

THE JOHN GUILDAY CAVES NATURE PRESERVE MANAGEMENT PLAN

Revised March 2008

INTRODUCTION

The John Guilday Caves Nature Preserve property, in Pendleton County, West Virginia, contains several caves, including three well known, significant caves: Trout, New Trout, and Hamilton. The caves have been visited by thousands of people over the course of at least 200 years, and continue to be popular with recreational cavers, particularly youth groups. The property has historical value as an 18th century saltpetre site, and all three of the main caves are important paleontological sites. In addition, the property is biologically significant as a hibernaculum for a small colony of Indiana Myotis, an endangered species of bat.

The National Speleological Society (NSS) purchased the property in 1983 to protect the caves and their resources, and to ensure perpetual access to the caves. Every year, more landowners in the area close their caves to visitors and the NSS believes it is worthwhile to maintain a site that can accommodate groups of recreational cavers with little or no impact on the caves.

The property has been designated the John Guilday Caves Nature Preserve in honor of the late John E. Guilday, who was one of the foremost paleontologists in the country working with cave-deposited material and a long-time NSS member. While research curator at the Carnegie Museum of Natural History, he made the initial paleontological studies in Trout Cave.

OBJECTIVES

The objective of this management plan is to establish processes and guidelines that will allow the Society to effectively manage and monitor the use of the Preserve in a way that will maintain and protect the property's natural environment, maintain visitors' access to the caves, allow historical, paleontological, biological, and other speleological work to continue, and protect and encourage the habitats and populations of endangered species while optimizing cave access.

This management plan replaces the previous management plan developed for the Preserve.

MANAGEMENT COMMITTEE

The Preserve Management Committee, chaired by the John Guilday Caves Nature Preserve Manager, is responsible for effectively managing the Preserve as outlined in this Management Plan. The Preserve Manager is appointed by the NSS Board of Governors, and selects those committee members as deemed appropriate to achieving the objectives of the management plan.

HISTORY AND DESCRIPTION OF THE PROPERTY

History

The caves on this property have been known since the earliest settlement of Pendleton County, Virginia (now West Virginia), which at the time of first settlement was part of Augusta County. It appears that the caves first came under private ownership on July 19, 1787, when they were surveyed for John Penninger. The caves were already being worked for saltpeter, or were so worked shortly after that date. The first operator whose name we have was John Mefford, who leased a property across the river from John Penninger in 1795. The caves were worked for saltpeter from then until the end of the Civil War, though not continuously. According to the 1810 Census of Manufactures, the annual production of saltpeter was 4,000 pounds. According to the 1820 Census, 12,500 pounds of gunpowder was manufactured on the site during the War of 1812, using saltpeter extracted from the caves. At the time of the 1820 census however, the "works are presently not worth attending to."

During the Civil War, the caves were operated for the benefit of the Confederacy and were frequently raided by Union troops. There are no references to further economic uses of the caves themselves following the Civil War.

In 1867, the property changed hands, passing from the McCoy family to the Hiner family. Over the period 1870-1880, it passed from the Hiners to James W. Kee, who sold the property to Martin Moyers on March 1, 1882. The cave tract remained in the Moyers family, being part of a larger tract of some 1,142 acres at one time, from that date until March 15, 1983.

The caves were among the earliest ones explored and mapped by members of the NSS. Maps of all three are included in William E. Davies *Caverns of West Virginia* (1958). It appears that New Trout Cave had been forgotten for some time after the Civil War. It is sometimes referred to as "Little Cave". Trout Cave is sometimes referred to as "Great Cave". Hamilton Cave is named for the first clerk of the Pendleton County Court, Gavin Hamilton.

When the NSS acquired the property in 1983, it consisted of 42 acres, more or less, and was divided into two parcels by a north-south line. The Moyers family retained some timber rights on the western parcel for a period of seven years after the transfer, along with all necessary rights of access for the purpose of obtaining the timber. There were no such reserved rights on the eastern parcel that contains all three caves. Those rights for a one-time harvest were concluded in 1984, and the property is returning to a more natural state.

