

# **Final White-nose Syndrome Interagency Response Plan for New Mexico**

November 5, 2010

## **Cooperators:**

### Federal:

Bureau of Land Management (BLM) – New Mexico State Office  
US Forest Service (USFS) – Southwestern Region (R3)  
National Park Service (NPS) – Carlsbad Caverns National Park  
El Malpais National Monument

### State:

New Mexico Department of Game and Fish (NMDGF)  
New Mexico State Land Office (NM SLO)

## **Interested Parties:**

US Fish and Wildlife Service (USFWS) – Region 2  
Bureau of Indian Affairs (BIA)  
Department of Defense (DOD)  
New Mexico Abandoned Mine Land Program (NM AML)  
New Mexico State Parks (NMSP)  
National Speleological Society (NSS)  
Southwest Region of the NSS (SW NSS)  
New Mexico Bat Working Group (NMBWG)  
Bat Conservation International (BCI)  
Private landowners

## **Introduction:**

The purpose of this document is to articulate the collaborative and cooperative land management actions that will be taken by the agencies in face of the possible arrival of White-nose Syndrome in New Mexico bat populations. This Interagency Response Plan reflects a commitment from each agency to use their authorities together and separately to protect New Mexico's bat populations, as described in this and subsequent versions of this plan. The agencies have also committed to making the actions in this plan consistent across differing land jurisdictions as much as possible. Agency missions are not identical however; therefore there may be some lands that require different management actions based on agency responsibility. Communication among agencies, stakeholders, and the general public is a critical part of this Interagency Response Plan. The agencies are striving for consistency in message as well as action and are working together to foster understanding of and compliance with the actions needed to protect New Mexico's bats.

