


## Current Status of White-Nose Syndrome

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Ohio Bat Working Group Meeting  
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## What is White-Nose Syndrome?

- Disease of hibernating bats that continued to spread in 2011
  - Reached the Midwest – OH & IN
    - No new confirmations in MO
    - Within the already affected area
- Continues to pose considerable biological and social challenges
- National Plan has been developed to build on accomplishments to date, enhance coordination, and facilitate research



## WNS – An Unprecedented Crisis

USFWS

Alan Hicks

## How much mortality?

Credit: Andrew King, USFWS

- As previously mentioned, an estimated > 1,000,000 bats have succumbed to WNS
- Peer reviewed research predicts local extinction (extirpation) of little brown bats in the NORTHEAST, if current trend continues
- Federally endangered Virginia big-eared and threatened Gray bats remain unaffected by WNS


## Spread of WNS

2007 - 1 state, 5 hibernacula


May 2011: 19 States, 4 Provinces, 190+ affected sites

## What We Know About WNS


- Extremely high mortality at many affected hibernacula
- Susceptibility seems to differ by bat species or microclimate
- Specific fungal infection is common to affected hibernacula sites and defines the disease
- No evidence of bacterial, viral, or parasitic cause
- The fungus can persist in caves in the absence of bats
- Bats can become infected from an affected environment
- 6 cave bat species affected, w/ fungus detected on 3 additional (none of which tested positive in the 2<sup>nd</sup> year)




## Bat Species in the U.S. & Canada




Little brown bat (7-14g)




Indiana bat\* (6-9g)




Big brown bat (14-21g)



Tri-colored bat (6-8g)



Small-footed bat (3-5g)



Northern long-eared bat (6-9g)

SPECIES THAT HIBERNATE

Species name	Common name
1 <i>Myotis austroriparius</i>	Mexican long-eared bat
2 <i>Myotis austroriparius</i>	Scallop-eared bat
3 <i>Myotis californicus</i>	California bat
4 <i>Myotis californicus</i>	Western small-footed bat
5 <i>Myotis evotis</i>	Western long-eared bat
6 <i>Myotis grisescens</i>	Gray bat
7 <i>Myotis grisescens</i>	Gray bat
8 <i>Myotis leibii</i>	Eastern small-footed bat
9 <i>Myotis lucifugus</i>	Little brown bat
10 <i>Myotis occiduum</i>	Occult bat
11 <i>Myotis septentrionalis</i>	Northern long-eared bat
12 <i>Myotis toledoi</i>	Indiana bat
13 <i>Myotis thysanodes</i>	Fringed bat
14 <i>Myotis velifer</i>	Cave bat
15 <i>Myotis volans</i>	Long-legged bat
16 <i>Myotis yumanensis</i>	Yuma bat
17 <i>Neoticeus humeralis</i>	Evening bat
18 <i>Parastrellus hesperus</i>	Canyon bat
19 <i>Pteronotus subflavus</i>	Tricolored bat
20 <i>Corynorhinus townsendii</i>	Townsend's big-eared bat
21 <i>Corynorhinus townsendii</i>	Rafinesque's big-eared bat
22 <i>Eptesicus fuscus</i>	Big brown bat
23 <i>Antrozous pallidus</i>	Pallid bat
24 <i>Eidemia maculatum</i>	Spotted bat
25 <i>Idionycteris phyllotis</i>	Allen's big-eared bat


Source: Paul Cryan, USGS

## Bat Populations in MA, NH, NY, PA, VT from 42 sites w/ 2+ yrs of mortality

Species	Sum Pre WNS	Sum Post WNS	Total decline
Little brown myotis	384,277	30,260	91%
Northern myotis	1,706	31	98%
Tri-colored bat	3,107	783	75%
Indiana myotis	55,028	15,650	72%
E. small-footed myotis	1,303	1,142	12%
Big brown bat	2,919	1,713	41%
<b>All bats</b>	<b>412,340</b>	<b>49,579</b>	<b>88%</b>

From Turner, Reeder, and Coleman - 2011

## Is there a cure?



Credit: Nancy Heaslip, NYDEC

- ## Accomplishments in Managing WNS
- WNS investigation team and partnerships
    - Coordination structure and Task Groups established in 2008
  - FWS webpage: <http://www.fws.gov/WhiteNoseSyndrome>
  - State & Research support and coordination (RFPs)
    - Latest Research RFP – Established 3 priorities
      - Understanding the timing and/or reservoirs for Gd transmission, and the parameters that correlate with apparent survival and/or susceptibility of bats with/ to WNS.
      - The general progression of fungal growth or disease expression within a site.
      - Identification of non-chemical control options to reduce the severity of WNS among wild bats.