The accessibility of these caves has long made them favorites for beginner and youth group trips. A number of other prominent caves in the county have been closed, either by their owners of their own volition, or at the request of the U. S. Fish and Wildlife Service (U.S.F&W) for the purpose of protecting endangered species. This has led to the over-utilization of some of the remaining caves in the county, which was aggravated by the closure of these three caves prior to their acquisition by the Society. With the exception of some very remote areas, these caves do not contain fragile formations nor do they have large-scale vertical drops. They are eminently suited for the above types of traffic. A number of bats hibernate in Trout Cave, including a small colony of *Myotis sodalis*, an endangered species. An investigation on February 28, 1983 by Dr. Virginia M. Tipton found 530 *Pipistrellus subflavus*, 183 *Myotis lucifugus*, 26 *Eptesicus fuscus*, 21 *Myotis sodalis*, 1 *Myotis Leibii*, and 2 unidentified bats in Trout Cave and 1 *Myotis Leibii*, 5 *Eptesicus fuscus*, 1 *Plecotus Townsendii Virginianus*, and 3 unidentified bats in New Trout.

The discovery of a colony of an endangered species (*Myotis sodalis*, also known as the Indiana bat) in the most popular cave on the hillside created a very intense and divisive controversy within the society. The original intent in purchase had been to provide a place for recreational caving while permitting continued scientific studies of the caves. The presence of an endangered species seemed to warrant closure of this cave to human use during the winter. Arguments on both sides of the debate were rooted more in passion than rational thinking. Initially, a temperature study was performed to give guidance to a decision. Unfortunately, no parameters were determined prior to the study, and when the data thus collected seemed to conflict with previously published data, the decision was made to close the cave nevertheless, giving the impression that the result had been predetermined. This decision brought about a near division of the society, as demonstrated by votes at Congress of Grottos meetings that ran close to 50-50 on the issue. Ultimately, the Board of Governors reached an agreement that a six-year trial closure would be conducted. If after that period the census of the endangered species had increased to a number of 100 individuals, the caves would remain seasonally closed indefinitely. If that number was not reached during the trial, it would reopen for all year use. The entrance was fenced to discourage entry. Although the fence was repeatedly vandalized (it is widely believed to have been members of the NSS responsible) the closure was generally honored. The six year period passed, the number of individuals did not increase significantly, if at all, and the cave was reopened to all year use.

Subsequent, semi-annual counts continued to indicate a steady population of around 25 individuals of *Myotis sodalis*, until the count conducted in 2005. During that count a sudden increase to a population of 95 individuals was observed. Some of the bats were now using the main passage, primarily in the area where much larger numbers had been seen during the 1940s and 50s. This sudden increase could not have come about as a result of normal procreation, as only one young is produced per year by mating couples. The following year, a count of the endangered species alone was conducted, to quickly validate that this was not simply a one-time spike in the population, with a count of 93 Indiana bats. The conclusion is that somewhere another unidentified site had become unsuitable for reasons unknown. Ongoing temperature studies in the cave suggested that the habitat was still marginal for the species. In 2007, the number increased to 158 individuals. Representatives from the U.S. Fish & Wildlife and the West Virginia Division of Natural Resources (W.V.D.N.R.) requested that the NSS seasonally close and consider gating the cave.

Preserve Location and Description

The property is essentially the southwest face of Cave Hill, an offshoot of Pickle Mountain, which lies to the northwest. The survey of the property at purchase begins at the intersection of US Highway 220 and a county road, Powder Mill Run Road, runs along the center of Powder Mill Run Road, to an iron pin at the side of the road, and then climbs the hill to the crest. From there it runs through woods to the southeast and curves gradually to the south until it reaches another iron pin at a point above Trout Rock. It then passes to the centerline of US Highway 220 and follows that centerline to the point of beginning.

At the time the property was acquired, there was no fencing along either of the road frontages, and only a small amount of wire fence along the curving portion of the boundary through the woods. The boundary between the two parcels within the property was marked with surveyors flagging tape, with the southern end of the dividing line marked by a broken topped cedar tree and the northern end of the line marked by an iron pin.

