

# MANAGEMENT PLAN FOR ONESQUETHAW CAVE PRESERVE

## INTRODUCTION

The Onesquethaw Cave System (Onesquethaw Cave and Jordan Cave) is about 5500 feet long, making it the second longest known cave in Albany County, New York. The Northeastern Cave Conservancy (NCC) owns and manages access to the Onesquethaw Cave part of the system. Onesquethaw Cave is a sinking stream cave system, and it has a history of flooding.

The property, containing the entrance of Onesquethaw Cave, is 1.312 acres. It is roughly trapezoidal in shape with 153 feet of road frontage. The back line is 155 feet. The northwest side is 357 feet long and the southeast is 407 feet long. The entrance to the cave is located in the back half of the property. A broad, shallow sink is developing about halfway between the cave and the road.

## PURPOSE OF A MANAGEMENT PLAN

The purpose of a management plan is to describe what is on a property and how it should be managed. It is an operating manual for the preserve. A plan is not a static document that once written is placed on the shelf and forgotten. It is a document that is to be used and referenced on a regular basis. The property manager must follow the plan unless there is a compelling and overriding reason for doing otherwise. Unless there is an immediate need, nothing should be done at a property that is not in the plan. If something new is desired, the plan should be amended only after careful, complete, and thorough analysis of the proposed changes or additions. Then, the amendments must be approved by the NCC Board. Think of the management plan as an operating manual for a preserve.

## HISTORY OF THE PROPERTY

The cave is named for the nearby creek. The Mohawks called the land "O-nits-quat-haa" as indicated on the original Slingerlands Land Patent. The name when translated from the Mohawk language simply means "the water goes down" or "sinking stream." And the Onesquethaw Creek does sink and reappear thrice. (A 1776 map of New York and New Jersey shows Clarksville as "Niscontha.")

The cave is not mentioned in some of the older references, such as French's 1860 gazetteer, which do record nearby caves such as Clarksville Cave and caves at the base of Copeland Hill. The first mention of it comes from 1897. After that, there is no known mention of it until the 1950s when it was known as Tri-County Cave (presumably named after the Tri-County Grotto of the NSS which existed in the area at the time). It has also been known as Dewey Cave.

The cave entrance was, for many years, on the property of Helderlaan, the nearby farm originally settled in 1751. In the late 1950s the property was owned by the Dewey family. (The farm is now owned by the Mattenson/Olsen family.) In 1960 the owner, Corinne Dewey, put the farm up for sale. Jack Child persuaded her to subdivide the land and sell him the portion with the cave. Ron Sloan bought the land from Child though the deed was apparently never filed. Due to taxes and the difficulty of developing this property, Sloan decided to let the parcel go for taxes. In March 1990, Albany County foreclosed on the property and became owners of the cave.

In December 1990, a county road crew working where County Route 106 crosses the outlet from Lawson Lake breached a beaver dam. The increased flow flooded the cave while a group from Syracuse University Outing Club was in the cave. The resulting rescue led the county to try to physically close the cave. As the cave is integrated in the local drainage, this action was found to be problematic. The county then decided to give the cave to the then Albany County Land Conservancy, now known as the Mohawk-Hudson Land Conservancy. In 1992 the MHLC entered into an agreement with the NCC to manage the cave. Due to a deed restriction the MHLC could not transfer the cave to the NCC. Instead, they transferred the property back to Albany County which then transferred it to the NCC in 2011.

In late August 2011 Hurricane Irene caused significant flooding in the cave. This resulted in the opening of a hole about 110 feet northeast of the entrance, near the old apple tree. This hole was about eight feet deep with the top six feet in soil. It ended in bedrock. This was determined to overlie the upper-level passage leading from the second room of the cave. Since its opening, the soil has sloughed into the hole and it is now less than four feet deep.

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## UNDERGROUND RESOURCES

Biological - One species of cave-adapted amphipod, *Stygmobromus alleghaniensis*, exists in Onesquethaw Cave. Luis Espinosa analyzed the DNA of this species from other caves widely dispersed geologically and geographically. This work indicated all samples represented the same species. No special precautions are in place to protect the amphipod as normal caving activities do not seem to have an adverse impact on its population. A small population of cave crickets, *Ceuthophilus maculatus*, has also been noted in the cave.

Because Onesquethaw is a sinking stream system there are a number of accidentals found in it. Over the years there have been reports of catfish, eels, and frogs. These either get flushed through the system or die in the cave. They do not constitute a significant or important biological resource except as a food source. However, a resident population of non-troglobitic eels is known in Jordan Cave. Also, carcasses tend to get washed into the cave. These have included dogs and goats.

