

White Nose Syndrome – A Conservation Challenge for Cavers and Conservancies

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White Nose Syndrome Liaison for the NSS

White Nose Syndrome (WNS) has caused the deaths of tens of thousands of bats across the northeastern United States. So far, it has appeared in caves and mines on primarily private, but also public lands.

- Its causes are under investigation.
- Its full impact is yet unknown.
- It has been described as the greatest threat ever to North American bats.

As the White Nose Syndrome phenomenon enters its fourth year, the conservation challenges it presents are huge. Issues regarding cave access, use, and decontamination policies; research resources and funding; landowner, agency, and public relationships; and more have come into play – all on a scale far beyond anything we could have imagined.

This article describes how we have responded to these conservation challenges, what we learned along the way, and what we may expect in the future.

As members of the National Speleological Society (NSS), we belong to a conservation organization. Our mission states: “*The purpose of this Society shall be to promote interest in and to advance in any and all ways the study and science of speleology, the protection of caves and their natural contents, and to promote fellowship among those interested therein.*”

The NSS Conservation Policy states:

- Caves have unique scientific, recreational, and scenic values.
- These values are endangered by both

carelessness and intentional vandalism.

- These values, once gone, cannot be recovered,
- The responsibility for protecting caves must be formed by those who study and enjoy them.

As a Society, we own and manage several caves. We are also the largest organized group of cave explorers and cave scientists in the United States. Similarly, there are many cave conservancies throughout the country, dedicated to owning, protecting, and managing cave and karst resources – including those biota that dwell within – in this case, bats. For the NSS and the Northeastern Cave Conservancy (NCC), this ownership status significantly comes into play as WNS issues unfold.

In the winter of 2007, unusual bat mortality events were observed and documented at four New York hibernacula. Two of these are owned by the NSS: Gage Cave and Schoharie Caverns. One, Knox Cave, is owned by the NCC. These three caves have large numbers of visitors.

HAILES CAVE, NEW YORK – PROTECTED INDIANA BAT HIBERNACULUM

New York State owns the fourth site, Hailes Cave. Since the 1970s, it has been managed as a hibernaculum for the federally-endangered Indiana bat. Hailes has not seen general visitation for decades.

The reports came in separately from cavers, and from Al Hicks, mammologist for New York’s Department of Environmental Conservation, who has studied the bats at Hailes Cave for many years.

Bat mortalities generally have been attributed to vandalism, flooding, temperature changes, predators, and excessive human disturbance. In this case, the sheer numbers were staggering. In addition, the NY Department of Health Hotline saw a sudden increase of calls from the public, citing bats flying around during the day, near homes, and some freshly dead bats were found on a woodpile.

It was also observed in Hailes Cave that many of the remaining bats had moved from their historical roosting sites to be near the entrance of the cave. Most dramatically, many of the remaining bats displayed something highly unusual – the now infamous telltale white mask around their noses.

INITIAL INVESTIGATION OF WHITE NOSE SYNDROME – CONCERNS INCREASE

Hicks and others began collating data on these sites, examining carcasses, sending photos around to colleagues, and studying climate data. Eyebrows were raised, but spring came and further study would have to wait until the following year.

In December of 2007, Hicks raised a warning at the quarterly meeting of the NCC. Hicks is also a member of the NCC Board. He showed a poster that had been put together describing the mortalities. He told the Board that we needed to be prepared for the worst, if this “White Nose Syndrome” reappeared. Little did we know...

In January of 2008, Al contacted the NCC’s Executive Committee (of which this author is Vice President). He said the situation was really bad – bats were flying all over, many were dead and dying – at many sites. We checked several of our New York caves and others. Reports started to come in from elsewhere, including Vermont.

After a flurry of conference calls and e-mails, a strategy was proposed, involving the NCC, the State of New York, and the State of Vermont. We quickly understood that this was a situation that could spin rapidly out of control in this Internet age. We also knew that we had several audiences to address: the caving community, the scientific community, and the general public.