There is an historic marker on the opposite side of the highway, and the only parking for vehicles is in the vicinity of this sign. There are a few places along Powder Mill Run Road where vehicles can be parked but this road is quite narrow. Over the years, cavers have entered the property at any point convenient to their vehicles and, due to the steepness of the slopes on the south side of the property, this has led to some erosion.

RESOURCES

The property is a wooded hillside; with a prominent cliff that contains three major caves (Hamilton - 25,037 ft., Trout - 12,458 ft., and New Trout - 14,908 ft.) and a few much smaller caves (Film Can - 21 ft., Trammelton - 35 ft., Cathy's Crack - 42 ft.). It is bounded on the south by US 220, on the west by Powder Mill Run Road, on the north by (generally) the crest of the hillside, and the east by a sandstone cliff. Two talus caves (Spider Cave - 97 ft. and Boulder Crawl - 23 ft.) are here, but reside on our neighbor's property. A small stream, Powder Mill Run, runs on the property along the road named for it, and NSS Flood Cave (1542 ft.) has its entrance in this streambed. The property contains all of the limestone exposure in the hillside.

Biology

The caves are home to the usual assortment of bats common in West Virginia, and as already noted, Trout Cave harbors a hibernaculum site for a small number of the endangered Indiana Myotis. Bat census counts are conducted annually in Hamilton and New Trout Caves, and semi-annually in Trout Cave in accordance with the U.S.F&W species recovery plan. Many of the caves on the hillside are home to the Allegheny woodrat, a "species of concern" in West Virginia as its habitat is dwindling. The caves are generally dry, and a search for invertebrates conducted by Dr. Dave Culver and Dr. Dan Fong produced a few cave adapted species, but nothing of major interest. An unusual spider previously reported in Trout Cave was not seen during this sampling. The habitat for the Indiana Myotis seems to be marginal for the species, although some historical data from the 1940s and 50s indicate a much larger colony than at present

Geology

The caves at Trout Rock, taken separately, are excellent examples of cavern development in the Alleghany Mountains. All three major caves are formed in the New Scotland Formation near its lower contact with the Coeymans Formation (Devonian Helderberg Group). NSS Flood Cave is formed lower in the Keyser Formation. New Trout Cave is primarily a single tube with some branching tributaries. Trout Cave, a parallel system just to the west, also contains one or more master conduits, but in addition has developed rudimentary branching and networking maze sections. Hamilton Cave, further to the west, is an archetypical network maze cave with passages developed along two primary fracture sets intersecting at right angles. NSS Flood Cave, almost directly below Hamilton, exhibits similar development to Hamilton Cave, but is less extensive.

These caves, taken as a system, tell yet another story, and their interrelationship makes the geospeleology of the Preserve special among Appalachian caves. All

three major caves conform well to the same stratigraphic unit, the New Scotland Limestone. New Trout, Trout, and Hamilton Caves are all relatively horizontal, but are at progressively higher elevations. This is because the beds of limestone dip (tilt downward) to the east, forming a broad anticlinal fold. The front section of Hamilton Cave is located along the nearly flat crest of the anticline, while Trout and New Trout are lower, on the dipping flank of the fold. The back section of Hamilton Cave is developed along the opposing flank of the fold. NSS Flood Cave, like the front section of Hamilton, is also formed on the flat crest of the fold, but at a lower elevation, just above the current water table.

The caves of the John Guilday Caves Nature Preserve provide a prime locale for observing the influence of geologic structure on the development of caves. Proximity of the caves to one another and their stratigraphic positions emphasize the spectrum of structural control more than at any other locality of similar size and accessibility in the West Virginia cave region.

With the exception of NSS Flood Cave, there are few calcitic formations in the caves on the property. Visitation to NSS Flood has been limited almost exclusively to the initial exploration and mapping of the cave. The entrance has been returned to its natural state and its location is not well known. Access has been restricted to protect the unusual number of formations therein.