Due to seasonal flooding, a bat population has never been established in Onesquethaw Cave. However, in 1984 a Northern Long-eared bat, *Myotis septentrionalis*, may have been identified during a bat count.

Geological & Hydrological - The cave was the subject of an extensive study by A.N. Palmer which was published in the NSS Bulletin in 1972. A less technical version was published in *The Northeastern Caver* in 1971 and the following quote is from that article.

The cave is developed in the Onondaga Limestone of Middle Devonian age at the eastern edge of the Helderberg Plateau, where the essentially flat-lying rocks of the plateau have been deformed by gentle folds and minor faults during the crustal disturbance that produced the folded structure of the Appalachian Mountains. The zone of cave development in the Onondaga Limestone that includes Onesquethaw, Ward-Gregory [Clarksville], Leonard Caves, and the Slingerland Hellhole [Chatter-Stone-Hole] system, is bounded on the west by hills of the overlying Hamilton shales and sandstones and on the east by an escarpment formed by the exposed edge of the Onondaga and the underlying Esopus Siltstone. The limestone forms a rather flat bench sparsely dotted with small hills of glacial drift.

The origin and development of the cave is the result of progressive headward diversion of a tributary to Onesquethaw Creek. At present the cave-forming stream sinks roughly 1000 feet northwest of the Onesquethaw entrance, passes through the lowest levels of Onesquethaw Cave, and resurges at Jordan Cave to the northeast. The main passages of Onesquethaw Cave receive direct recharge from the sinking stream only during periods of flooding.

The cave is formed on the splay of a major a thrust fault. (This splay comes off the same sole fault that forms the splays seen in Clarksville Cave and farther north in Thacher Park.) The "bedding plane" at the ceiling of the entrance passage marks the fault. Between the end of the first crawl and the beginning of the Broken Room, the fault cuts down across the beds. Slickensides can be seen in the ceiling at the beginning of the Barnyard. The dip of the fault flattens here. In the Broken Room are several calcite boulders. These represent infilling on the fault surface. The Barnyard exists because the fault flexes downward creating a dip in the passage where mud and debris can collect.

Of area caves, Onesquethaw Cave exhibits the best and thickest examples of banded calcite infilling along a thrust fault. A maximum calcite thickness of 27 or more inches may be observed in the Broken Room along the southeast-dipping (21° to 31°) thrust fault zone. Several authors have offered conjectures on how such calcite banding would form. The presence of black minerals and limestone clasts (to ~ 6 inches) within Onesquethaw Cave calcite vein fill may provide important information on the mechanism of development of these veins. As such, Onesquethaw Cave provides an excellent field site for geologic research into this topic.

The cave has a drainage area of about 1.4 square miles. M.V. Palmer did an extensive study of the hydrology of the cave. She determined that due to the relatively small elevation change from one end of the system to the other and the low gradient through much of its length, the cave can flood to the ceiling throughout its entire length. (Half of the elevation change in the cave is between the entrance and the first room. From the beginning of the Barnyard to the end of the cave, there is only a 15-foot elevation loss.)

Caves are like natural pipes. Water quality does not change significantly as the water passes through the cave.

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Paleontological - The Onondaga Limestone is a reef limestone. As such, several places in the cave (most notably near the beginning of the Barnyard) have excellent exposures of the Devonian-aged fossils. Due to the manner in which the cave floods, no paleontological resources of younger age have been found in the cave.

Archeological - No resources are known to exist in the cave.

Historical - No resources are known to exist in the cave.

## SURFACE RESOURCES

Biological - The property contains no unique or unusual flora or fauna. The front half of the property is regularly farmed. Only the area around the cave entrance has been allowed to go back to natural vegetation. The primary early successional plants include gray dogwood, *Cornus* spp. and staghorn sumac, *Rhus typhina*. The most common tree on the property is the sugar maple, *Acer saccharum*. A few black cherry, ash, black walnut, and American elm are also present. The wild grape, *Vitis* sp., is also common.

Geological & Hydrological - In periods of high run-off a stream sinks directly into the entrance to the cave. Otherwise, the water sinks about 1000 feet upstream of the entrance. The cave drains about 1.4 square miles.

A sinkhole is forming in the cornfield about halfway between the entrance and the road. This sink is associated with the upper level passage that intersects the cave in the 2nd room and is east of the junction near the upstream end of this upper level passage. Additionally, as a result of Tropical Storm Irene, another hole has formed that is about 18" in diameter. It was 8 feet deep, but slumping of soil has reduced its depth. This is located just east of the old apple tree. It seems that during the storm, the entire main sinkhole flooded and there was standing water out into the field. This water piped through the soil. This hole is associated with the upstream end of the left-hand passage at the end of this upper level passage.