NCC ORGANIZES FIRST WNS SPECIAL MEETING

The NCC called a special meeting on February 10, 2008. In advance of the meeting, we polled the NCC Board, and ran proposals by our Science Chair for managing our caves.

The NSS was contacted regarding its northeastern cave preserves. As background, it’s important to know that the NSS-owned caves, and some of the NCC caves require visitation permits which are administered by the same individuals in both cases. We have over 80 camp, youth, church, scout, and other groups who regularly visit these caves. How to tell these user groups – and when, given they were already planning for the summer season – was very important.

The meeting was well attended by NCC members, grotto representatives, scientists, and even Fox News. Hicks gave a PowerPoint presentation documenting WNS concerns. An extended question and answer period followed. We all knew the research and potential spread of WNS was

Al Hicks NY State DEC



very serious – this was the biggest challenge we had ever faced.

OUTCOMES OF THE FIRST PLANNING MEETING – TEMPORARY CAVE CLOSURES

Having laid the groundwork prior to the meeting, the NCC adopted a motion immediately closing all of its caves for the remainder of the season (until May 15). We wrote and issued a press release February 12 urging all cavers and cave visitors to voluntarily restrict their caving for the rest of the season. The same week, New York and Vermont issued similar press releases as part of a coordinated outreach effort, designed for highest impact and consistent message.

Further, in cooperation with the US Fish and Wildlife service, we developed a cave visitation database and issued a call for all cavers who had visited any of the four initial WNS sites to log on, enter the dates of that visitation, and then list all other caves anywhere that they had visited since. This was part of an effort to determine if humans were responsible for spreading whatever it is that was causing WNS. It is still being used today to coordinate a soil sampling project for WNS research.

Media reports of potential problems with bats began to appear, and Fox News asked if they could attend the meeting and go to one of the caves afterward. We agreed that this would be helpful in getting the story out to the public and various user groups.

That evening, we took their film crew into the NCC's Clarksville Cave and collected a bat with WNS for the New York lab. The first national TV story aired shortly thereafter. There have been literally hundreds of TV, radio, newspaper, and Web stories since, all of which have needed management in terms of expert contacts, consistent message, accuracy, and developing news.

The NSS immediately closed its northeastern caves, including Tytoona in Pennsylvania and the John Guilday Preserve in West Virginia. Vermont bat biologist, Scott Darling, immediately suspended all winter bat surveys – again to avoid unnecessary human contact. We didn't know if we humans were part of the problem, but certainly, if the bats

were sick or weak, additional disturbance was not going to help.

It is critical to understand that in February 2008, no one had any idea what was causing WNS. The agreed-upon strategy by those of us most affected was to basically call "time out."

CLOSURES CAUSE OVERLOAD OF COMPLAINTS

We knew that there would be complaints. In the northeast, some cavers questioned why caves without bats were closed. From around the country, other complaints were heard. In the Middle Atlantic States and Pennsylvania, where relations haven't always been good between cavers and government managers, loud voices protested. From other places, where most caves are on federal land, concerns about this being a plot to close caves were raised. Take a look at the number of visits to Cave Chat and some of the entries and you will get a sense of the volume. E-mails tore through the Internet, and phone lines heated up.

Al Hicks' voice mail and e-mail filled up almost overnight. He couldn't keep up, and people complained he wasn't getting back to them. In truth, Al was out in the field responding to reports of dying bats. Similarly Fish and Wildlife officials in Vermont, Massachusetts, and Connecticut were similarly inundated. Cavers were calling. The public was calling. The media was calling. Somehow, this growing problem needed to be managed.

NSS WNS LIAISON APPOINTED

After conferring with agency colleagues, Hicks approached the NCC with the idea of a single point of contact between the science community and the caving community. We agreed, and Mike Warner (another NCC Board member) presented the idea to the NSS Board of Governors. Thus, the NSS WNS Liaison was born, and I was appointed to take on the job, having essentially been acting in that capacity already here in the northeast.

