



### How do we manage the spread of White Nose Syndrome?

A great discussion to have following the reading of the bat paper is what government officials, scientists, and the general public can do to stop the spread of White Nose Syndrome (WNS). Ideas generated from a brainstorming session with students can then be compared to the report The U.S. Fish and Wildlife Service has released regarding their plan for managing WNS. The entire report can be found here:

<http://www.fws.gov/whitenosesyndrome/pdf/WNSnationalplanMay2011.pdf>

While this report does serve as a nice example of how science can influence the government, taken as a whole, it is overwhelming. We have gone through and highlighted some sections that may be of most interest to students. We would like teachers to note that what we provide below are only highlights from the report and do not cover every action proposed by The U.S. Fish and Wildlife Service.

**Action Plan 1** (taken from pages 5 and 8 of the report): **Communicate about WNS as an unprecedented wildlife disease event resulting in devastating consequences, spreading at an alarming rate, and with no obvious means of curtailment.**

The government's first goal is to disseminate all known information about WNS to the public in order for the public to be aware of the disease itself and of any steps they can take to prevent its spread. This information includes:

- There is no evidence at this time that *Geomyces destructans*, the fungus causing WNS, is pathogenic to humans, therefore the direct human health risk from WNS appears to be low.
- Evidence indicates that WNS is caused by an infectious agent, and therefore can potentially be spread by all known modes of disease transmission, including direct contact, inhalation, ingestion, fomites (inanimate objects), and human or animal vectors.
- Research is under way to improve our understanding of what are believed to be the primary vectors for WNS, namely bat movement and contact with infected bats and environments.

- Because humans are potentially capable of transmitting the disease great distances in a short amount of time, these precautions should be followed:
  1. Avoiding direct contact with bats, contaminated objects (fomites) or environments, and body fluids;
  2. Wearing barriers (e.g., gloves, coveralls, etc.) when contact with bats is necessary or expected (single-use items are recommended);
  3. Promoting the concept that prevention of transmission requires constant personal surveillance;
  4. Maintaining vigilance within the research, wildlife management, and caving communities;
  5. Adhering to basic hygiene practices that are known to minimize the spread of infectious agents;
  6. Helping to increase public awareness and education.

**Action Plan 2** (taken from page 9 of the report): **Provide a database system that can be used by all state, federal, and tribal agencies and serve as a central repository for nationwide analyses and specific projects.**

This action plan aims to unite all scientists, government workers, and tribal leaders so that they can share their data with each other and work together to stop the spread of WNS.

**Action Plan 3** (taken from page 10 of the report). **Develop consensus standards for WNS testing and interpretation.**

This action plan aims to make WNS diagnostic assays standard and available to all scientists. Additionally, this action plan will establish sufficient laboratory testing capacity so that WNS samples can be analyzed in a timely manner.

**Action Plan 4** (taken from page 12 of the report) **Eliminate *G. destructans* from infected individuals.**

Specific aims of this action plan include:

1. Identifying chemical control treatments for *G. destructans*.
2. Identifying biological control treatments for *G. destructans*.
3. Identifying effective environmental manipulations to reduce or eliminate *G. destructans* from affected bats or sites.
4. Reducing disturbance-related mortality associated with disease management activities.

**Action Plan 5** (taken from page 13 of the report). **Critically review current knowledge of epidemiology and ecology of WNS to identify knowledge gaps and research needs.**

This will help scientists, government workers, and tribal leaders to evaluate where future WNS research should be headed.

**Action Plan 6** (taken from page 15 of the report). **Determine best practices for maintaining and recovering populations.**

Specific aims for this action plan include:

1. Developing techniques and protocols for assessing and mitigating the population effects of WNS.
2. Prioritizing monitoring and recovery efforts based on analysis of species vulnerability.
3. Determining the feasibility and role for captive management for species of conservation concern. These actions could include translocation, temporary captivity, propagation, and cryopreservation.
4. Protecting or restoring summer and winter habitats to ensure that a quality habitat is available for bat populations before and after exposure to WNS.
5. Establishing methods for restoring hibernation sites to provide refuge for surviving and non-affected individuals should proven environmental treatments for WNS become available.
6. Identifying previously occupied hibernacula and suitable but previously unused sites that warrant continued protection for bat recovery and clearly identify a means of justifying such protection.