

# Shawnee Karst Preserve Management Plan

As approved 26 September, 2021

**INTRODUCTION:** The Shawnee Karst Preserve is a 67.8 acre property in Lawrence County owned and managed by the Indiana Karst Conservancy (IKC). The principle asset of the preserve is a portion of the Shawnee Cave System, more specifically Upper Twin Cave, that lies underneath the preserve and is the “home” for what may be the largest known population of the Hoosier cavefish. Protecting the cave’s habitat is critical, while still allowing visitation for scientific study and appropriate recreational use for future generations. The surface of the preserve, enrolled in the Classified Forest and Wildlife Program, will be managed to maintain/enhance the karst landscape’s values, sub-surface water quality, the property’s overall natural setting, and low impact recreational use.

**HISTORY OF THE CAVES:** The Shawnee Cave System, was likely visited by Native Americans. The system is of worldwide biological significance and the most-downstream Donaldson entrance in particular is famous for the numerous cavefish and other studies conducted at the “IU Cave Farm” around the turn of the 20th century (e.g.; Eigenmann, 1894). The main (downstream) entrance to the Upper Twin portion of the system is also the type locality for the term “karst window” (von Osinski, 1935). A dam and boat dock were constructed in this karst window by the Civilian Conservation Corps in the late 1930s, impounding approximately 600 feet of cave passage to facilitate commercial use. The Indiana Department of Natural Resources (IDNR) concessionaires continue to operate flatboat tours into this section of the cave from Memorial Day weekend through mid-October. Views of troglobitic cavefish and crayfish are highlights of the tour.

The first known map of the cave system was surveyed by Greene and McIndoo and published in conjunction with a systemic study of cave plankton (Scott, 1909)<sup>1</sup>. This map – showing 4,674 feet of passage in Upper Twin – served as the best source of survey information for almost seventy years. The author speculated that the water in the system originated at the sinks of Mosquito Creek, and attempted to confirm this by placing 500 small blocks of wood coated with paraffin at the sinks to see if some would re-appear in the cave. Although this attempt was unsuccessful, his speculation was later proven to be correct using modern dye-tracing techniques

The Greene/McIndoo map was later reproduced – with modifications – in “Caves of Indiana”, Circular No. 8 of the Indiana Geological Survey (Powell, 1961).