Our first assigned task was to get a Web site presence up. Our second task was to confer with the NSS Preserve Managers and science community on whether to reopen the caves come spring. All of this information – and much more -can be found on the WNS Liaison Web site, which is continually updated (www.caves.org/WNS/WNS%20Info.htm)

DESIGNING RESEARCH OBJECTIVES – WNS SCIENCE STRATEGY

With all this pressure, we still didn't know how big the problem was, or what was causing it. Hicks and other officials began asking the NCC and other regional cavers

to assist in finding out how the widespread WNS was occurring. Hydrologist Paul Rubin sent in a photo from Howe Cave taken in 2006 that showed a bat with the fungus on its face, documenting that this had begun as early as two years prior.

Many of us went out (frequently in Tyvek suits) to investigate reports and do quick cave surveys. We were looking for bats with the fungus, clearly. However, by now we had also learned other things. The bats were often slow to arouse, or didn't arouse at all. They also were flying outside the caves in the daytime, or were crashing into you, or falling into the snow and freezing. They were clustered near the entrances of caves. By spring bat emergence, we had documented nearly 30 sites in four states.

Then, hibernation was over. Now what? By now, researchers and wildlife personnel from across the country had become involved. How big was this? What was this? Everyone had theories. What were the priorities? What about funding?

An idea was born that a WNS Science Strategy conference should be organized to identify and prioritize the necessary field and laboratory research. This took place June 9-11, 2008, in Albany, New York. The NSS and NCC helped underwrite the conference, and we participated actively in it. Details can be found on the WNS Liaison Web site. Unfortunately, three days weren't sufficient to complete the work, and conference proceedings weren't finalized until September.

WNS RAPID RESPONSE FUND

A sad, but important fact is that there was no dedicated source of funding to support any investigation. Everyone who had been working on this was either doing it on their own time or stretching their current scope of work to tangentially include WNS. State and federal agency personnel had to work in fits and starts as their other work demands (which had funding sources) took them away.

Federal and state funding is subject to congressional and legislative appropriations and their budget cycles. Money being spent today was advocated for two years ago and appropriated one year ago. Also, competitive grants for science limit what can be obtained.

Enter the NSS. We knew that some of the seasonally critical pieces of research would not take place unless someone came up with the money. Through the summer, we presented this issue to the NSS Board of Governors and National Speleological Foundation (NSF). At the Florida Convention, the BOG established a WNS Rapid Response Fund. Both the NSS and NSF each donated \$10,000. Other cavers, grottos, and conser-



Al Hicks NY State DEC

WNS results in mass deaths among bat populations as in this New York cave.



Discovery of bats with WNS inside Hamilton Cave, Pendleton County, WVA, has recently caused the NSS John Guilday Nature Preserve to be closed

vancies have added to that, with over \$27,000 contributed to date.

We have now funded four projects that would not otherwise have occurred.

- One study looked at the status of bats going into hibernation this past fall.
- Another is studying arousal patterns.
- A third is looking at immune system responses of hibernating bats.
- Volunteer cavers in 30 states are using soil sampling kits to check for the presence of the new species of fungus in the background environment of hibernacula.

NEW RESEARCH DONATIONS ARE NECESSARY

These priority research activities will help determine the extent of WNS and its causes. The Rapid Response Fund has given out most of its funds and needs another influx of money to address the inevitable next round of projects. Please donate at <http://www.caves.org/donate/index.shtml>

The NSS and NCC have also signed on to a large, multi-state Wildlife Grant – one of those potential government funding sources. As a competitive grant, there is no guarantee of success, but it's the best shot for significant resources for combating WNS, and may be the only major source other than private donations.

NORTH AMERICAN SYMPOSIUM ON BAT RESEARCH FOCUSES ON WNS

Near the end of October, the North American Symposium on Bat Research held its meeting in Scranton, Pennsylvania. While national election politics went on outside the conference, with visits by Joe Biden and Sarah Palin, several hundred bat researchers, agency personnel, and cavers from across the country attended a special session on WNS.

