

# MANAGEMENT PLAN FOR ELLA ARMSTRONG CAVE PRESERVE

## December 7, 2008

### INTRODUCTION

The Northeastern Cave Conservancy Inc (NCC) purchased the cave in 2004. Since that time it has been managed as the Ella Armstrong Cave Preserve. The preserve consists of a one (1) acre parcel which borders Knox Cave Road. A short trail will leads visitors to the cave.

Within a mile, there are six other known caves: Knox Cave, a former commercial cave containing the infamous Gunbarrel; Crossbones Cave, a recently discovered vertical cave adjacent to Knox; Skull Cave, the second-longest cave in the state (closed); Two-Second Pit (closed); Knox Annex, basically a roofed-over fissure; and Ken's Kave.

### 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. 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 over-riding 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.

### HISTORY OF THE PROPERTY

The first known exploration of Ella Armstrong Cave was in 1808. At that time two entrances into the cave were open, with one on either side of the road. One has been filled by highway crews on the shoulder slope decades ago. Records of exploration in the later 1800's are more abundant, including the 1879 inscription of Ella Armstrong at the base of the current entrance drop. When the other entrance was open, one could make it to the base and that was considered the end of the cave. Hence the majority of inscriptions are here.

Even with the extensive visitation of Knox Cave right across the road, Ella Armstrong has always remained relatively obscure. In July of 1960, members the Berkshire Hills Grotto started a grade 5 map of the cave. Art Palmer published this map with his thesis in 1962 and it remains the most common record to this day.

The heavily joint controlled cave was recently described by Chuck Porter in the *Northeastern Caver* as follows: "*Ella Armstrong has a short, tight, south-trending entrance fissure which slopes down to a 23 foot drop into a large hall up to 10 feet wide and 35 feet high. After 115 feet, a climb up to the west leads to a former entrance blocked by road construction a century ago. Near the base of the 23-foot drop, a complicated series of crawlways extends for 100 feet along a joint dipping at 40 degrees*". Most of the cave lies in the Manlius limestone with the exception of the old and current entrance passages being in the Coeymans. Total length of the cave is approximately 350 feet. Of the six caves in the area, Ella Armstrong Cave is slightly higher than Knox Cave, both in elevation and stratigraphically, and may be the oldest cave on the local plateau.

The Northeastern Caver description still left some questions around the exploration in the 1960's, so Art Palmer recently penned this more detailed account on request:

## **A Brief History of Ella Armstrong Cave**

Art Palmer

*"The modern history of Ella Armstrong Cave dates from 1960, when it was entered by local cavers including high-school students Jim Proper (Berne, NY) and Jim Lane Delanson, NY). The two Jims explored the entire cave and noted evidence for previous visits dating back to the mid-1800s. On July 23, 1960, they invited Art Palmer (Pittsfield, Mass.) for a tour. Art was involved in exploration and mapping of nearby Knox Cave and Skull Cave for an undergraduate thesis at Williams College and was a link to the various NSS grottoes in the Northeast.*

*The group noted various faded signatures at the base of the main entrance drop, with dates as old as 1808. Most of them were from around 1879. The latter date was accompanied by a bold but puzzling "ELLABM2BONG" carved into flowstone. Art wrote this down and after some puzzling he realized that the "Bs" were simply florid versions of "R" and the "2" was a backward "s". "Arbitrarily doubling the "A, " he came up with "Ella Armstrong, " and hence "Ella Armstrong Cave."*

*On July 31, 1960, Art led a mapping trip with his brother Dave, along with Jim Hager and Al Holt. All were members of the Berkshire Hills Grotto. Mapping was not completed until November 21, 1961, when Art was joined by Chuck Porter, Lew Harvey, and Rich Garland (all of Williams College), and Laurie Cone (Bennington, Vt.). The map and a brief description appeared in the Boston Grotto News. Vol. 5, No.2 (1962). In June of 1962 Art submitted his thesis, which included a geologic summary of the cave.*

*Soon afterward, Art and Dave were speaking with Mrs. Robinson, then-owner of Knox Cave, about early cave exploration in the area. She mentioned that the cave we called Ella Armstrong had an entrance at one time on the west side of the road, at the southwestern end of the cave. She said that groups would often visit it during the previous century, but that the entrance had been filled during road construction and the cave had been left almost unknown for many decades. She also mentioned an Armstrong family that grew up nearby (ha!), and a strapping lad, who was one of the more adventurous sons, named Eil (whoops!). "Eil" was probably a nickname, short for Elbert or something, but our hypothetical woman caver "Ella" evaporated in a puff. But we continued to call the cave Ella Armstrong, as people still do today. Anyone who would carve his name into flowstone deserves a change in gender.*