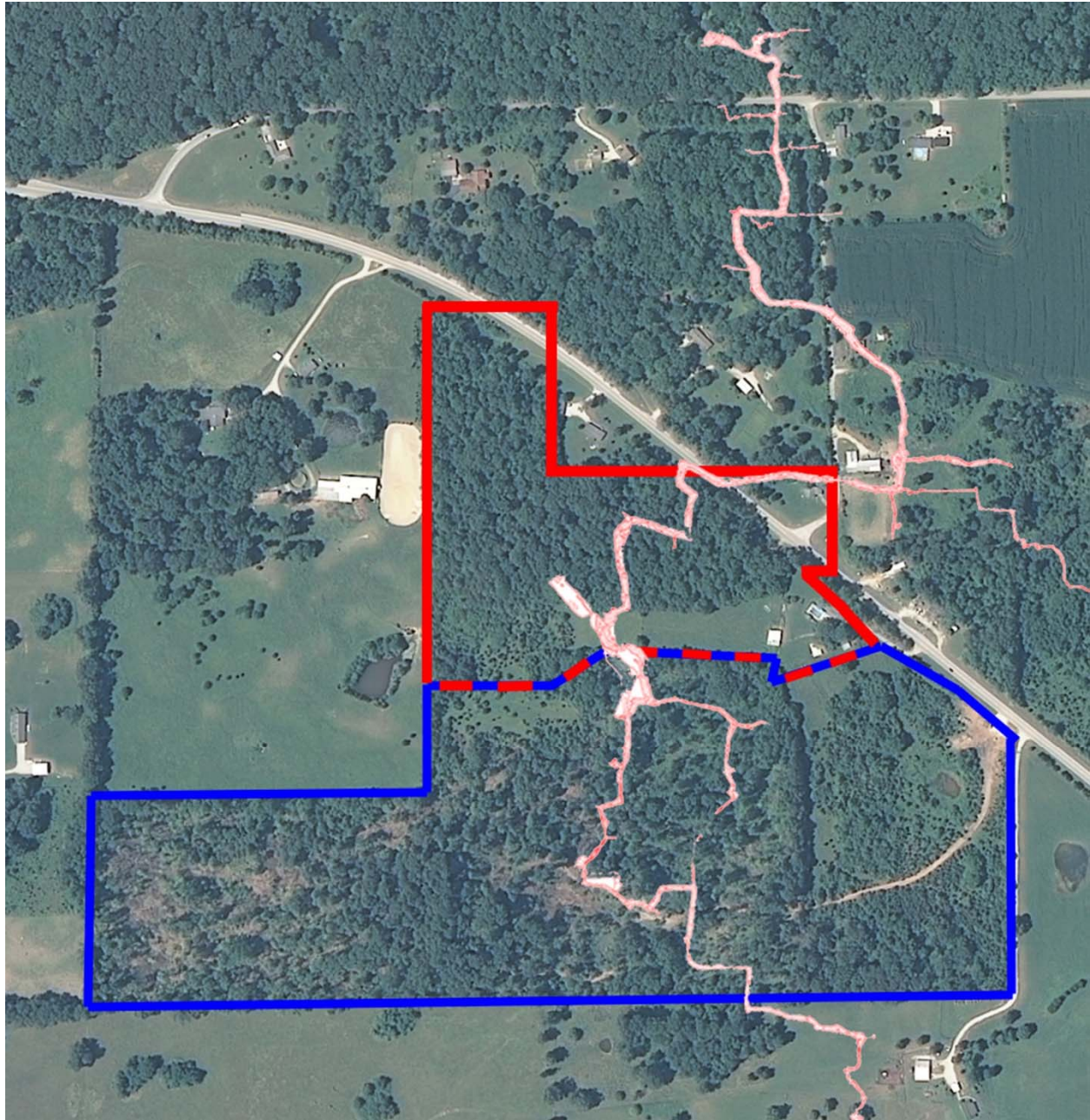
Re-survey activities of the Shawnee Cave System occurred in late 1970s by the Indiana Speleological Survey (unpublished map of the Donaldson/Bronson section), and then again from 1989 to 1991 under a Memorandum of Understanding between the IDNR and the IKC. The survey of the Upper Twin section revealed three additional entrances and extended the length of known passage in Upper Twin Cave to over three miles. The uppermost of these new

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<sup>1</sup> At that time, the Twin Cave entrances to the system were known as Dalton Cave (for a nearby landowner).

entrances is located on the Shawnee Karst Preserve, and provides the most expedient access to the main cave passages for scientific study and recreation. A fifth entrance reportedly exists upstream of the IKC's entrance, but has not been verified or fully documented.

There is also a small cave that was discovered in 2018 on the northern expansion tract. It was later named Whittaker Cave in memory of IKC member Gary Whittaker, who bequest a sizable donation that helped facilitate the purchase of the expansion tract.



**HISTORY OF THE PROPERTY:** The IKC acquired the southern portion of the preserve (50.3 acres) in 2013 with the financial assistance of The Nature Conservancy (TNC), which contributed 50% of the capital cost. In 2020, an additional 17.5 acres was added on the north side of the original preserve to bring the total to 67.8 acres.

The two tracts were once one and owned by Edwards Price (circa 1870), M. Jarvis (circa 1920) and James Williams, Sr (circa 1950). In the early 1940s, State Road 60 was constructed, isolating two small tracts away from the main property. Williams, Sr then split the 67.8 acre property. His son, James, Jr, took ownership of the 50.3 acre tract that was sold in 2007 to Ben Reynolds, who then resold it to a timber company (Green Farms) in 2009. The property was heavily and poorly timbered in 2011, prior to the IKC purchase in 2012. The 17.5 acre portion of the property was transferred to Diana Williams (wife? daughter?) and subsequently to Delorah Williams (sister? daughter?) who married Gary LaDuke. They lived on the property for over 40 years. After the passing of Delorah, and then Gary, the property was acquired by Keith Dunlap in 2019, with all the structures (two houses, a horse stable, and several smaller out buildings) removed except for a pole barn. The property was then acquired by the IKC in 2020 to re-consolidate and create the current 67.8 acre preserve.

