Testimony of Peter Youngbaer
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White Nose Syndrome

Chairman Grijalva, Chairwoman Bordallo, Members of the Subcommittees. Thank you for the opportunity to speak with you today about the national crisis known as White Nose Syndrome or WNS, and to ask for your help in addressing this emergency. It is in honor and a pleasure.

My name is Peter Youngbaer, and I'm here testifying on behalf of the National Speleological Society as its White Nose Syndrome Liaison.

I want to start by telling you a little about the NSS itself and cave conservation generally, the effects to date on our membership, and specifically our deep involvement in addressing the ravages of WNS. I will then address the three specific questions posed in our invitation.

NSS – the organization and our WNS activities

With nearly 12,000 members in all 50 states and 200 local chapters, or grottos, the National Speleological Society does more than any other organization to study, explore, and conserve cave and karst resources; protect access to caves; encourage responsible management of caves and their unique environments; and promote responsible caving.

While WNS has our focus clearly on bats, we must keep the entire cave resource in mind as we plan our science and management responses.

Founded in 1941, we are affiliated with the American Association for the Advancement of Science, and the International Union of Speleology. Conservation is a primary function of the NSS. We have assisted in the protection of numerous bat hibernacula and habitat for other endangered cave species. Our members worked hard to help pass the Federal Cave Resources Protection Act and similar state legislation.

Our members run the gamut from the casual recreational caver to the full time scientist. Our scientists work in the areas of geology, hydrology, biology, paleontology, cartography, microbiology, and more. Members of our Communications and Electronics and Cave Diving Sections have developed many technologies used by industry and the military, including underground communications and other electronic equipment, hydrological, meteorological, and biological instruments, mapping aids, electric lights and battery systems, and underwater gear, including the rebreather. Our photographers have brought the wonders of the underground to the general public. Our explorers have discovered the breadth and depths of some of our National Parks caves, including Carlsbad Caverns and its neighbor Lechuguilla – now over 100 miles – and Mammoth Cave, the world's largest now at over 350 miles.

WNS has hit the NSS, its cave resources, and its membership hard. Cavers noticed the first bat deaths in the winter of 2006-2007, in two caves that we own and manage on our New York Nature Preserves. We were the first to close our caves in response to WNS. This year, bats in our West Virginia John Guilday Nature Preserve caves were found to have WNS, and those caves are now closed. A full chronology and description of the conservation challenges facing the NSS and its members is included in an article I authored in the NSS News publication provided to you with my testimony today. I will not repeat that here.

As the devastation has grown and spread, the NSS, Cave Conservancies, State and Federal agencies, and some private cave owners have closed caves or issued advisories curtailing cave access and recommending decontamination procedures. Caving events well outside the affected region have been cancelled or curtailed. This has caused economic fallout in neighboring communities that support these events with lodging, food, supplies and tourist opportunities.

The effect is both national and international. The USFWS decontamination protocol advisory is nationwide. Cavers in the west are puzzled as to why this affects them. National Cave Rescue Commission organizers are struggling to find a location for their annual intensive weeklong rescue trainings. Professors of cave sciences at our institutions of higher learning are concerned about the interruption of their cave field studies, and their undergraduate and graduate students involved in areas other than the study of bats.

This summer, the NSS is honored to host the 15th International Congress on Speleology in Kerrville, Texas. Nearly 1,400 people from almost 50 countries and virtually every state are registered for the world's premier speleological event, which takes place every four years. The U.S. is the only country to now host two of the Congresses. Pre and post-Congress field camps provide international visitors the opportunity to see some of North America's finest caves and caving regions. Due to WNS, many of these trips have been cancelled or curtailed, and strict management of gear and decontamination protocols have been implemented for the entire event.

While the confirmed bat mortalities associated with WNS have "only" spread to the Virginias, the effects of management decisions on cavers, scientific researchers, other cave and mine visitors, and related economic fallout is already nationwide. All of these speak to the urgency of you acting quickly and comprehensively to address the situation.

The NSS has been actively involved in the WNS investigation since the beginning. Working closely with the NY Department of Environmental Conservation, and later Vermont Fish and Wildlife, we closed our caves and worked to develop a cohesive and collaborative public message. Our members have been particularly active in the northeast in fieldwork helping to determine the geographic extent of WNS, helping with bat counts, and other field work.