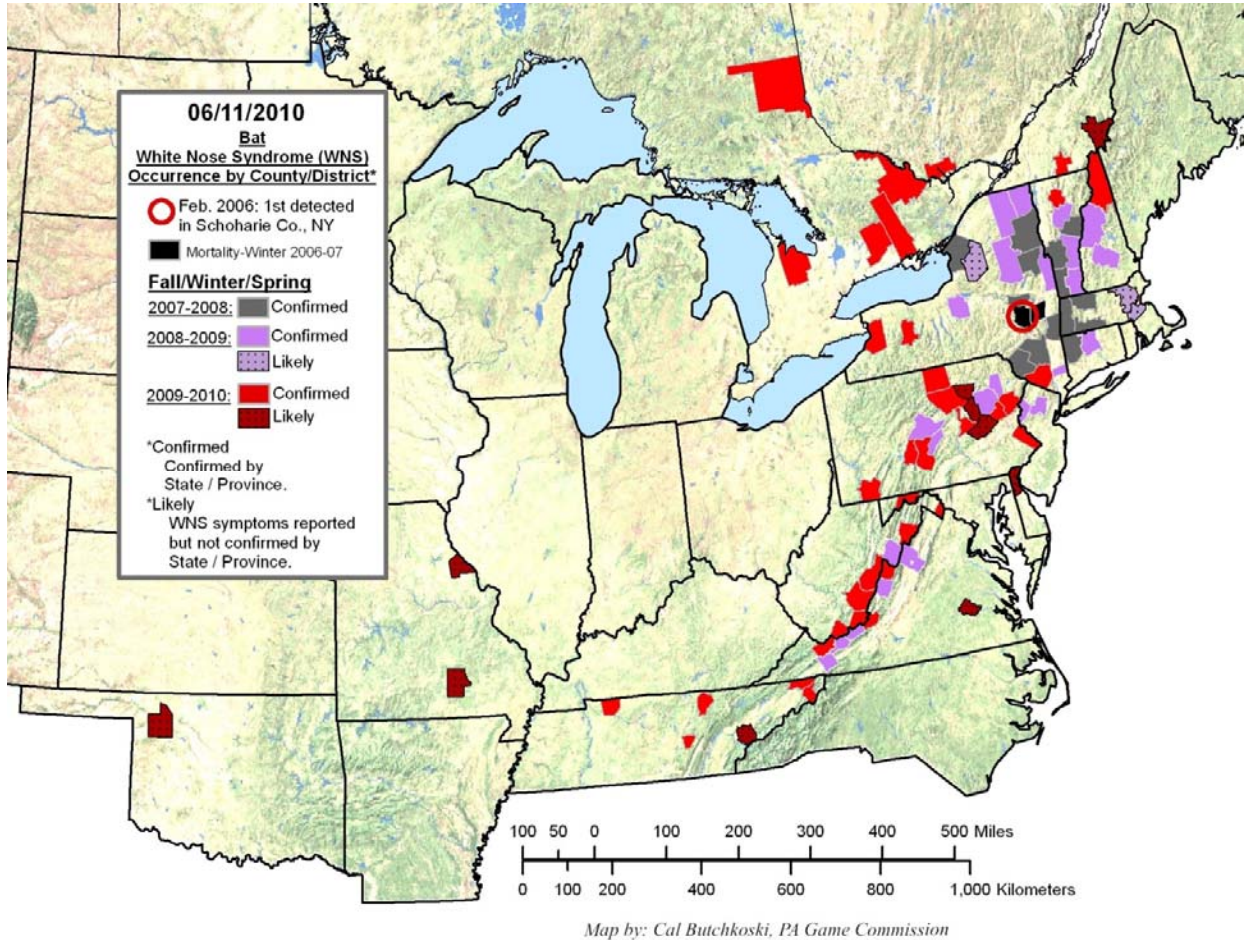
**Background:**

White-Nose Syndrome (WNS) is an emerging disease that is afflicting hibernating bats. The disease is often characterized by a white fungus (*Geomyces destructans*) on the membranes, ears, and noses of affected bats. The fungus was first observed in a cave in upstate New York in 2006 (US Fish and Wildlife Service 2008). Since that time, WNS has spread across the eastern half of the continent, and the fungus has recently been documented in western Oklahoma (Figure 1) {USGS, National Wildlife Health Center 2010}. This cold-loving fungus is thought to be the causal agent of WNS (Castle and Cryan 2010). The skin infections caused by *G. destructans* may act as a chronic disturbance, causing bats to awake from hibernation (USGS 2010). Each time a bat arouses from hibernation, it uses the limited supply of fat reserves it has built up to survive over winter. If anything increases the frequency or duration of such arousals during winter, a bat's fat reserves can be depleted, resulting in starvation.

More than a million bats have died from the disease in the eastern U.S., including some species of high conservation concern (Bat Conservation International 2010). Population declines in some eastern colonies have exceeded 95%, sometimes over a 2-3 year period after initial observations (Blehart et al. 2009). This dieoff represents the most extreme decline of North American wildlife caused by infectious disease in recorded history (USGS NWHC 2009). Recent population modeling has predicted the regional extinction of the little brown bat (*Myotis lucifugus*) in the northeastern U.S. within 16 years (Frick et al. 2010).

In May 2010, the fungus associated with WNS was confirmed in caves in MO and northwest OK. These occurrences are notable for several reasons: 1) *G. destructans* was documented on live bats; however the pattern of infection was inconsistent with the WNS infections observed in eastern bats. There also were no mortality events attributable to the findings (D. Blehart, pers. comm., Sept. 2010). 2) The OK occurrence represents the first discovery of the fungus on a bat species that does not occur in the eastern United States. The range of the cave myotis (*Myotis velifer*) extends from central Oklahoma and Kansas, south and west into Texas, New Mexico, Arizona, California and Mexico. Another concern is that cave myotis tend to congregate in large groups, and share caves with migratory species such as the Mexican free-tailed bat (*Tadarida brasiliensis*) (Bat Conservation International 2010). Mexican free-tailed bats are one of the most widely dispersed and far-ranging species of bats in the Americas, and could potentially help spread the fungus across its distribution. 3) This finding is the most western report of *G. destructans* to date, and puts it approximately 250 miles from New Mexico.

Figure 1. White-nose Syndrome and/or *G. destructans* affected counties across North America. Map courtesy of Cal Butchkoski, Pennsylvania Game Commission, June 11, 2010.



WNS has currently been confirmed in six eastern U.S. bat species (big brown bat, tri-colored bat, and the little brown, eastern small-footed, northern, and Indiana myotis) and the associated fungus has been documented in the gray and southeastern myotis, as well as the newest record of cave myotis in Oklahoma. However 25 of the 46 U.S. bat species hibernate in caves and mines and thus could be affected by WNS in the future (USGS 2010). Of the 28 species of bats that occur in New Mexico, 16 are hibernating bats (Table 1), and three of those species have been confirmed with either WNS or the fungus in the East.

Table 1. Bat species known or thought to hibernate in NM (USGS 2010, Findley et al. 1975).