**MANAGEMENT PERSONNEL:** Within this document, the following individuals and groups will have management responsibilities:

- Executive Board – The membership-elected governing board of the IKC.
- Property Manager – The Executive Board appointed individual whose primary responsibility is to implement and execute the Management Plan and oversee the property with the exception of Upper Twin Cave. The Property Manager is required to make an annual report pertaining to the property to the Executive Board. The Property Manager will function as the back-up for the Cave Patron when the Patron is unavailable.
- Cave Patron – The Executive Board appointed individual whose primary responsibility is to oversee Upper Twin Cave. This includes arranging access, monitoring impact, and maintaining usage records. The Cave Patron is also required to make an annual report to the Executive Board pertaining to the cave, visitation usage, incidents, etc. The Cave Patron and the Property Manager may be the same person.
- Property Management Committee – This optional informal committee generally will consist of the Property Manager (de facto Chair) and the Cave Patron, and any other designated volunteer(s) who assist with maintaining the property and caves. The Property Manager can delegate responsibilities to the volunteer committee members.
- Grotto Liaisons – These are approved representatives from the grottos that have signed a cooperative agreement with the IKC for arranging access to specific caves covered in that agreement. However, due to the sensitivity of Upper Twin Cave, the cooperative agreement does not apply here, and access may only be granted by the Cave Patron.

**SUBSURFACE RESOURCES:** The Shawnee Cave System is formed in the Salem Limestone. Most of the system consists of an active stream, and is prone to flooding. Deep pools are often found where the joint-controlled passages abruptly change direction, and solution scallops on the cave walls and potholes on the floor suggest that the cave stream carries a lot of energy after

heavy rains. The Upper Twin section of the cave system contains 16,353 feet (3.1 miles) of mapped passage with a vertical extent of 36 feet. The main (or downstream) entrance to Upper Twin Cave consists of an opening on the south wall of a large collapse sink within Spring Mill State Park. This is where the boat dock and dam are located. Dye-tracing has confirmed that much of the water in the cave originates at the Sinks of Mosquito Creek (S1/2, Section 15, T3N R1E). The water issuing from the main entrance of Upper Twin proceeds downstream into the Lower Twin entrance, continues through the Bronson karst window, and ultimately discharges out of the Donaldson entrance of the system.

The entrance to Upper Twin owned by the IKC lies in a collapsed sinkhole about 4,200 feet upstream from the main entrance. Through a climbdown opening into a small room, then a short scramble down talus and breakdown, leads directly to the active cave stream. The passage downstream (left) varies between three and nine feet high for most of its length, although there are places requiring crawling, and other places where the ceiling is twenty feet or more high. Water depth varies from ankle-deep to more than five feet. Within 200 feet downstream of the IKC entrance, there is a short-cut to the left over mud fill. Continuing another forty feet in the chest-deep stream, a side passage on the right can be found, which quickly becomes wetter and tighter. Another 200 feet downstream, a twenty-five foot climb-up on the left leads to a narrow canyon ending in a large formation room.

Continuing in the main passage, the water depth varies greatly. The passage follows the joints in the bedrock through six bends followed by a straight shot for about 600 feet. At this point the main stream turns sharply left and two smaller stream passages enter the main passage from the right. The first passage is narrow and about 4 feet high, but soon becomes lower and eventually leads to another entrance. The second passage is wider and taller and may be followed for about 300 feet until it becomes too low to continue. A breakdown mound is found opposite this second passage. At this point, unless you have a DNR issued cave permit, visitors must return to the IKC-managed entrance. There is also a cable installed across the passage marking the turn-around point.

The next 900 feet of main passage is of walking height and fairly straight but the water becomes progressively deeper. Eventually the passage makes a sharp turn to the right and within another forty feet, a small, dry passage can be seen entering on the right that leads to another entrance. Continuing beyond this point you begin to approach the area where the state park conducts their boat tours.

