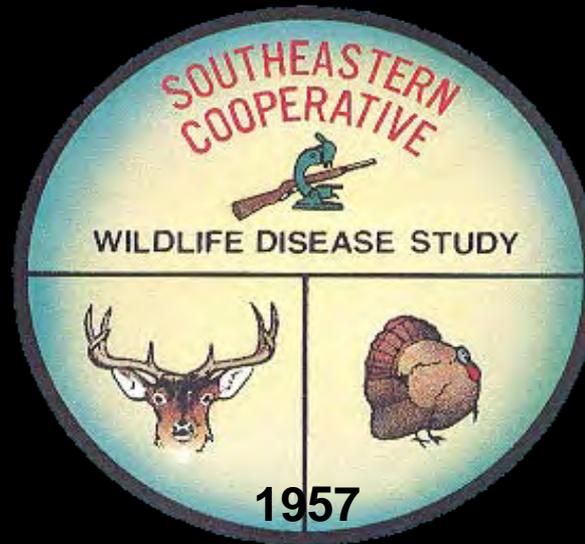


Ongoing and Emerging Wildlife Disease Threats



John Fischer

Southeastern Cooperative Wildlife Disease Study

College of Veterinary Medicine

The University of Georgia

National Fish and Wildlife Health Initiative



- Endorsed by AFWA in 2005
- Overarching goals: enhance agency capacity & reduce negative impacts of health issues on fish and wildlife
- Accomplishments - training, information materials, gap analysis
- In 'stasis' from 2011 - 2013; reinvigorated in 2013
- Becky Humphries Chairs NFWHI Steering Committee
- Each regional association has a Director on the Steering Committee – Ed Boggess from MAFWA
- 1st meeting in March 2014 - Denver, 2nd Sept 2014 - Laramie

DEA Controlled Substances Act



- Uneven enforcement of CSA problematic for wildlife agencies (and private DVMs) in some states
- Requires separate registrations for each address where CS's are administered or stored
- AFWA attempted to work together with AVMA but...
- WAFWA and AFWA have WGs attempting to resolve the issue with DEA