<b>Species Name</b>	<b>Common Name</b>
<i>Myotis auriculus</i>	Southwestern (Mexican long-eared) myotis
<i>Myotis californicus</i>	California myotis
<i>Myotis ciliolabrum</i>	Western small-footed myotis
<i>Myotis evotis</i>	Western long-eared myotis
<i>Myotis occultus</i>	Occult (Arizona) myotis
<i>Myotis thysanodes</i>	Fringed myotis
* <i>Myotis velifer</i>	Cave myotis
<i>Myotis volans</i>	Long-legged myotis
<i>Myotis yumanensis</i>	Yuma myotis
<i>Parastrellus hesperus</i>	Canyon bat (Western pipistrelle)
* <i>Perimyotis subflavus</i>	Tri-colored bat (Eastern pipistrelle)
* <i>Eptesicus fuscus</i>	Big brown bat
<i>Antrozous pallidus</i>	Pallid bat
<i>Euderma maculatum</i>	Spotted bat
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat
<i>Idionycteris phyllotis</i>	Allen's big-eared bat

\* - WNS and/or *Geomyces destructans* confirmed

Laboratory experiments conducted by the National Wildlife Health Center have shown that bat-to-bat transmission of *G. destructans* can occur in a controlled environment (Castle and Cryan 2010, USGS 2009). *Geomyces destructans* genetic material has been identified in cave sediments collected from hibernation sites within WNS-infected areas, indicating that WNS is also likely spread by contacts among bats and their cave and/or mine environments (USGS 2009). There is also circumstantial evidence to support the potential for transmission by humans from cave to cave (Castle and Cryan 2010, USGS 2009). Based on previous patterns and rates of spread, WNS could appear in southwestern bat populations as early as winter 2010-2011.

### **Prior to documentation of *G destructans* in NM, or WNS in NM or an adjacent state**

#### Objectives:

The overriding management objective for the cooperating agencies in New Mexico is to prevent the arrival of WNS by effectively controlling transmission from already-affected areas.

Recognizing however that the spread of WNS to the Southwest may be unavoidable, our primary objective is to implement management for the winter of 2010-2011 that will focus on the need to prevent potential human transmission of the fungus into New Mexico, as well as contain any novel occurrence discovered within the state. In addition to this primary objective, the following supplementary objectives are identified:

Minimize direct bat mortality  
Provide WNS-related research opportunities  
Minimize impacts on other cave biota  
Work cooperatively with the caving community  
Minimize restrictions on the public  
Educate the public about WNS and the importance of bats

#### Increase Awareness:

- Interagency Communication Team will announce the completion of the Response Plan through a press release and social media venues, and get media coverage.
- Interagency Communication Team will create an e-mail list of interested parties to provide the most updated information in a timely manner.
- Interagency Communication Team will develop “Bats and WNS” presentations and make them available to all cooperators for presentations to grottos, the general public and other interested groups.
- BLM will develop a WNS ‘web-presence’ with information on current southwestern cave closures, links to other sites and a section for reporting unusual die-offs or WNS suspect bats (with directions on how to access).
- Each Agency will develop a protocol for disseminating WNS information to agency personnel.

#### Prevent the Spread of the Disease / Early Detection:

- It is mandatory that anyone entering non-commercial caves or mines on federal lands in NM must follow the most current USFWS White-Nose Syndrome Decontamination Protocols and gear dedication procedures (Appendix A). It is highly recommended that these protocols be used on other properties including private lands.
- It is highly recommended that anyone working with wild bats in NM should follow the *USFWS WNS Decontamination Protocol for Researchers* (Appendix A) when examining bats. NMDGF is responsible for the issuance of scientific collecting permits to biologists/ researchers who work on wildlife in NM. Permits issued to bat researchers include requirements and recommendations for the prevention of WNS transmission. However, permittees are also required to comply with any other requirements that land management agencies may implement when conducting wildlife research on those agency lands.
- Each agency will assemble information internally as well as from the research and caving communities to document significant bat roosts (timelines vary by agency). Agencies will work cooperatively with research and caving communities and other interested parties to develop a WNS monitoring/ surveillance plan, which will be completed by mid-November. Monitoring of significant hibernacula will be implemented during winter 2010-2011.

- Agencies, in cooperation with agency Abandoned Mine Land (AML) programs, the caving community, and other interested parties, will develop signs summarizing the WNS issue and decontamination protocols for posting at abandoned mine and cave entrances. These same groups will develop plans for posting signs at frequently visited caves, abandoned mines, significant bat roosts, and other designated sites.

#### Management or Regulatory Actions:

These actions apply to the caves and underground mines that are managed by federal and state land management agencies in NM. However due to differences in agency missions, some caves and mines may require different management actions based on agency responsibility. A bat “roost” is defined as a place where bats rest, sleep, raise young, overwinter, etc.