The NSS holds all mineral rights to the property.

Paleontology

All three major caves on the John Guilday Caves Nature Preserve have been found to have deposits of fossil bones and teeth dating from the Pleistocene Epoch, ranging in age from about 17,000 to about 70,000 years before the present. Each of the three caves contains several bone sites.

Carnegie Museum employees under the direction of John Guilday made the first discoveries of fossilized bones at Trout Cave in the late 1960s. These excavations were important because the bones found proved to be older than most of those found at other cave sites in the Northeast.

Beginning in the late 1970s and continuing to the present, additional sites have been found in New Trout, Trout, and Hamilton Caves. Workers from several museums and universities have been studying the fossils. Thousands of specimens have been collected and identified, including fish, amphibians, reptiles, birds, and mammals.

Several extinct species have been identified from the Preserve caves, including ground sloth, dire wolf, short-faced bear, saber-toothed cat, and extinct relatives of the horse and musk ox. Other specimens recovered from the caves include existing species that no longer live in West Virginia, such as caribou, badger,

pocket gopher and water rat. During the past several hundred thousand years as the glaciers advanced and retreated, the climate fluctuated in the area around the caves, causing remains of animals with different climatic preferences to be found.

The continuing paleontological work that is under way in Hamilton is all located in either obscure side passages or in very remote areas of the cave. To date we have not found there to be any disturbance of the sites, even though we do have evidence of visitation to other sites by other than the paleontology personnel.

Historical

Trout and New Trout Caves were extensively mined for Saltpetre in the 19th century. Few artifacts remain, although the occasional paddle or timber is found. Most common are spent faggots (torches). Tally marks are also seen on occasion, as well as sporadic drill holes from blasting.

There is a report that Peter Hauer discovered an area in Trout Cave that contained many undisturbed artifacts, to which he reportedly then completely filled in the connection to the main cave. His stated goal of protection has been successful, as they are yet to be found. Efforts to do so continue, with the hope that doing so may also assist in the restoration of habitat for the hibernaculum. Evidence of such a passage have been found, and efforts to gain entry are being pursued.

Hydrological

Within the various caves on the property, only NSS Flood has any permanent water, a small impenetrable sump at its lowest point. In Trout Cave, an intermittent stream can be found in the Square Room. The formation areas in Hamilton Cave contain a few small pools that are generally present all year.

Archaeological

No archaeological resources have been found in the caves, although one archaeologist has reported that there is a possibility of archaeological deposits in Trout and New Trout Caves.

ACCESS POLICY

The caves on the hillside are open to visitation with the exception of NSS Flood Cave. All trips to NSS Flood Cave require prior approval, which will be granted for approved research proposals alone. Visitors to the property are reminded that in accordance with West Virginia law (Laws of West Virginia, Cave Protection,

Chapter 20, Article 7a, under Laws of the Division of Natural Resources, and Chapter 19, Article 25, Laws of the Department of Agriculture, Limiting liability of Landowners) neither the National Speleological Society nor its agents are liable for injuries sustained by persons using the property. Commercial use of the property is strictly prohibited. Use by non-profit groups is acceptable, provided that no participant (or their family) has been charged any fee beyond the normal sharing of travel expenses.

CAVE MANAGEMENT

The small caves on the cliff require no special management scheme, but shall be inspected sporadically for impact. To date, no impact has been observed. Hamilton and New Trout Caves shall be examined at least twice annually, during the bat census conducted in February each year, and also during the "Conservacation", the annual property cleanup usually held in October or November. Minimal impact has been observed here as well. NSS Flood Cave is closed to recreational use in an effort to protect the unusual (for the area) number of formations present in the cave. The cave entrance shall be examined at least once a year for signs of disturbance from its natural state, as it must be dug open for entry.