Paleontological - No resources are known to exist on the property.

Archeological - Although none are known to exist on the preserve, Native Americans have frequented the area for thousands of years. An extensive projectile point collection amassed by the Shultz brothers of Clarksville provides physical evidence. Their collection was obtained from local plowed fields. Also, many artifacts have been catalogued from the Winnie Farm, about 1.4 miles away.

Historical - No resources are known to exist on the property.

## ASSUMPTION OF RISK STATEMENT

Cave exploration and hiking on karst terrain may involve risk or injury, even death from various hazards, both obvious and obscure, including, but not limited to, slippery and uneven ground, open pits, injury by acts of other people, falling, being struck by falling objects, becoming lost, the presence or sudden appearance of water, and hypothermia. All cave visitors will abide by the normally accepted rules of [safe and conservation minded caving](#) as outlined by the [National Speleological Society](#), 6001 Pulaski Pike, Huntsville, Alabama 35810-1122.

## ACCESS POLICY

Groups wishing to visit Onesquethaw Cave will be required to get a permit. To obtain a permit visitors should e-mail the number of people on the trip and the date. A permit will be sent back via e-mail. The preserve manager may be reached at [onesquethaw@necaveconservancy.org](mailto:onesquethaw@necaveconservancy.org). Visitors wishing to obtain permission other than by e-mail may contact the manager to make other arrangements.

It is proposed that a computerized permitting system be developed that would operate through the NCC website. A built-in calendar would allow the manager to block out dates during which the county is working on beaver dams upstream. There will also need to be a trip counter to prevent more than four (4) trips a day. The

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trip leader's e-mail and group size would need to be stored. That would allow the generation of use statistics.

Regarding the small sink that is forming between the cave and the road and the hole near the apple tree, in the event that an entrance does form at one of these locations (and processes should be allowed to proceed naturally) a gate should be installed somewhere in the upper level passage as the descent into the main passage from this upper level can be rather dangerous for individuals without proper experience. This gate should be designed so that it can be opened without a key from the inside.

As the cave can flood to the ceiling, the few bats that hibernate in the cave may drown in the spring runoff. The preserve manager, in consultation with NYSDEC, may place something at the entrance to protect bats by preventing them from trying to hibernate in the cave. This would be in place during that time when bats are typically entering the cave for their annual hibernation. (At this time, that would be 8/1 to 11/1.) Entry to the cave by cavers would still be permitted when the bat-protector is in place.

#### USE CONFLICTS

Onesquethaw Cave is a sinking stream that drains about 1.4 sq. mi. including Lawson Lake (about 40 acres in size). Due to high water problems at the lake, it is, on occasion, necessary to lower the water level. Such a step would likely cause the cave to flood. Events of December 1, 1990, clearly indicate that if lowering of water levels were to occur when cavers are in Onesquethaw Cave, the results could be disastrous.

To remedy this problem, the Albany County Department of Public Works has committed to informing the preserve manager when they apply for and receive a beaver dam removal permit from the NYS Dept. of Environmental Conservation.

Additionally, the listing under the Endangered Species Act of the Northern Long-eared bat, *Myotis septentrionalis*, as threatened creates a conflict between bat hibernation and cave visitation from October 1 through April 30. The NYSDEC requires that the cave be closed during this period. If bats are prevented from entering the cave, the preserve manager, in consultation with the NYSDEC, may keep the cave open during the winter.

#### RESEARCH RULES

All research carried out on the NCC preserve must meet the following criteria:

- 1) Researchers must initially contact the NCC science coordinator.
- 2) The goals and objectives of the research must be clearly defined.
- 3) There must be a clear beginning and end to each project, with the exception of long-term monitoring studies.
- 4) The work must not cause permanent damage to any caves, natural features, native biota, or historical resources nor interfere with natural hydrologic or chemical processes.
- 5) The research plan must assure the maximum safety of all concerned.
- 6) The work must not interfere with the "experience" of other property visitors.
- 7) Unless specifically authorized by the NCC Board, researchers must operate within the confines of the established management plans for each property.

#### EXPLORATION RULES

While Onesquethaw Cave has pretty much been explored from end to end, new passage does, on occasion, turn up. As some potential does exist the following simple rules to govern exploration are recommended:

1. The exploration party should be explicit in indicating what part of the cave will be explored when they ask for permission to enter the cave.
2. Any digging projects will have to be approved by the preserve manager. Persons proposing a dig project shall submit a plan to the manager detailing where they plan to dig, how long they plan to dig, and where they plan to dispose of the spoils. Plans should also include how the diggers plan to remediate the dig should it be abandoned. Projects that include potential passage modification require specific approval from the preserve manager. Any dig that is not worked on for more than one (1) year, excluding cave closures for bat hibernation, shall be considered abandoned and any subsequent work

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in the same area will require manager approval.