In March of 2008, the NSS Board of Governors created the WNS Liaison and appointed me as its WNS Liaison to act as a single point of contact with the emerging science and

management effort. As Liaison, I have participated in the major conferences of scientists and wildlife managers, webinars, numerous conference calls, and task forces over the past fifteen months, and communicate information and developments from these venues.

We created an extremely active website at http://www.caves.org/WNS/index.htm. It tracks WNS developments, policies, research, and media coverage, and provides education and outreach tools to our members, the public, and agencies about WNS and how to prevent its spread.

In June of 2008, we helped underwrite the first Science Strategy conference in Albany, NY, and participate in the proceedings. The need for immediate research funding was paramount, and we created a WNS Rapid Response Fund to help. To date we have raised over $55,000 and funded five critical projects.

In April of this year, the NSS Board of Governors adopted a comprehensive WNS Policy Statement, which is attached for your information. In it, we ask our members and grottos to take the lead in reaching out to non-organized and unaffiliated cavers, as they are "out of the loop" in terms of ready mechanisms for communication about WNS. To that end, we created an information brochure that can be downloaded from our website, copied and distributed. It is being used widely, and we were just complimented to receive a request from the National Park Service to use its copy and design for their brochure on WNS. It is also attached for your information.

Indeed, an NSS study in the 1980's estimated that only about 5% of cave visitation is by organized cavers. Camp, scout, church, and other youth groups and outing clubs, plus a host of locals and the general public make up the majority of cave visitors. Many of these individuals seek out local cavers through our grottos to learn about safe caving techniques, basic cave science, and to gain access. These relationships are critical to effective dissemination of WNS information and to the protection not only of bats, but all other cave resources.

Our Views Regarding the Current Scientific Understanding of WNS

Although a new species of fungus is implicated in the massive bat die-offs, we still haven't answered the basic question of whether it is the primary pathogen or an opportunistic one. As outlined in the science strategy priorities last year in Albany, we know the bats are dying of starvation, emerging early from hibernation emaciated and marked by noted physical damage and marked behavioral changes.

In the absence of significant government funding, several of the NSS-funded projects are designed to help get at the answer of why the bats are starving: are they entering hibernation without sufficient quantity or quality of stored fats? Are they consuming more stored energy upon arousal than normal? Are bats affected with WNS immunocompromised? These studies are jointly funded with others, including Bat Conservation International and university funds. While fall and winter sampling is done, laboratory analysis is not complete, and results are not expected until the fall.

The NSS was the sole funder of a massive sediment sampling project, collecting nearly 1000 samples in nearly 30 eastern states, looking to see if the suspect fungus is ubiquitous to the background cave and mine environment. Sampling was coordinated with state and federal biologists already doing the biennial endangered Indiana bat surveys this winter, but dozens of cavers trained in sterile collection protocols, provided additional samples from much more geographically diverse sites.

Analysis of these samples will help determine one of the fundamental questions: is the fungus the cause or a symptom? If the fungus is already present, then something else is happening to allow it to take hold. If it's already present, then efforts to contain it via decontamination and limiting human access to sites may be moot.

The samples are waiting to be analyzed by the USGS National Wildlife Health Center laboratory in Madison, Wisconsin. We have learned that the analysis has been funded by the USFWS, which is good. However, Congress should understand that it took private funding to initiate and carry out the fieldwork in a timely fashion. Without it, we would need to wait another year to even begin the work.

Further, the committees should be aware that the government structure for receiving funds wouldn't work, and that we used a fiscal agent to pass the funds through to accomplish the work.

Other key questions remain about how the fungus is transmitted. While there is general agreement that it is passed bat to bat as the primary method of transmission, we do not know if the caves or mines themselves are infected and can transmit the fungus. Further, while most media stories covering the cave and mine closures include a line about suspected human transmission, there is no proof to date, or studies to establish proof. The lone circumstantial evidence comes from a cave visitation date base that documents some caver movement from WNS affected sites in NY to two newly affected sites in PA and WVA. The same and other cavers have visited numerous other sites in many states – notably WVA, VA, TN, KY, GA, and IN, yet no WNS has been observed in those sites. We do not know if there is an incubation period for the fungus, or if there are other possible transmission mechanisms.