- As a pre-emptive strategy, access to all caves and/or mines with significant bat roosts will be restricted to approved administrative uses only, e.g. commercial use or research. For the purposes of this document, a “significant” bat roost is a hibernaculum, maternity roost, bachelor roost, day roost, or fall swarming (mating) roost, that is used by 1) bat species that primarily roost in caves and/or mines, or 2) species that use multiple roost types including caves and mines. In addition, a significant bat roost must meet at least one of the following three criteria:
  - a. A roost that is used by a colonial bat species (a grouping of the same bat species) that hibernates over winter.
  - b. A roost that is used by a bat species that is ESA-listed, federal agency sensitive, state-listed, or ranked as High on Western Bat Working Group’s Regional Bat Species Priority Matrix.
  - c. A roost that is used by one or more bat species resulting in a large ( $\geq 30$ ) aggregation of individuals.

(For additional details on how a “significant” bat roost was determined, and for a list of southwestern cave and mine dwelling species that occur in NM, see Appendix B).

- Access to those caves and mines determined to be closed (significant bat roosts) may be allowed to approved researchers and/or others only when appropriate decontamination and gear dedication procedures are followed (See *USFWS White-Nose Syndrome Decontamination Protocols* (Appendix A)). Recreational caving trips may be allowed within known caves that are not significant bat roosts, provided that agency-specific requirements (e.g. permits) are followed, including appropriate decontamination and gear dedication procedures.
- Encourage other landowners to consider closing the caves that harbor significant bat roosts on their properties to recreational caving, and only allowing approved researchers and/or others that will follow USFWS decontamination protocols.
- Encourage cavers and other recreationists to respect public and private land cave closure advisories.

**Post-documentation of WNS in NM or an adjacent state, or *G destructans* in NM:** Once WNS has been documented in NM or an adjacent state, or the fungus has been documented in NM, additional management actions will be implemented. Objectives, reporting protocols, and management or regulatory action alternatives will be developed by the Interagency Biologist/Cave-Specialist Team within the calendar year, and will be available for leadership review no later than early January 2011.

## References and Literature Citations

Altenbach, J.S. and E.D. Pierson. 1995. The importance of mines to bats: An overview. *In* Riddle, B.R. (ed.). Inactive mines as bat habitat: guidelines for research, survey, monitoring and mine management in Nevada. Biological Resources Research Center, University of Nevada, Reno.

Bat Conservation International. May 20, 2010. White-nose Syndrome jumps to a “gateway to the West”. Available at [www.batcon.org](http://www.batcon.org)

Blehert, D.S., A.C. Hicks, M. Behr, C.U. Meteyer, B.M. Berlowski-Zier, E.L. Buckles, J.T. Coleman, S.R. Darling, A. Gargas, R. Niver, J.C. Okoniewski, R.J. Rudd, and W.B. Stone. 2009. Bat white-nose syndrome: An emerging fungal pathogen? *Science* 323(5911):227.

California Department of Fish and Game California Interagency Wildlife Task Group. 2000. Life history account of Mexican long-tongued bat. California Wildlife Habitat Relationships System.

Castle, K.T. and P.M. Cryan. 2010. White-nose syndrome in bats: A primer for resource managers. *Park Science* 27(1): 20-25.

Cleveland, C. J., M. Betke, P. Federico, J. D. Frank, T. G. Hallam, J. Horn, J. D. López, Jr., G. F. McCracken, R. A. Medellín, A. Moreno-Valdez, C. G. Sansone, J. K. Westbrook, and T. H. Kunz. 2009. Economic value of the pest control service provided by Brazilian free-tailed bats in south-central Texas. *Frontiers of Ecology and the Environment* 4:238–243.

Fleming, T.H. 1991. Following the nectar trail. *Bats Magazine* 9(4). Available at <http://www.batconservation.net/index.php/media-and-info/bats-archives.html>.

Frick, W.F., J.F. Pollack, A.C. Hicks, K.E. Langwing, D.S. Reynolds, G.G. Turner, C.M. Butchkoski, and T.H. Kunz. 2010. An emerging disease causes regional population collapse of a common North American bat species. *Science* 329: 679. Available at <http://www.sciencemag.org>.

Gargas, A., M. T. Trest, M. Christensen, T. J. Volk, and D. S. Blehert. 2009. *Geomyces destructans* sp.nov. associated with bat white-nose syndrome. *Mycotaxon* 108:147–154.

Georgia White-nose Syndrome (WNS) Response Plan. 2010. Available at <http://www.georgiawildlife.com/node/1786>

Harris, A.H. 1974. *Myotis yumanensis* in interior southwestern North America, with comments on *Myotis lucifugus*. *Journal of Mammalogy*, Vol. 55, No. 3, pp. 589-607.