## PUBLICITY POLICY

The cave is not publicized in magazines or newspapers of general circulation. Cavers' publications like The Northeastern Caver and the NSS News may contain information on the latest discoveries. Some grotto publications may also have information, but again these have limited circulation and usually do not give locations.

## SURFACE MANAGEMENT

Much of the 1.312 acres has been used for farming. Normally, the northeastern half of the preserve was planted in either corn or alfalfa. The farmer used a no-till method of planting. It has been decided by the NCC Board that they no longer want a portion of the Onesquethaw preserve farmed. In lieu of farming the land will be planted in native grasses, etc.

The northwestern edge of the property is mowed by the northern neighbors. In return, they use the property to access the back of their property.

No camping is allowed on the preserve.

Parking is allowed only within 20 feet of County Route 301 except by special permission of the preserve manager.

A changing area has been constructed to the left of the trail into the sinkhole. Some sort of a floor needs to be placed in it. This might be as simple as a couple of wood pallets. Additionally, the location of this area has resulted in cavers accessing the cave via the steep mud bank adjacent to it. A fence has been placed to direct cavers back to the main trail into the sink.

A kiosk has been constructed where the main trail meets the spur to the changing area.

As noted the northeastern half of the property has been primarily in either corn or alfalfa. Roughly in the center of this is a developing sinkhole. This sink, while it has "rabbit holes" off the bottom, appears to be stable and at the last corn harvest vehicles drove over it without any apparent impact. The newer opening near the old apple tree was marked to prevent vehicles from driving into it. It needs to be re-marked.

## MONITORING

To know whether a plan is working requires monitoring. This may be as simple as driving by the preserve on a routine basis or more complicated strategies involving data-loggers and more.

At Onesquethaw Cave one of the concerns is the status of newer openings that have formed in or near the corn field. These should be observed on a regular basis to ascertain what is happening with them.

Additionally, it is recommended that a light monitoring data-logger be placed in the cave. Location can be determined later, but just before the 1st room or in the 2nd room would seem to be logical locations. Data-loggers to gather information on the temperature and humidity may be placed. The recommended location is near the ceiling in the cave's second room.

The preserve manager shall, once a year, ensure that property corners are marked and that no neighbors have intruded onto the property.

## RESCUE CONSIDERATIONS

There has been only one known rescue at Onesquethaw Cave. Primary dangers in the cave result from flooding and from the climbs into the upper level passages in the first and second rooms.

In the event of a fall and the need for a rescue, it appears that a sked-type stretcher could be taken out through the winding entrance passage without too much difficulty. The only problematic area might be at the downstream end of the entrance passage where it enters the first room as it is narrow. In fact, despite the large amount of crawling in the cave, moving a stretcher through most of its length would not appear to be too difficult. The most difficult area to negotiate would probably be the Duck-Under, the fissure and wet crawl between the Barnyard and the Otter Slide.

Flooding is another problem. As noted above, M.V. Palmer determined that the cave can flood to the

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ceiling along its entire length — the cave quite literally filling like a bottle. If someone is trapped in the cave, all they can do is move to the highest ground and hope the water recedes before it gets there. This is what happened in the December 1, 1990 rescue. No attempts should be made at rescue until the water levels drop and it is safe to enter the cave.

One of the problems with the cave is that the first place in the cave to flood is the first crawl off the second room. This crawl, beyond which the majority of the cave lies, acts like the elbow in a drainpipe. At one time, the inward end of this crawl was quite a large room (by northeast standards). In less than 20 years, this room was filled to within a foot of the ceiling. It has since been re-excavated and a 6-foot climb is now present. In all events, the size of this room and the climb vary from season to season and from year to year. Cavers caught beyond this crawl have as their only viable option to climb the fissure at the end of this crawl. With some passage enlargement, this might permit a caver to reach the first room via the upper level, though it is unclear how they would then get down.

The Barnyard and the Duck-under can also act as water traps. The only feasible way around these are the two extremely tight crawls that lead from the top of the Otter Slide to the upstream end of the Barnyard. Some study of these should be made to see if they could be enlarged.

#### FUTURE PLANS

1. Some sort of a floor should be placed in the changing area.
2. A preserve clean-up will be scheduled.
3. Plant vegetation on the slope between the changing area and the entrance.
4. Plant vegetation in the trail southwest of the entrance.
5. Place a bat-protecting device over the entrance if it will result in the cave being opened to winter visitation if recommended by NYSDEC.
6. Mark the southeastern boundary of the property.

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