*The entrance we had used, and which is still the only accessible one, leads to a 23-foot sheer drop into the main part of the cave. The entrance used by earlier groups involved a chimney of only 15 feet, which was not difficult to climb. This explains why the signatures were located at the base of the 23-foot drop, because that was as far as the early explorers could go without rope. The cave received very little visitation during the later 1960s, and for several decades afterward it remained closed by the property owner. The Northeastern Cave Conservancy acquired the property in 2004 and has made the cave available to those who sign permission and waiver forms ".*

### **GEOLOGY**

In addition to history above, Art Palmer also penned a discussion based on only a few trips to the cave in the period 1960-1962. He plans on providing an update for future versions of this management plan to produce a more experienced viewpoint.

## ***Geology of Ella Armstrong Cave***

*Art Palmer*

*April 19, 2006*

"Ella Armstrong Cave is located near the crest of the Helderberg Plateau near Knox Cave and Skull Cave. The entrance consists of a narrow slot that drops 8 feet from a shallow sinkhole and leads to a narrow canyon. The canyon extends steeply downward in a SSW direction for 45 feet to a 23-foot drop into the main passage of the cave. The main passage is only about 260 feet long but is fairly sizable, varying from 10 to 20 feet high and 3 to 20 feet wide. Near the base of the 23-foot drop a multi-level crawlway system branches to the east and pinches out at the lowest point in the cave, at a depth of 65 feet (20 m) below the edge of the sinkhole.

The main passage terminates in a fairly large room 30 feet long, 13 feet wide, and up to 25 feet high. At its western end is a 15-foot climb to a fissure that runs under the road to a former entrance. This entrance was blocked by road construction, apparently in the early 20th century, but was the original entry point for explorers in the previous century. A small tube in the main room continues along the main trend of the cave at floor level but appears to be too tight to push.

The Coeymans Limestone is exposed at the surface at Ella Armstrong Cave, and the entrance passage is located entirely in this formation. The upper parts of the main passage and the entire passage beneath the road are also in the Coeymans. Most of the cave volume is in the Manlius Limestone, about 30 feet of which is exposed in the cave (which represents about 75% of the entire Manlius thickness in this area). The low point in the cave is still above the base of the Manlius, so there is no evidence that the underlying Rondout and Cobleskill Formations have served as a base level for cave development. It is unlikely that they would do so anyway, despite the dolomite content of the Rondout and the shale content of the Cobleskill, because nearby Skull Cave and Knox Cave extend right through them both into the underlying Brayman Shale, which erodes easily but is not particularly soluble.

The cave is clearly joint controlled, as its passages are straight and follow the dominant NNE-SSW trend of local fractures. These are the same trends that are so clearly seen in maps of neighboring caves. The multi-level crawlway at the base of the 23-foot drop has an inclined cross section that slopes about 30-40 degrees to the north. Apparently it follows a minor fault that dips in that direction.

Ella Armstrong has a very small catchment area, and there is little evidence for the original stream pattern in the cave. Today it is mainly a geologic relic. The cave is moist but has no running water, except for some trickles from the entrance during wet periods. The origin of the cave may at first seem something of a puzzle. It is clear, though, that small streams once entered the cave through both the present entrance and the now blocked southwestern entrance, perhaps simultaneously but more likely sequentially, with the northern entrance the more recent one. Drainage on the surface was surely down the slope toward the south, and it is common for streams to abandon older downstream sink points in favor of newer ones farther upstream.

The large size of the main passage seems contrary to the small size of the entrance infeeders. This is easily explained by the fact that the main passage formed mainly by headward erosion (particularly dissolution) of waterfalls. The spray of the waterfalls exposed more bedrock to dissolution than the gently inclined streams could. Vertical flutes are visible over much of the wall surface in the large part of the cave. The complex drain at the base of

the 23-foot drop apparently served as the main outlet for water throughout much of the cave's developmental history. Sediment includes a mixture of cobbles, sand, and mud, which indicates rapid flow alternating with static flooding. It is likely that during the later stages of cave development the cave flooded periodically with no efficient outlet.