We also don't know if the current decontamination protocols are effective. They take a universal precaution approach. Certainly, they are onerous and inconvenient for caver and field researcher alike. In the case of ropes, webbing, harnesses, and other load-bearing textiles, what may kill or contain the fungus also weakens or destroys the material, rendering it unsafe for use. To that end, the NSS has also funded current research through Northern Kentucky University testing a variety of decontamination techniques on these materials, which will then be stress tested by the manufacturers. This will lead to having both effective and safe protocols that will permit access for bat researchers and cavers alike to multi-level vertical mines and caves.

Much research is also needed into how the fungus itself and how it affects the bats. We don't know how to effectively contain it, kill it, or limit its spread. Can we create a

vaccine? Can we identify the characteristics of survivors? Will geographic or other natural barriers become evident as WNS spreads? We simply don't know, but need to know soon.

One of the things we, as cavers, cave scientists, and cave conservationists do know, however, is that caves are delicate ecosystems. While we focus on bats, we must remember that caves are not just about bats. Many other significant and endangered species live in caves, some as rare as in only one cave.

With no light to provide energy to the ecosystem, energy must be brought it through other mechanisms. Bats are a primary, if not the primary mechanism in many caves. Bat guano provides a source of nutrients for many other species of cave life. Other fauna also bring in energy, primarily to the cave "twilight zone."

Water is another primary source of energy and nutrients, but also a source of private and public water, and a critical point to understand in terms of potential WNS mitigation activities under consideration. If we move to high-risk containment strategies, such as fungicides, biological controls, or sealing sites, what other parts of the ecosystem might we affect?

We must do the research to test mitigation strategies thoroughly before widespread application. Science must inform our responses, and this science needs to happen as soon as possible.

Our Views on Current Federal, State, local and private responses to its spread.

Most importantly, let me first state that the people I have met – whether federal, state, private, or higher education-related – have been doing yeoman's work on a primarily ad-hoc basis. Many work outside the constraints of their jobs and funding sources, demonstrating their passion to do what they can to figure out just what WNS is, how it can be stopped, and what we can do to save our bats and their critical place in our ecosystem. They deserve your utmost gratitude, and now your concentrated support.

As mentioned above and in our attachments, initial responses were by private and state entities. Responses grew on an ad hoc basis. While some federal personnel were involved, no real federal organization was evident until October of 2008. Funding streams and bureaucratic structure were clearly not set up and able to respond in a timely fashion. The State Wildlife Grant (SWG) mechanism is regionally competitive by design. Indeed, the fact that the title of today's hearing reflects a regional problem, rather than the national problem that it is, is telling.

To most experienced cavers, government responses have been inconsistent, contradictory, and at times counter-productive. Current government responses have favored closing caves on public lands to visitation, presumably to retard spreading the fungus by the human vector. While an apparently obvious reaction, the impact on the spread of WNS will likely not be conclusive, because of the numerous other visitations by uninformed or

unaffiliated persons as described previously. Decontamination protocols and guidelines for determining what equipment may be contaminated seem arbitrary, overly broad, and sometimes dangerous.

In the private sector, the NSS has responded by closing some of its caves. So, too have numerous related cave conservancies – the Northeastern Cave Conservancy, the Middle Atlantic Karst Conservancy, the West Virginia Cave Conservancy, and the Southeast Cave Conservancy – and The Nature Conservancy on some of its properties.

At the state level and federal level, current government responses vary widely and are confusing to the caving community, and probably other cave and mine visitors, including gemologists, rock hounds, geocachers, and scientists and students study other aspects of caves than bats. For example, the USFWS advisory call for a voluntary moratorium on cave-related activity in a 13-state region. It also calls for nationwide implementation of decontamination protocols. The USFS has closed all its caves and mines in 30 states. Several National Parks have closed some of their caves and either have already adopted or are considering closures well outside the affected region. National River areas within and without the USFWS advisory region have adopted closures. States have taken even a wider variety of steps, all of which is confusing and reads as a lack of coordination.

Cavers knowledgeable of cave morphology and bat usage wonder about many caves covered by the advisories and closures, such as non-bat caves and caves that completely flood. Further, as cave conservationists attempting to protect the entire cave resource, taking the most experienced cavers out of the loop of interfacing with the unorganized public seems counterproductive. Some people will continue to visit caves, increasing the risk of vandalism, destruction of wildlife, and even additional unnecessary rescues.