From the IKC entrance, the upstream portion of the cave is about twice as long. Passage dimensions vary greatly and several locations require crawling in water and other places require swimming. Approximately 4,400 feet upstream of the IKC entrance, the passage splits. The right-hand passage is 200 feet of mostly stoop-walk where a third passage enters from the left. Continuing straight leads to a breakdown blockage within another 300 feet. Turning left leads to a progressively drier canyon about 600 feet long that re-joins the main passage. Back at the original split, the main stream passage on the left starts out high, but involves a couple of wet stoop-walks for about 1,100 feet to the point where the third passage previously mentioned rejoins it. A well casing can be seen in this section of the cave.

At this junction it's easier to continue upstream by climbing up the mud bank to the left rather than belly-crawling in the water. In 100 feet, this upper passage rejoins the main stream passage at a breakdown mound. The remaining 1,200 feet of cave alternates between walking and stoop, but eventually becomes a belly crawl that ends in a sump. Another well casing going directly through the middle of the cave passage may be observed at this point.

Upper Twin Cave contains a broad variety of troglobitic species including the well-known Hoosier cavefish *Amblyopsis hoosieri* and the crayfish *Orconectes inermis*. Less well-known troglobitic invertebrates include the rare water mite *Homohalacarus subterraneus*, the pseudoscorpion *Apochthonius indianensis*, and an undescribed (new to science) species of the dipluran *Litocampa* (Lewis, 2011). An extensive study of the cavefish population in Upper Twin Cave was conducted in 2017-2018 (Sollman, 2018).

As mentioned previously, a small cave named Whittaker Cave, is located on the northern tract of the property. This incidental cave is located very close to Upper Twin Cave passage and very likely is hydrologically connected. It also has the potential to be physically connected to Upper Twin Cave someday.

**SUBSURFACE MANAGEMENT:** Upper Twin Cave will be managed as a natural, wild cave with an emphasis on protecting the fauna that reside there. No improvements for the convenience of the visitors are desired or will be allowed. Digging or other alterations for exploration or expansion of the cave is prohibited without prior approval of the Executive Board. Cave restoration (other than trash removal) is limited to IKC-approved and supervised workdays. The purpose is to keep all restoration methods consistent with IKC-approved practices.

Because the biological diversity of this cave system is high and the cave contains a number of rare species that could be negatively impacted by over-visitation and larger groups, the maximum group size per group/trip will be limited to ten, and no more than one trip per day. At the discretion of the Executive Board, additional restrictions may be necessary if faunal populations are observed to be negatively impacted by existing visitation practices.

**CAVE ACCESS POLICY:** Upper Twin Cave is not an appropriate cave for novice cavers. This cave is very wet and a real danger of hypothermia and/or flooding exists. Only experienced cavers with knowledge of the dangers and their own limitations will be allowed to visit Upper Twin Cave.

No youth groups will be allowed in Upper Twin Cave. All cavers must be at least 18 years of age or accompanied by an experienced caver parent or guardian.

For safety purposes, the recommended number of participants on a trip is no fewer than four. If a caver gets hurt, this allows for someone to stay with the injured caver while the other two exit for help. Due to deep water and exposure, a wetsuit and/or personal flotation device (PFD) is suggested for trips downstream of the IKC entrance (especially when the DNR's by-pass gate at the dam is closed), and strongly recommended for any trips upstream.

Those wishing to visit the IKC portion of Upper Twin Cave via the IKC entrance must contact the Cave Patron to obtain permission. The Property Manager is also an authorized backup to grant access. All persons entering the cave must read and sign a RELEASE AND WAIVER OF LIABILITY AGREEMENT, follow surface and subsurface rules established by the IKC, and agree to protect the cave's biology and other natural resources.

Currently the IKC has an agreement with the Indiana DNR, Division of State Parks, that allows access during certain times of the year to the downstream portion of Upper Twin Cave owned by Spring Mill State Park, facilitating a “thru-trip” between the IKC entrance and the main (boat dock) entrance. These trips need to be scheduled through the IKC/DNR coordinator (see the IKC website for more details). The DNR has its own set of rules/restrictions and permit system that will need to be followed carefully. During the times when access is not allowed in the DNR-owned section of the cave, visitors must stop at the designated downstream turn-around point, and exit via the IKC entrance.

The Cave Patron can authorize or deny ordinary (recreational) cave trips. Trips with some extraordinary purpose (e.g., scientific studies) require Executive Board approval. Trip requests may be denied if there are concerns about the cavers' capability (poor gear, etc.). However, the authorizing parties are not expected to certify a caver's competence and approval is not attesting to the requestor's abilities.