- ## Additional Accomplishments in Managing WNS
- Science-based Guidance Documents:
    - Containment – Decontamination protocol, fall swarming/spring emergence trapping, cave advisory
    - Structured Decision Making (SDM) Initiatives
    - White papers: rehabilitation, surveillance-monitoring, genetics,...
  - National & State Response Plans

## Decontamination Protocol

**Decontamination**

- Protocols last updated Jan 2011 ([http://www.fws.gov/WhiteNoseSyndrome/pdf/WNS\\_DecontaminationProtocol\\_v012511.pdf](http://www.fws.gov/WhiteNoseSyndrome/pdf/WNS_DecontaminationProtocol_v012511.pdf))
- Designed for Winter/Summer – Emphasis on cave/mine work/recreation Relevant for summer research work
- Decontamination Protocol Committee Creation of “National Protocol”




## Cave Advisory – March, 2009

Due to threat of human transmission, USFWS recommends that people stay out of caves and abandoned mines and not transport caving gear.

• OBJECTIVES:

- Protect all cave bat populations from disturbance during hibernation
- Slow the spread of WNS by preventing large scale jumps to new areas
- Coordinate with agencies, non-government organizations, and landowners to foster compliance with conservation actions without causing undue burden on private citizens



## Supportive Assumptions for FWS Cave Advisory

1. *G.d.* can persist in caves and mines for some unknown time period in the absence of bats
2. Conidia of *G.d.* may remain viable for months or years under the appropriate conditions
3. Conidia of *G.d.* persist for some unknown time period outside a cave environment
4. Current decontamination procedures are effective if done correctly, but should not be expected to be 100% reliable
5. People can transport *G.d.* conidia (spores) on contaminated gear and equipment
6. Bats can transport *G.d.* conidia (spores) to other bats

## WNS National Plan

Purpose:

To guide the response of Federal, State, and Tribal agencies, and partners to WNS

Multi-agency input: USFWS, USGS, NPS, USFS, DoD, APHIS, BLM, AFWA & States, St. Regis Mohawk Tribe

Establishes an organizational structure with oversight up to the Washington level

Formally establishes 7 working groups:

1. Communications
2. Data and Technical Information Management
3. Diagnostics
4. Disease Management
5. Etiological and Epidemiological Research
6. Disease Surveillance
7. Conservation and Recovery



## WNS National Plan

Two stages:

1. National Plan
  - The framework - not prescriptive
  - A static document
2. Implementation Plan
  - Identifies players & costs
  - Provide guidance
  - Adaptive plan, web based
  - (coming soon: [www.whitenoosesyndrome.TBD](http://www.whitenoosesyndrome.TBD))



## WNS National Plan

Implementation by Partnering Agencies:

- Other Federal agencies (ex: NPS, USFS, BLM, DoD) provide guidance/policy in relation to planning and managing Federal lands under their respective jurisdictions
- State agencies largely responsible for surveillance, population monitoring, and disease management
- Response Plans- tailored to meet needs of individual State, Tribal, and Federal agencies
- Funding/Support for research and response



## What is happening in Ohio?



- OH cave-hibernating species are known to be susceptible to WNS
- Found in March 2011 in Lawrence Co. while conducting Indiana bat census
- WNS confirmed on little brown bat; Gd detected on Indiana bat
- No other species were sampled
- Full census of all bats in 2012 at Indiana bat hibernaculum
- Multi-species bat conservation plan

## Some Working Group Products to Date

1. National Communications Plan
2. National Surveillance Plan
3. Diagnostics protocols & case definitions
4. Specimen-tracking database
5. Captive Management SDM project
6. New Decontamination Protocol pending
7. Commercial/Show Cave guidance pending
8. Research....



## WNS National Effort

### How can you contribute?

- Keep updated: check in on national website
- Support compliance with national guidance
  - Reduce the possible spread of WNS by humans
    - Consider the ramification of your actions
- Recognize the importance of your bat resource; talk with adjacent states/partners
  - Avoid disturbing bats
- Report observations
  - See Jennifer Norris
- Direct questions to regional WNS coordinator



....."Like winds and sunsets, wild things were taken for granted until progress began to do away with them. Now we face the question whether a still higher 'standard of living' is worth its cost in things natural, wild, and free. For us of the minority, the opportunity to see geese is more important than television, and the chance to find a pasque-flower is a right as inalienable as free speech."

....."What a thousand acres of Silphiums looked like when they tickled the bellies of the buffalo is a question never again to be answered, and perhaps not even asked."

*Sand County Almanac – Aldo Leopold*

Visit our FWS Webpage – Updates for WNS  
<http://www.fws.gov/whitenosesyndrome.html>

**Thank you**

## Currently Funded Research (partial)

- Immune response of hibernating bats & post-exposure
- Behavior and physiology of hibernation
- Population-level impacts (local and range-wide)
- Contaminants – pesticides and environmental
- Genetics – predisposition, post-exposure, & fungal
- Disinfection/Decontamination & *Gd* in the environment
- Prospects for captive management
- Dynamics of transmission
- Epidemiological modeling
- Improving detection of *Gd* on bats & in environment
- Susceptibility & potential for resistance