King, K.A., A.L. Velasco, C.L.H. Marr, and R.L. Kearns. 2003. Trace elements in bats roosting in mines at Kofa National Wildlife Refuge, Arizona, 2001-2002. USFWS, Arizona Ecological Services Field Office.

Meteyer, C. U., E. L. Buckles, D. S. Blehert, A. C. Hicks, D. E. Green, V. Shearn-Bochsler, N. J. Thomas, A. Gargas, and M. J. Behr. 2009. Histopathologic criteria to confirm white-nose syndrome in bats. *Journal of Veterinary Diagnostic Investigations* 21(4):411–414.

Missouri Department of Conservation. 2010. White Nose Syndrome Action Plan. Available at <http://mdc.mo.gov/discover-nature/habitats/caves-and-karst/white-nose-syndrome-missouri>

Pierson, E.D. M.D. Wackenhut, J.S. Altenbach, P. Bradley, P. Call, D.L. Genter, C.E. Harris, B.L. Keller, B. Lengus, L. Lewis, B. Luce, K.W. Navo, J.M. Perkins, S. Smith, and L. Welch. 1999. Species conservation assessment and strategy for Townsend's big-eared bat (*Corynorhinus townsendii townsendii* and *C.t. pallascens*). Idaho Conservation Effort, Idaho Department of Fish and Game, Boise, ID.

Puechmaille, S.J., P. Verdeyroux, H. Fuller, M. Ar Gouilh, M. Bekaert, and E.C. Teeling. 2010. White-nose syndrome fungus (*Geomyces destructans*) in bat, France. *Emerging Infectious Diseases* [serial on the Internet]. DOI: 10.3201/eid1602.091391. Available at <http://www.cdc.gov/EID/content/16/2/290.htm>.

Ransome, R.R. 1990. The natural history of hibernating bats. Christopher Helm Publishers, London, England.

Sherwin R.E., Gannon, W.L. and J.S. Altenbach. 2003. Managing complex systems simply: understanding inherent variation in the use of roosts by Townsend's big-eared bat. *Wildlife Society Bulletin* 31(1):62-72.

Tuttle, M.D. and A. Moreno. 2005. Cave-dwelling bats of northern Mexico. *Bat Conservation International*.

U.S. Geological Survey Fort Collins Science Center. 2010. White-nose syndrome threatens the survival of hibernating bats in North America. Available at <http://www.fort.usgs.gov/WNS.htm>

U.S. Fish and Wildlife Service. Cave Advisory March 26, 2009. Available at <http://www.fws.gov/WhiteNoseSyndrome/caveadvisory.html>

U.S. Geological Survey National Wildlife Health Center. 2009. Update on white-nose syndrome. *Wildlife Health Bulletin* 2009-03.

Western Bat Working Group's Regional Bat Species Priority Matrix. ([http://www.wbwg.org/speciesinfo/species\\_matrix/species\\_matrix.html](http://www.wbwg.org/speciesinfo/species_matrix/species_matrix.html)).

Western Bat Working Group's Species Accounts. 2005. *Leptonycteris nivalis*, Greater long-nosed bat. Available at <http://www.wbwg.org>



Wibbelt G, Kurth A, Hellmann D, Weishaar M, Barlow A, Veith M, et al. 2010. White-nose syndrome fungus (*Geomyces destructans*) in bats, Europe. Emerging Infectious Diseases [serial on the Internet]. DOI: 10.3201/eid1608.100002. Available at <http://www.cdc.gov/EID/content/16/8/1237.htm>

### **Links for more information**

Bat Conservation International WNS Page: <http://www.batcon.org/index.php/what-we-do/white-nose-syndrome.html>

Bat Conservation and Management WNS Page: <http://www.batmanagement.com/wns/wns.html>

USFWS WNS Page: <http://www.fws.gov/WhiteNoseSyndrome>

USGS Fort Collins Science Center WNS Page: <http://www.fort.usgs.gov/WNS>

USGS National Wildlife Health Center WNS Page:  
[http://www.nwhc.usgs.gov/disease\\_information/white-nose\\_syndrome/](http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/)

USGS National Wildlife Health Center – Wildlife Health Bulletins:  
[http://www.nwhc.usgs.gov/publications/wildlife\\_health\\_bulletins/WHB\\_10\\_04.jsp](http://www.nwhc.usgs.gov/publications/wildlife_health_bulletins/WHB_10_04.jsp)