Ten Important Facts About White-Nose Syndrome in Bats

A presentation at the National Caves Association Convention, 2009
Branson, Missouri

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1. Much of the focus on White-Nose Syndrome (WNS) has been on a newly discovered fungus (*Geomyces destructans*) that is associated with it. This bat disease is called a syndrome because more than just the fungus may be involved. As a result, anything we can do to help bats may be helpful. Helpful actions include minimizing disturbance to bats by protecting their underground habitats.

2. WNS is a bat disease; people do not get it. Based upon research to date the fungus associated with WNS is only known to grow on bat tissue.

3. This is a cold temperature fungus. It grows slowly at 37.4^0 F, optimally between 41 and 50^0 F, and marginally above 59^0 F. The upper limit of growth is at about 68^0 F.

4. WNS first appeared in 2006. Since then over a million bats have died from it. As of the time of this NCA Convention WNS exists in bat populations from Vermont to southwestern Virginia. In testimony before the U.S. Congress WNS was accurately described as causing the most precipitous drop in wildlife populations in the last hundred years (since the extinction of the passenger pigeon).

5. WNS is very lethal to bats. Mortality in infected hibernacula exceeds 75% in surveyed sites and survivors routinely show injury and may die during the following summer or not survive a second hibernating season. There appears to be little or no natural or acquired immunity to WNS.

6. We must expect WNS to substantially expand its range during the bat hibernation season of 2009-2010, and to further expand its range afterwards. The hibernation season is the period when most bats die from WNS.

7. WNS causes damage to bat tissue and causes bats to break torpor (wake-up) much more frequently during the hibernation period than is normal. Breaking torpor expends the bat's stored energy and infected bats starve to death before the arrival of spring and the return of insects upon which the bats feed.

8. WNS is spread from bat to bat and from infected roost sites to uninfected bats. It is likely that it could be spread by bat researchers who handle both infected and uninfected bats, but this risk is minimized if effective disinfection protocols are followed. There is no scientific evidence that WNS can be spread by people who do not have contact with both infected and uninfected bats.

9. Six species of bats have been killed by WNS and additional species are likely to be affected as the disease spreads. The species already affected hibernate in caves and inactive mines in the winter. In the summer they disperse to many thousands of habitat sites including caves, mines, buildings, bridges, and beneath the bark of dead trees. Under summer conditions caves provide only a small percentage of the habitat sites used by bats. As a result, it is not reasonable to expect the spread of WNS to be reduced if people avoid caves. It is reasonable for people to not visit caves with hibernating bat colonies in the winter because of the disturbance it causes to the bats.

10. There is no known cure or control for WNS, and perhaps none exists or none will be found in time to prevent a tremendous number of bat deaths. If a cure or control is found it will be through research. That research is urgently needed but is currently very under-funded. If your cave is contributing to research funding either independently or through the NCA this is a good time to explain that to visitors.

Positioning Show Caves for Dealing with the White-Nose Syndrome.
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A number of years ago I heard a talk by Jack Herschend at an NCA Convention. It was entitled "Positioning Your Business". His concepts, as I hopefully have accurately remembered them, are appropriate to dealing with the White-Nose Syndrome (WNS). The issue is how should show caves be positioned in relation to this issue and how do we accomplish this positioning.

First, what do we know about the WNS issue and what must we anticipate?

- WNS is a terrible disease that causes bats to starve to death. The mortality rate at infected hibernation sites is 75 to 100%.
- Over a million bats have already died. The deaths occur in caves and underground mines during the hibernation season.
- The presently infected area extends from Vermont to southwestern Virginia. It almost certainly will spread rapidly further west and southwest. It is now almost to the edge of the grey bat range and these bats travel more widely than any of the previously infected six species.
- At present there is no known cure or control. There is nothing on the horizon that looks to be a "silver bullet".
- Various state and federal agencies have closed caves or recommended cave closures. One agency is evaluating actions that include spraying caves with fungicides.
- Various agencies have made recommendations relative to show cave operations. These include closing caves, use of footbaths before and after the cave, and not visiting another cave for 8 days.
- Public agency announcements about WNS and caves being closed have damaged business at some caves.
- Most public agencies and their employees have good intentions but often poor insights. As a result, their actions may adversely impact show caves.
- Some entities and the public are likely to view show caves as reckless commercial ventures contributing to the spread of a horrible disease. It is not true, but think of PETA for a minute. One group in West Virginia filed suit to stop a wind farm because the turbines might kill bats and the suit argues that populations are already declining due to WNS.

How we should be positioned. We recognize the WNS problem and are proactively working to be part of the solution, not part of the problem.

- Providing accurate public education about WNS is one of the strong arguments showing that we are part of the solution. We must actually provide that information and it must be accurate.
- While I am admittedly biased, retaining the Ozark Underground Laboratory (OUL) as a technical consultant to NCA on this issue is an important part of the positioning as it shows our approaches are science-based.
- Attendance in a voting role at the annual WNS science strategy meeting is very important. The fact that NCA served as a sponsor of the last meeting was very beneficial. This last meeting was attended by most of the major people and agencies working on the WNS issue.
- Based on OUL data American show caves provide part-time or full-time employment for about 4,000 people a year with much of this in rural areas with limited employment opportunities.
- Actions by show caves that lessen the perceived risk that show cave visits will result in the spread of WNS can be beneficial even if the actions are unlikely to help. An example is the use of footbaths at some Pennsylvania show caves. However, since footbaths contain materials toxic to cave life they almost certainly cause more damage than good for the environment and should be avoided if possible.
- Clean trails lessen or negate the risk that mud containing fungal spores could be transported from one cave to another. Where clean trails are feasible use this approach and point it out to visitors. Doormats are also useful. Trails may need to be cleaned after off-trail activities.
- Many show caves are not important bat sites. If a cave has no bats then it cannot be involved in the spread of WNS. Some caves may wish to exclude the few bats they have by screening entrances. For the protection of the cave microclimate do not seal entrances or significantly alter natural airflow patterns.
- Adventure tours are offered at some caves and in some cases are major income sources. Actions that minimize the amount of cave sediment or guano leaving your property are beneficial. This may mean providing more equipment than you currently do. An example would be coveralls that you launder after trips. Encourage participants to launder their clothing after their cave trip and before they visit another cave.
- Consider the possibilities for offset mitigation. For example, provide enhanced bat protection in a cave you do not tour.

Fund raising for WNS research is perhaps the most effective way of positioning the NCA and the show cave industry as part of the solution.

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There is another fungal disease that is killing frogs, toads, and salamanders. In response, some aquariums have added an identified fifty cents or a dollar to admission tickets with the money going to research on the disease and possible control mechanisms. I suggest a similar voluntary approach, although other approaches such as money from wishing wells should be considered. Jim Richards suggested that some percentage of the money raised should be retained by NCA for costs associated with WNS (such as the services of the OUL and the costs of providing interpretive information). The balance would go to an organization such as Bat Conservation International for research funding with the NCA having the right to comment on particular research proposals prior to their funding.