

## Why Gate Trout Cave?

by Bob Hoke

The West Virginia Division of Natural Resources and the U. S. Fish and Wildlife Services have asked the National Speleological Society to allow the construction of a gate at the entrance to Trout Cave (Pendleton County, WV). The gate will allow the effective closure of the cave in the winter and will (hopefully) facilitate the recovery of the cave's small, but growing, hibernating colony of endangered Indiana bats (*Myotis sodalis*).

This article provides some historical background for the gating request and discusses the benefits of having an enforceable winter closure of the cave.

The documented population of hibernating Indiana bats in Trout Cave has varied over the years:

- The cave was extensively mined for saltpeter during the Civil War. With all the activity and torch smoke it is very likely that any bats were chased out and the postwar population had to rebuild from zero. There are no known records of prewar population counts.
- Apparently the population did recover over the next 75 years because in 1941 an NSS report estimated that the cave held at least 1,000 Indiana bats in several clusters.
- There are reports of banding 238 Indianas in Trout in 1951, 232 in 1952, and 565 in 1953. These bats were seen in the main passage, about 500–600 feet inside the entrance.
- In 1955–57 there were reports of several clusters of Indiana bats and an estimated population of at least 1,000 Indianas.
- By 1960 the Indiana population had dropped to five. In 1961 there were 13 and by 1965 there were none.
- When the NSS purchased Trout Cave in 1983 there were 21 Indianas, mostly located in a small side passage not far inside the entrance.
- From 1983 through 2005 there were bi-annual bat counts and the population of Indianas varied from 2 to 24 individuals.
- In 2005 the population suddenly jumped to 96. In 2006 it was 93 and in 2007 it increased to 158 individuals (see the graph below). In addition, the number of Indianas in the main passage has increased from a maximum of 12 in the 1983–2003 period to 35 in 2007.

Why did the bats decline so precipitously by 1960? There is probably no way to know for sure, but here are some possible reasons:

- Caver disturbance (noise, light, smoke, vandalism, etc.).
- Loss of summer habitat to timbering and farming.
- Excessive banding of large numbers of bats in the 1940s and early 1950s.
- DDT and other pesticides killing the food supply or affecting reproduction.
- Environmental changes in the cave (there are undocumented rumors of passages being closed in the 1960s).

Clearly something changed around 2005 to make the cave more attractive to bats. There are various theories:

- Another hibernation cave became unusable and the increase in Trout is the refugees.
- Something has changed in the cave to make the habitat more desirable.

- Reduced use of carbide and human smoking means fewer noxious fumes to disturb hibernation.
- The general bat population in West Virginia is doing reasonably well and Trout is just seeing its normal share of the state's bats.
- Bats like cavers and find that sharing their cave has some sort of benefits.

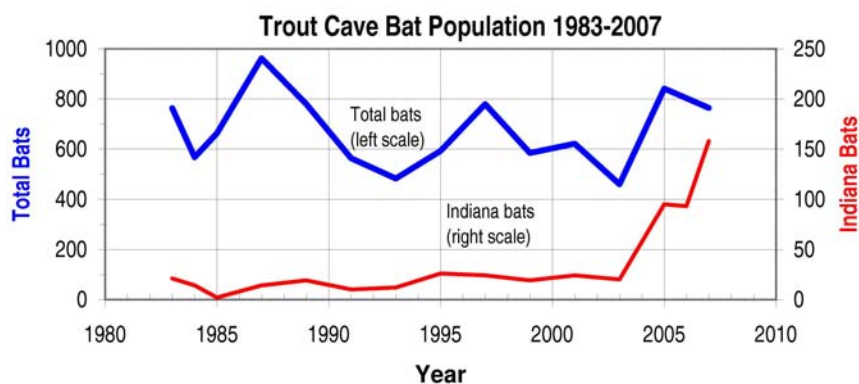
Several cavers have noted that it looks like the bats have become accustomed to the presence of cavers and they say there is no need to close the cave. Superficially this sounds like a good reason to leave the cave open. However, unlike the Pipistrelle bat, Indiana bats are not sound sleepers. They are very sensitive to disturbance and will awaken if disturbed. It doesn't take many disturbances for them to use up their stored body fat and not survive the winter. An effective winter closure is the only way to insure that the bats are not disturbed. Needless to say, it is hoped that by eliminating human disturbance in the winter the cave's population of hibernating Indiana bats will continue to increase and perhaps exceed the historic levels.

A gate is needed to allow an effective closure. Trout Cave may be the most popular wild cave in West Virginia. Most of the visitors are not from the organized caving community and there is no way to enforce a winter closure without a bat-safe gate on the cave. When a group drives several hours to visit the cave it is unlikely that they will be dissuaded by signs saying the cave is closed. A gate will let them know that the closure is real. There are two other caves on the same hillside and the Trout visitors can easily go to them instead.

The WVDNR and USFWS realize that Trout Cave is a major recreation resource and they don't plan to request that it be closed in the summer. Their request for funding for the gate states "Trout Cave is part of the NSS's John Guilday Caves Nature Preserve. This area is routinely used to educate school and scout groups about responsible recreational caving techniques, as well as cave conservation and management issues. It is anticipated that this use would still continue during the portions of the year that endangered bats would not be present in the cave."

In summary, Trout Cave has been documented as having a significant historic population of endangered Indiana bats. Effectively closing the cave in the winter, which requires that the cave be gated, has the potential to allow recovery of this population and make Trout again the second-most significant Indiana hibernation site in West Virginia.

References: Copies of early bat counts and other source documents are available on the DC Grotto's Web site at [www.caves.org/grotto/dcg/bat-counts/bat-counts.html](http://www.caves.org/grotto/dcg/bat-counts/bat-counts.html).



This graph shows the dramatic increase in the Indiana bat population in Trout Cave (lower line) compared to the total number of bats in the cave (upper line). Clearly something has changed since 2004 to make Trout Cave more desirable. It is hoped that gating the cave and closing it in the winter will allow an increased recovery of the bat population to documented historic levels of at least 1,000 individuals.

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