The decisions to close everything except commercial caves strikes many as political, and not biologically based. Many local NSS Grottos have strong relationships with their local show caves, helping with conservation efforts, public education, exploration and management, promotion, and even cleaning. While we recognize the economic considerations of government and privately owned show caves, good science should drive closure decisions.

We recognize that closure decisions – including our own – have been essentially prophylactic in nature. However, where we go from here needs to be guided by science. Our call to you today is to support a comprehensive national research program to thoroughly research the underlying WNS mechanisms and develop sound management solutions.

Our Views on Needed Federal Actions to Further Comprehend and Contain this Unparalleled Crisis.

We think the first thing that needs to be done is to recognize this is a national, not regional problem. Its impacts are already being felt across the country, and beyond.

We believe a national plan for addressing WNS, with a supporting bureaucratic mechanism in place to coordinate funding and management, is necessary.

Immediate, significant new funding is needed. Others will testify to the appropriate amounts and specific needs, but they are substantial.

We also need to recognize the seasonal nature of bat research – that the hibernation and summer cycles only permit certain types of research during limited windows of time. WNS will continue to be spread quickly by the bats. We need to have a mechanism for quick delivery of significant funding.

While some limited federal funding has been put toward WNS, it has been woefully inadequate. The recently awarded State Wildlife Grant ($940,000 over two years), will be spread among 11-13 states over two years, and do little more than support current staff time for monitoring and surveillance. This is important, but doesn't address the critical research needs described above, and will take a while to actually get into the field.

The letter sent by various members of Congress to Interior Secretary Salazar requested release of emergency funding. To the extent that is possible in the remaining federal fiscal year, it would be helpful and timely. However, our understanding is that this will take away from other potential uses. New money is needed, perhaps through emergency supplemental legislation.

We strongly believe that funding needs to be directly available to the various entities working on WNS. Currently, the approach has been virtually all through the USFWS. Direct appropriations to the USGS, USFS, and the National Science Foundation – made more readily available to university researchers would be a significant improvement. From our view, it would also ensure a balanced and multi-disciplinary approach, and have more people working more quickly to solve this problem – a key factor.

We need to have the research questions about the fungus, its transmission, and potential treatments answered. How quickly will it or can it spread to the major bat colonies of middle America, and Texas, New Mexico, and beyond. How do we ensure that our management approaches are guided by sound science? How do we ensure that we consider the entirety of cave ecosystems, and the larger environment, with our mitigation strategies?

We also need to recognize the critical public education necessary. One thing we have learned at the NSS is what you think about WNS depends greatly on your vantage point. Those of us who live in the northeast have seen the ravages for several years. The Virginias and Pennsylvania are in the early stages. Those beyond – in Ohio, Indiana, Kentucky, Tennessee, don't know what to expect yet. Those much farther west can do much to prepare – to obtain baseline data on bats and hibernacula that we found lacking when WNS hit in the east.

Time is our enemy. We've enacted preventive closures to allow time for science to catch up. We need significant federal resources now, and they can make a difference. We are along the path to answers in some areas, and the sooner we get them, the more bats and

areas of the country we can protect. The sooner we understand successful mitigation strategies, the sooner we can prevent further spread.

None of us wants to see the bat populations decimated and the subsequent dramatic increase in insect populations, which would lead to an increased use of pesticides. The economic and environmental costs would be tremendous.

It's not necessary. If scientists can quickly determine that, indeed, the fungus is the culprit, energies can quickly focus on the remedies.

Conclusion

The National Speleological Society has been proactive in researching the disease and attempting to halt its spread, and we will continue to offer our knowledge and resources as cave explorers, scientists, managers, and conservationists to fighting WNS.

The situation is urgent. We ask for your help in providing immediate and significant funding for WNS research, surveillance, and mitigation. We ask for your help in creating a national plan - a comprehensive national research program – to address WNS. We ask for your help in educating and persuading your colleagues, particularly those who appropriate money, as to the urgency of the need.

We love caves, and we love bats. Others have spoken to the role of bats as voracious insectivores. Bats have also contributed to our knowledge of other sciences and medicine. Bat research has enabled advancements in sonar, vaccine development, blood coagulation, and artificial insemination, just to name a few. We need bats. Now, they need us.