Dr. David Blehert presented his findings on a new species of fungus isolated from

90% of the bats taken from affected sites, giving new urgency and hope to the issue. Others gave talks on how research was being organized and funding sought. With the fall swarming already well under way, the focus was once again on WNS.

Decontamination Protocols Are Vital to Research

Other conservation challenges include keeping cavers informed about—and urging compliance with—decontamination protocols. It's not just cavers who are inconvenienced by this, but state agency field personnel and laboratory researchers, as well.

Let's face it, it's a drag to clean and disinfect gear between caves. Clothing, boots, nonporous gear, and vertical gear all need different treatments—and need to be balanced with safety concerns. This may mean curtailing visits, or having alternate sets of gear, which is an added expense, but it is vital in aiding the field research, and not adding to the problem.

LEGAL ACTION

Legal issues have also surfaced regarding WNS. Legal action has been filed against several federal agencies regarding their issuance of permits for activities such as logging and road building in areas that bats use. This requires agencies to devote time and resources to responding to these legal questions, pulling them away from working directly on WNS. It also makes them act more defensively in terms of managing resources under their control – including caves – with concerns about limiting access.

BAT SPECIES AFFECTED

The Endangered Species Act adds an additional wrinkle to WNS strategies. Right now, the Indiana bat (*Myotis sodalis*) is the only federally-endangered species being affected. The fear is that WNS could spread to affect other endangered species in other parts of the country.

Little Browns are the most-affected bat by sheer numbers. Other affected species are Eastern Pipistrelles, Big Browns, Northern Long-Eared, and Eastern Small-Footed.

LEGAL BOUNDARIES AND HUMAN DIMENSIONS

As mentioned earlier, WNS cuts across both public and private land. While the NSS, cave conservancies, and agencies can control what happens on their own land, private landowners can pretty much do what they want. Irresponsible visitors can ignore advisories about when to visit caves with bats, or ignore the request to clean their gear. Since WNS doesn't seem to care about these legal boundaries, it adds another dimension to the conservation challenge – and is prob-

ably best dealt with through the media and public education.

In consultation with scientists and agency personnel, the NSS and NCC caves reopened in May. In October the NSS New York Preserves and some, but not all, of NCC caves, as well as the state-owned caves, closed for the winter (a change for several of them). Thus, the collaboration and knowledge enabled a more targeted approach to cave access.

FUTURE RESPONSE IS CRITICAL

What will the future bring? As I write this article in mid-January, the news is not good. Affected bats have been reported already in New York and Vermont, some in worse numbers than last year. The public is reporting bats flying outside in the daytime all over the region. Pennsylvania has just reported that it has spread there. While several research projects are underway, they are limited, and the results will not be known for some time.

WNS is going to be with us for a while. How we as individuals, cave conservancies, and the NSS deal with it is critical. To date, we have chosen to be active partners in the investigation. This has elevated the profile of the NSS within the scientific and agency community, and with the public. It has kept cavers directly involved as participants, not just observers.

White Nose Syndrome has had an impact on a scale far beyond what anyone could have anticipated. We may be witnessing the devastation of species, caused by a fungus, or by man-made environmental toxins. No one knows.

When we think of cave conservation, it's often in terms of cleaning out a sinkhole, removing graffiti, or repairing a formation. WNS is something much bigger. As our conservation policy states, these values, once gone, cannot be recovered. Will those who come after us only be able to see the beauty of bats in file photos? The responsibility is ours. Let us exercise hope as we continue to rise and meet this conservation challenge.

POSTSCRIPT

Since submitting this article, White Nose Syndrome has been confirmed in Pennsylvania (Shindle Iron Mine) and New Jersey (Hibernia Mine). In addition, two bats with tell-tale fungus were photographed in Hamilton Cave, West Virginia, on the NSS-owned John Guilday Nature Preserve. Laboratory confirmation is pending as this article goes to press, but Dave West, NSS manager for the Preserve has closed it pending further notice. Given the nature of how WNS develops in a particular site over the winter, we expect more such news by the time you read this article. P.Y.