

Photo-documentation Trip to Hellhole Cave, WV

On Saturday, 2/20/10, a joint West Virginia Department of Natural Resources, U.S. Fish and Wildlife, and NSS project did a photographic documentation and bat population survey trip into Hellhole Cave, West Virginia. This project came together very quickly over the past 3-4 weeks, once flying bats were observed outside the cave. While awaiting laboratory confirmation of WNS in a couple of Little Brown bats, organization moved forward on several fronts. I was asked to organize cave/bat photographers from around the country and get official NSS Project status, while logistics were organized in terms of equipment, travel, and permits and waivers.

Fifteen people on three different crews went in to document three separate areas of the cave. Each crew had guides from the Germany Valley Karst Survey, a biologist, and photographic crews. The jobs were to photograph everything, count and observe bats, replace temperature and humidity data loggers, and remove an appropriate number of bat carcasses, if any. We were able to connect with and include a National Geographic photographer and assistant, who are working on a WNS story for a future issue. Hellhole is only one of the sites they have visited.

For context, Hellhole is West Virginia's largest bat hibernaculum. The last survey (2007) showed over 112,000 bats. The majority are Little Browns, but some 4-5% of the known Indiana bats live here, and over 6,000 Virginia Big Ears - about 45% of the entire known population on the planet. The last two species are federally listed as endangered.

The bad news: upon arriving at the sinkhole entrance, plenty of bats were readily observed exiting the cave and flying outside. Many flew off into the distance to a certain death, given the absence of food supply this time of year. Others were seen landing and "wing-walking" on the snow.

In the entrance room (a 160 foot drop into a huge bell chamber), bats were everywhere - flying, on the walls, and the floor littered with carcasses. Virtually all were Little Browns. From one 15-meter square sample area, a gallon-size Ziploc bag was filled with dead bats. The rest of the floor was the same. For context, the 2007 survey observed only one bat in the entrance room.

At the different Little Brown roosting sites, WNS was in clear evidence, and carcasses found along the way. In the deepest recesses of LBB roosts, lesser amounts of the fungus were evident, implying that bats had moved to the entrance area, consistent with behaviors observed in northern sites.

The Indiana clusters also showed WNS - ranging from a reported 12% to 50%. An observer who had NY sites to compare said it looked like what they had seen in year one of an infestation. For comparison, the data from the northeastern sites affected for several years has shown that the Indiana mortality numbers are in the 50% range, as compared with the Little Browns well into the 90% range.

The good news: No evidence of WNS was seen in the Virginia Big Ears. This was extremely encouraging, as their roosts are located in places along the routes where the other infected species pass. Some pre-trip speculation had hoped that things might be different with this species. Why? 1. It's a different species; 2. they roost in very dry areas (70% humidity as confirmed by data loggers); 3. they roost in very cold areas - around 32 degrees F, including occasionally below (again, temperature loggers at the sites have shown this consistently); 4. they rouse quickly, which may indicate they don't need to burn the sort of fat reserves other species do in order to amount an immune response.

All of these things will need to be studied and analyzed, of course, but, for now, the news is very good. Let's hope it stays that way. A caution: we've seen WNS progress very slowly in other

low-humidity sites, but not be stopped, so we'll need to see that the VBEs continue to remain untouched over a few years. This is just one site, and one observation, but it's clearly a highly significant one.

The work of compiling all the thousands of photographs taken, the comparison of the traditional clicker and cluster density methods of counting to the new photographic methods, and the analysis of the data logger data, will take a while, so a more complete report will come later. An NSS News article is planned for the future.

A huge thanks to the cavers of the Germany Valley Karst Survey for not only safely and efficiently guiding the crews to the sites, but also for use of their field house for pre- and post-cave meetings.

One last, but important note: Hellhole is leased by a limestone quarry, which electronically monitors the cave for any unauthorized intrusion. As a result, we know that no one has been in the cave since September 1, 2007. Thus, we know that WNS arrived here by bat-to-bat transmission, not via humans.

Peter Youngbaer
NSS 16161
WNS Liaison