Trout Cave requires the most attention because of its use as a hibernaculum by a small colony of the Indiana Myotis, a federally endangered species. The committee and representatives from the West Virginia Department of Natural Resources shall conduct a bat census every two years in accordance with the Indiana Bat recovery plan of the U.S.F&W. The cave is normally open for all year recreational use. A temperature study conducted in the early 1980s showed that only the first 150 feet of the cave fell into the preferred temperature range of the species, 3 - 7.2 deg. C, as described in *Tuttle, M. D., and J. Kennedy. 2002. Thermal requirements during hibernation. Pp. 68-78, in The Indiana bat, biology and management of an endangered species (A. Kurta and J. Kennedy, eds.). Bat Conservation International, Austin, Texas. 260 pp.* Historical data indicates that in the 1940s and 50s a much larger colony extended at least 600 feet into the cave, and established the cave as West Virginia's only "Priority 2" cave in the Indiana bat recovery plan. (WV has only one "Priority 1": Hellhole Cave) It seems readily apparent that something has altered the habitat in the intervening years. The management committee has received reports that a "back" entrance was observed in the 1950s, and also that Peter Hauer during his saltpetre research discovered an upper level that was a 600 foot long passage paralleling the main passage, and in an effort to preserve artifacts in situ, then filled in the connection to the main passage. He then passed on without providing adequate information about the location of this connection to allow its restoration. Evidence of such a passage has been observed. The committee believes the so-called back entrance (reportedly too small for entry) and the lost passage are connected, and that restoration of the connecting passage may restore the habitat in addition to providing a site for further study on saltpetre mining of the

19th century. Promising sites are examined and pursued as they come to view, usually by digging. In the event the "Lost Passage" is found, the following procedure will be undertaken:

1. The entry to the passage (which may differ from the one Hauer filled in) will be gated to prevent unauthorized entry.
2. The passage will be surveyed by the committee or its designees to determine where the original connection is. Any artifacts found will be documented and preserved in situ for study by researchers that have fulfilled NSS requirements for doing such work.
3. If the connection was not the entry point, the original connection will be reestablished and gated. The entry point will be restored to its original dimensions.
4. Another temperature study, similar to the one conducted in the early 1980s, will be conducted in cooperation with the West Virginia Department of Natural Resources.
5. It is expected that if in fact the above hypothesis is correct, at least 300 feet of the entrance passage will be found to reach temperatures in the preferred range of 3.0 - 7.2 deg. C.
6. If the expected increase in suitable habitat does not occur, the committee will continue to pursue avenues of restoring the habitat to the stated condition.

As mentioned earlier, U.S.F&W and W.V.D.N.R. have requested that the Society seasonally close and consider gating the cave. In addition, they have offered to fund the installation of the gate, with the Society providing primarily labor during the construction. This places the Society in a very different position than presented when the closure was conducted in the 1980s, as that closure was initiated from within the society:

1. The gate proposed in 1984 would have not received any government funding. All funds needed to come from the Society. Estimates for the recommended gate were around \$22K. The Society was unable to raise this amount of funding for a gate deemed highly controversial, and a fence was constructed. The government agencies currently anticipate a cost of about \$35.5K. Bat Conservation International has agreed to provide \$2.5K and the Society \$2K. Government agencies will provide \$25K, and the balance is "in-kind" labor provided by W.V.D.N.R. and the Society. In their request for funding, the U.S.F&W stated: "Trout Cave is classified as a Priority 2 Hibernacula in the 2006 Draft Indiana bat Recovery Plan. These caves contribute to the recovery and long-term conservation of the Indiana bat. There

are no other Priority 2 caves and only one Priority 1 cave identified within the State of West Virginia. Because access to the Priority 1 cave in West Virginia has already been restricted, alleviating winter disturbances to Trout Cave is one of the highest priority outstanding recovery actions within the State."

2. The number of bats has suddenly increased dramatically, and at 158 bats has exceeded by more than 50% the action level agreed to during the 1980s closure.

3. Whereas during the 1980s all Indiana bats observed were in an obscure side passage, over 20% of the 2007 count were seen in the main passage used by all visitors to the cave.

4. As a Priority 2 site, Trout Cave has long been perceived as a potential sanctuary for the Indiana bat in the event something goes drastically wrong at nearby Hellhole. Despite the continuing marginal habitat temperatures, the cave appears to be filling that role for an unidentified site currently. Attempts to restore the habitat currently seem to have good potential for success.