White Nose Syndrome

Pseudogymnoascus destructans



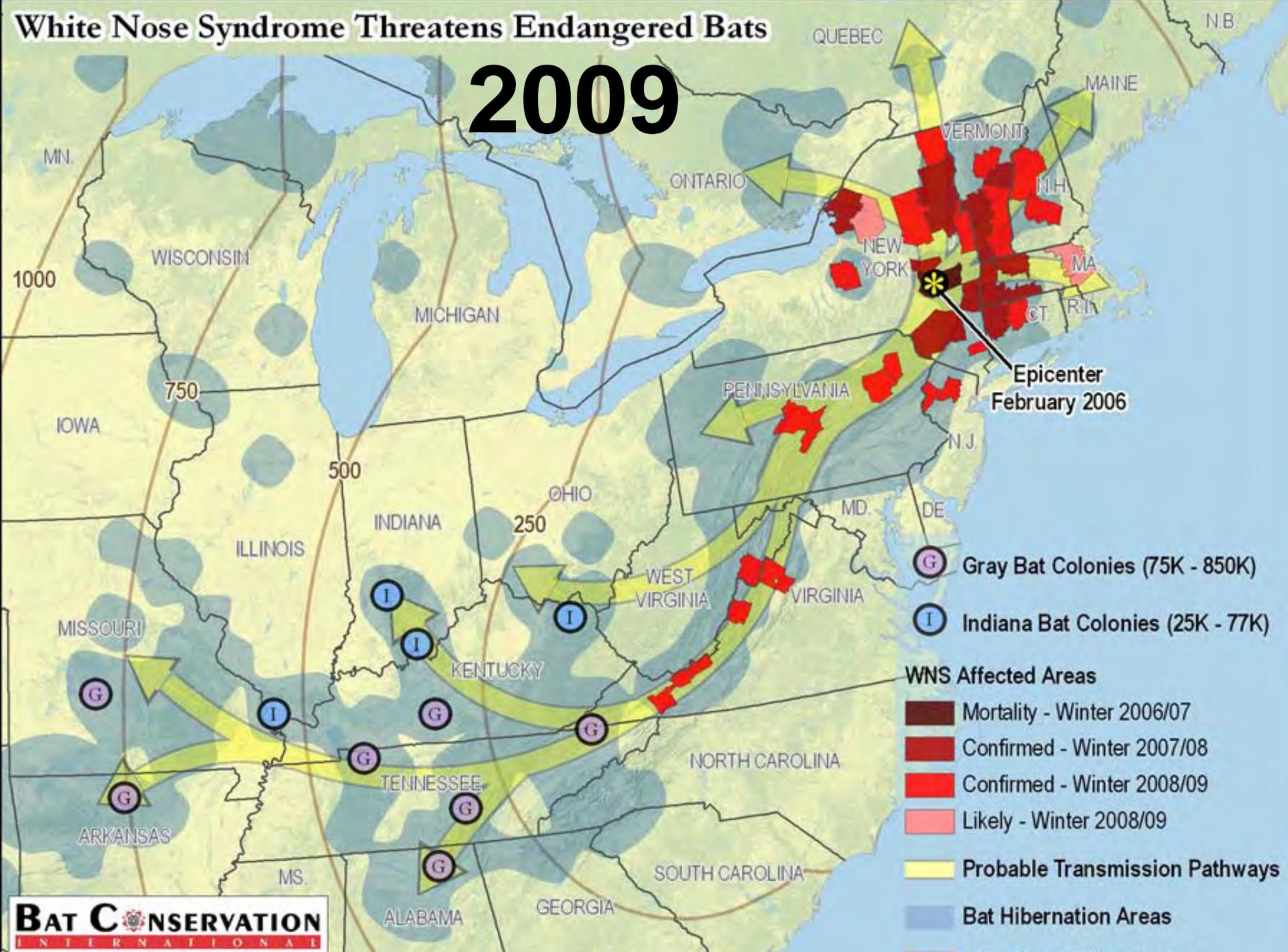
White Nose Syndrome

- Detected in 25 states and 5 provinces since 2006
- Estimated mortality through 2011: 5.7-6.7 MILLION bats
- New states 2013-14: MI, MN, MS, WI
- 7 species affected: little brown bat, big brown bat, tri-colored bat, eastern small-footed bat, Indiana bat, gray bat, northern long-eared bat
 - <http://www.whitenosesyndrome.org/>