Prior to a trip, the trip leader will receive the liability waiver (also downloadable from the IKC website) and the visitation rules (see end of this document) to be followed while on the property. The trip leader will be responsible for having each participant read and sign a copy of the liability waiver, then return the signed copies to the Cave Patron *before the trip*. The trip leader will also inform all the participants of the visitation rules before entering the property. The rules cover the minimum number of participants per trip, where to park, appropriate precautions while changing clothes before and after the trip, rules to assure a low profile, the specific path to take from the parking area to the cave, precautions related to the weather, and information pertaining to emergencies. Any improper behavior may result in those persons or group being barred from future visits.

The liability waiver will be kept on file for at least two years. *An executed liability waiver is required for each caver for every trip.* The Cave Patron will maintain a log of trips and number of visitors to the cave to assess visitation impact on the resource. The Cave Patron will also prepare an annual report on visitation and impacts and present it to the Executive Board.

Permission to visit Whittaker Cave is similar to the above process, but arrangements are handled by the Property Manager. The visitation rules are less formal, but an “incidental cave” liability waiver (also available on the IKC website) is still required from each caver on each trip.

Monetary compensation of the trip leader (cave-for-pay) is strictly prohibited. The Conservancy will vigorously prosecute any violations of the Indiana Cave Resource Protection Act, IC 35-43-1-3 or any other vandalism on the property.

**SURFACE RESOURCES:** The preserve consists of two tracts consisting of 67.78 acres of mostly wooded karst terrain. All drainage of the property is subterranean. A number of sinkholes are found on the property, several of which actively take water after rains. There is one natural sinkhole pond and one man-made wildlife pond that seasonally retains water. There are several existing openings with remnant prairies that provide bird habitat and plant diversity. There is another open field of mostly fescue on the northern tract that will be allowed to revert back to a forested landscape.

At the time of the original (southern) property purchase, that property had recently been heavily logged with multiple logging roads. There are several stands of cedar trees.

A 24' x 36' enclosed pole barn for storage remains on the northern property.

**SURFACE MANAGEMENT:** The two tracts have been enrolled in the DNR Classified Forest and Wildlife program. The surface should be managed according to the Forest Stewardship Plan. Any native trees existing or introduced to the property should be maintained using current best practices outlined by the DNR Division of Forestry. With the exception of the remnant prairie area, volunteer trees seeded from nearby wooded areas will not be removed unless the species are noxious or non-native. Controlled/prescribed burning and/or minimal application of approved herbicides may be pursued as needed for vegetative management. Vine control and Timber Stand Improvements should be utilized for maintaining and enhancing a healthy and diverse forest (rather than for marketable timber production).

Grasses may be introduced to stabilize ongoing erosion along the roadways. It may also be necessary to remove some of the stands of cedar trees. Trees may be removed from the remnant prairie openings to promote the native plants and retain these opening to the extent possible.

Part of the existing skidder road on the southern tract has been upgraded (hardened with crushed stone) and will be maintained as a driveway into the interior of the property. Several locations along the driveway will require ditching and cut-outs to be maintained. A road gate with combination lock has been installed on the southern tract and will be maintained near the highway to control unauthorized vehicle access. Likewise, a gate may be installed to control access on the northern tract's concrete driveway.

The IKC has constructed a trail system on the property for interpretive and recreational purposes. No boardwalks, bridges, overlooks, or similar improvements will be installed unless needed to facilitate safety. Occasional mowing may be used to maintain the trails until sufficient foot traffic hardens the paths. Other measures (such as water bars or aggregate) may be necessary to control erosion on steeper sections of the trails.

Riding of horses, ATVs, dirt bikes, mountain bikes, or similar conveyances is prohibited on the preserve. Except for maintenance activities, vehicular use is restricted to the hardened driveway and designated parking areas. Hunting and trapping are also prohibited, except as needed for appropriate wildlife management; and will be performed in a manner in keeping with state wildlife regulations. The discharging of firearms, fireworks, or other explosive devices will not be allowed. Digging or other surface modifications are prohibited without prior approval of the

Executive Board. Collecting on the property is prohibited with the exception of mushrooms, fruit/berries, and nuts.