5. During the 1980s closure, a fence which attempted to enforce closure was repeatedly vandalized, and the closure could not be enforced. It was clear that only a substantial gate would have any hope of enforcing a closure of the cave.

For these reasons the Preserve Management Committee have agreed in principle that upon the provision of a suitable gate, Trout Cave will be closed to recreational use beginning Labor Day each year and will reopen the first Saturday after April 15 each year. This status will remain in effect indefinitely until the Indiana bat:

1. Has recovered adequately that the U.S.F&W agrees to reopen the cave,
2. Ceases its increased use of the cave and is again limited to the side passage, and retains a stable population comparable to the previous population of 25 for a period of six years, or
3. Is declared to be extinct.

PUBLICITY

An information booth has been constructed at the base of the cliff at a point nearest the highway. Information is provided regarding the property and its legal uses. Conservation, safety, and general informational

brochures are available for visitors, and a sign in/out log is made available.

SURFACE MANAGEMENT

Flora on the property consists of that which is typical for the area. Its development is neither directed nor hindered. A wide area of erosion was present below Trout Cave at the time of the property's purchase, but this has since become more stable with the acceptance of the natural trail at the base of the cliff by the vast majority of visitors. The trail is maintained only to the extent that deadfall is not necessarily permitted to block it. A plastic fence helps to identify the trail in some areas.

CONSERVATION

An annual "Conservacation" is to be held on the property for the purpose of maintaining the trails, signs and information booth, cleaning up litter along the highway and Powder Mill Run, as well as examining the various caves for damage, graffiti, and trash. Cave clean up trips shall be conducted in conjunction with the Conservacation.

Registers are to be maintained in each of the three main caves for visitors to record their visit. These are provided by the Contemporary Cave Use Study Committee of the NSS, and all data thus collected is to be provided to them.

POLICIES OF THE JOHN GUILDAY CAVES NATURE PRESERVE

1. Everyone in the group must be properly equipped. Each person must have a helmet and three independent sources of light.
2. The caves are closed to commercial users. This includes any person or organization that takes money to guide others, or to anyone who pays for a guide. Not-for-Profit groups, to include youth groups, who pay or accept any type of fees associated with cave trips, are not allowed in the caves. Scout, church, and school groups are not considered commercial users provided they have not hired a guide. Sharing of expenses is not considered a "fee".
3. Camping and fires are prohibited. The property is too hilly for camping. Camping or fires in or near the caves will disturb the bats that reside in the caves throughout the year.
4. Make no marks in the cave, including directional arrows and any type of writing. If you wish to mark your route you can make small piles of rock, but please remove them as you leave. Each cave contains a

cave register where we encourage you to sign in and write any comments about your trip.

5. Leave nothing in the cave, including trash, food, spent carbide, and human waste. If you bring it in the cave you must take it out with you.
6. Do not disturb any animals you encounter. The caves are the home for several varieties of bats and you may see them hanging on the walls or flying. This is their home so do not disturb them.
7. Stay on the trail. Avoid the temptation to take a shortcut directly down the hill to your car. Doing so is dangerous, causes erosion, and will disturb the poison ivy growing on the hillside.
8. West Virginia caves are protected by law. Any acts of vandalism, mineral collecting, or disturbance of cave animals is prohibited. Violations will be aggressively prosecuted.
9. Hamilton and New Trout caves will be open to responsible caving all year. The management committee may close one or the other for short-term scientific studies. Trout Cave will be gated and closed seasonally from Labor Day through April 15 to protect a federally endangered species, the Indiana Bat.
10. All parking is to be in the wide shoulder across the street. Maintain a minimum of one-foot distance from the pavement. Vehicles parked too close to the pavement may be ticketed.
11. There will be no hunting on the property.
12. The management committee upon application in writing may issue scientific collection permits. Any additional permits required by any governmental agency are the responsibility of the applicant. Applications must comply with NSS guidelines.

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