The cave almost certainly pre-dates the latest glaciation, as do virtually all major New York caves, although no absolute dating has been performed in Ella Armstrong. Glaciation took place about 120,000 to 14,000 years ago. This was the main glaciation in the region, but there is slight evidence for at least one earlier episode. The effect of glaciers was mainly to block entrances with sediment. Some caves may have been enlarged by glacial meltwaters, but Ella Armstrong shows no clear evidence for this. It seems to have survived the glaciation with little modification. Its position high on the plateau probably prevented it from being buried by sediment or from having received large amounts of meltwater. Flooding during glaciation may have obscured some of the early solutional details and was probably responsible for depositing some of the cobbles and mud on the floor---cobbles when velocities were high at the beginnings of floods, and mud when the cave was partly filled with water that backed up behind the small and inefficient drain as the floods approached their peaks.

This discussion is based on only a few trips to the cave in the period 1960- 1962 and will soon be updated by a return visit with a more experienced viewpoint ".

## **SURFACE MANAGEMENT**

A small roadside parking area may be constructed along the property line of the proposed preserve. This will require the placement of a culvert, headwalls, and coordinating with the local highway crew. A walking trail should be maintained from the parking area, looping towards the back of the property, and then providing access to the cave on the gradual slope heading back towards the road and into the sink. A small strainer should be constructed to prevent trash from washing into the cave. A register and/or kiosk should be maintained on the property. To prevent vehicular access on the neighbor's property, fencing or suitable barricades should be erected.

Property tax-exempt status should be requested as soon as possible.

The conservation rights to the parcel should be addressed to reduce the potential value of the property by eliminating any development opportunities.

No camping or fires will be permitted on the property.

Hunting will not be permitted on the property due to the one-acre parcel size.

## **ACCESS POLICY**

Access to the property does not require parking permits or signed waivers. Visitors to the property are required to sign the register at the kiosk.

1. Standard caving gear will be required. This includes helmet with a chinstrap; three (3) sources of light, one of which is mounted to the helmet.
2. All cavers are expected to abide by the normally accepted rules of safe and conservation minded caving as outlined by the National Speleological Society, 2813 Cave Avenue, Huntsville, Alabama 358104431.

3. Ella Armstrong Cave must be treated as a unique natural resource, and nothing should be taken out of the cave except trash.
4. All work projects must be clearly defined and authorized beforehand.
5. Each group is expected to clean up any trash in the cave or on the property
6. Equipment Requirements: All cavers must have their own equipment for descending and ascending. Rope adequate for rigging the entrance drop is required. The use of a cable ladder for the drop will be permitted. The bolts and hangers at the drop should be checked before each use. Problems with the rigging should be brought to the property manager's attention.

### **EXPLORATION RULES**

Any digging in Ella Armstrong Cave will require permission from the preserve manager.

### **PUBLICITY POLICY**

The cave is not to be publicized in publications of general circulation. Caver's 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.

### **USE CONFLICTS**

At present there does not appear to be any use conflicts. Should a conflict arise between recreational caving and digging, the recreational caving shall take precedence.

If bat counts reveal the presence of any endangered or threatened species, the cave should be closed for the period recommended by the bat specialist of the Endangered Species Unit of the NYS Department of Environmental Conservation.

### **RESCUE CONSIDERATIONS**

Ella Armstrong Cave poses problems with respect to cave rescue because of limited working room at the top of the drop, while still in the narrow, sloping, entrance fissure. The newly installed bolts should help with stretcher management. A fall from the exposed climbs in the back of the cave could result in a rescue. Entrapment of inexperienced vertical cavers could also present additional problems.

### **FUTURE PLANS & RECOMMENDATIONS**

- 1) The bolts at the drop should be checked annually.
- 2) A small roadside parking area may be constructed along the property line of the preserve. This may require the placement of a culvert, and coordinating with the local highway crew.
- 3) Fencing or suitable barricades should be placed around the parking lot to prevent access onto the neighbor's property.
- 4) The conservation rights to the parcel should be addressed to reduce the potential value of the property by eliminating any development opportunities.

Original INTERM PLAN APPROVED 9/12/2004  
Current Plan approved 12/7/2008  
October 2008, Ed Lucas, HHG, NSS #42168