The IKC will establish no more than three campsites on the preserve, with parking sufficient for two vehicles per site. This is in addition to the main parking area for visiting the cave. Minimal amenities will be provided so as to provide a safe, but primitive camping experience. These campsites are restricted to IKC members and their guests, and are available on a first-come, first-served basis. Camping permission will be arranged/coordinated through the Property Manager, or in some instances, by the Cave Patron. The IKC will not provide facilities for larger group camping on this property. Downed firewood may be collected on the property. To mitigate possible introduction of tree pests and parasites, firewood should not be brought onto the property unless purchased from an approved USDA source or are kiln-dried lumber scraps.

In addition to the above surface and subsurface management prescriptions in this Management Plan, the southern tract of the property is also bound by the Shawnee Karst Preserve Management Agreement (TNC, 2012) between the IKC and TNC.

An informational kiosk may be installed at some future time. At this time there are no plans to place other permanent structures on the preserve.

Emergency Information signs shall be installed and maintained at the entrance to Upper Twin Cave and designated parking area(s).

**SURFACE ACCESS:** Vehicular access to the property will be solely through the two driveways. Walk-in access to the property by the public is neither encouraged nor discouraged, and permission to hike on the preserve is generally not required. However, all other surface activities require permission and coordination through the Property Manager.

#### **REFERENCES:**

Eigenmann, C.H., and Beeson, C.H., 1894, "The Fishes of Indiana", *Indiana Acad. Sci. Proc.*, v. 9 pp 76-108.

Lewis, J., 2011, Personal communication.

Powell, R. L, 1961, "Caves of Indiana", *Circ. No. 8, Indiana Geological Survey*, pp. 11-17, 60-61, 73.

Scott, Will, 1909, "An Ecological Study of the Plankton of Shawnee Cave, with Notes on the Cave Environment", *Biol. Bull.* v. 17 No. 6, pp. 386-406, 3 figs.

Sollman, Thomas, 2018, "A History and 2017-2018 Survey of the Aquatic Fauna of Upper Twin Cave, Lawrence County, Indiana", unpublished report to the Indiana DNR, 59 pp.

The Nature Conservancy, 2012, "Shawnee Karst Preserve Management Agreement", 7 pp.



von Osinski, W., 1935, "Karst Windows", Indiana Acad. Sci. Proc., v. 44 pp 161-165, 2 figs.

## SHAWNEE KARST PRESERVE VISITATION RULES

The following rules should be reviewed by all visitors *before entering the property*. These rules must be followed to protect the caves, the property, the IKC, and all visitors. It is also important to follow these rules to maintain a good relationship with the adjacent landowners. Remember you are a guest on this property and represent all cavers that come after you. *Please be on your best behavior*.

1. Follow all rules and requests of the Property Manager and Upper Twin Cave Patron.
2. Park in the designated parking areas and do not block the gates. Close and lock the driveway gates behind you.
3. Keep a low profile at all times while on the property. Talk quietly and no horse play.
4. Remain on designated trails and do not trespass onto adjacent properties.
5. The group size for Upper Twin Cave should be no greater than 10 and no fewer than 4.
6. Youth groups are not allowed in Upper Twin Cave.
7. All cavers must wear a helmet and have three independent sources of light. Proper foot wear and clothing should be worn; in particular, prepare to be immersed in 52-degree water.
8. Swimming and/or flotation devices are needed to reach most sections of Upper Twin Cave.
9. Upper Twin Cave is *known to frequently flood*. Do not enter the cave if rain is forecast or during or after a rain.
10. Do not enter the cave under the influence of alcohol or other mind- and mood-altering substances.
11. No smoking in the cave. No smoking on the property when dry conditions exist.
12. Do not change clothes in sight of the road or nearby property owners.
13. Do not exit the cave at any entrance located within state park boundaries (except in an emergency) unless you have previously obtained a cave permit from the DNR.
14. Before leaving the parking area, be sure to pick up all trash, clothing, cigarette butts, etc.
15. Tell someone where you have gone and when you will return. For rescue call Indiana State Police at 911 or the Lawrence County Sheriff at (812) 275-3316.