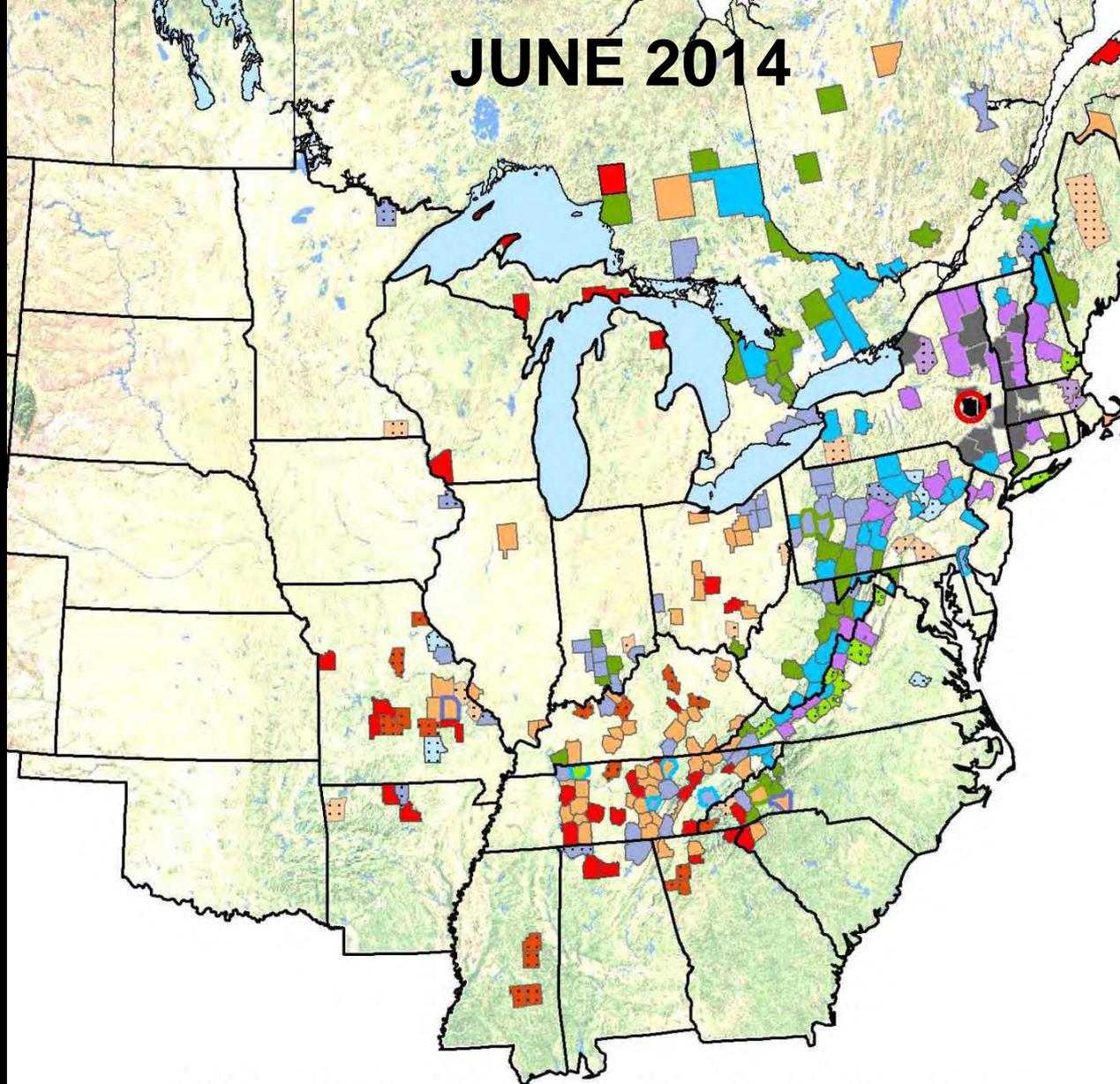


White Nose Syndrome Threatens Endangered Bats

2009



JUNE 2014



06/12/2014

Bat

**White Nose Syndrome (WNS)
Occurrence by County/District***

(or portions thereof)

○ Feb. 2006: 1st detected
in Schoharie Co., NY

■ Mortality-Winter 2006-07

Fall/Winter/Spring

2007-2008: ■ Confirmed

2008-2009: ■ Confirmed

■ Suspect

2009-2010: ■ Confirmed

■ Suspect

2010-2011: ■ Confirmed

■ Suspect

2011-2012: ■ Confirmed

■ Suspect

2012-2013: ■ Confirmed

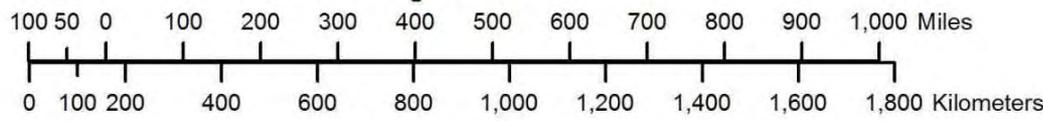
■ Suspect

2013-2014: ■ Confirmed

■ Suspect

*Confirmed
Confirmed by
State / Province.
(outline color=suspect year)

*Suspect
WNS symptoms reported
but not confirmed by
State / Province.



Map by: Lindsey Heffernan, PA Game Commission

CWD

CWD Transmission

- Precise transmission modes uncertain
- Feces, urine, saliva, and tissues are infective
- Oral transmission likely
- Experimental aerosol transmission in WTD
 - Denkers et al: J Virol. 2013 Feb;87(3):1890-2. doi: 10.1128/JVI.02852-12. Epub 2012 Nov 21.
- Apparent *in utero* transmission in experimental model (Reeves muntjac deer)
 - Nalls et al: PLoS One. 2013 Aug 14;8(8):e71844. doi: 10.1371/journal.pone.0071844. eCollection 2013.

CWD and Cervid Carcasses

- Decomposed carcasses of deer that died of CWD were source of disease for clean animals placed in paddocks
- Many states prohibit importing anything other than boned-out meat, antlers, etc. from states with/without CWD
- CWD never has been found in non-cervid species: Studies are from WI and CO where prevalence is high in deer
- No documented spread of CWD via scavengers or carnivores, although infectivity persists after GI transit



CWD Prions and Plants?

- 2013 abstract by Johnson et al for The Wildlife Society meeting: “Uptake of Prions Into Plants”
 - “Our results suggest that prions are taken up by plants and that contaminated plants may represent a previously unrecognized risk of human, domestic species and wildlife exposure to CWD and scrapie agents.”
- 2014 publication by Rasmussen et al, Prion 8(1): 136-142: “Can Plants Serve as a Vector for Prions Causing Chronic Wasting Disease?”
 - “The present study suggests that if prions are transported from the roots to the stems it is at levels that are below those that are detectable by western blot, IDEXX or Bio-Rad diagnostic kits.”

Live Animal Test for CWD?

Recent advances in blood test for vCJD/BSE – driven by vCJD transmission via blood transfusions and plasma from healthy persons who developed vCJD 17-40 months later

Lacroux et al, PLOS Pathogens e1004202; Preclinical detection of variant CJD and BSE prions in blood, June 2014



USDA's CWD Rule

- Implemented December 2012: Nine years after Proposed Rule published
- Finalized in April 2014; Revised CWD Program Standards published in May 2014



USDA CWD Rule - 2014

- Program is voluntary unless herd ships animals interstate, then it is mandatory
- Shifted from CWD eradication to control program since first published in 2003
- USDA-State-Producer cooperative program
- States may have more stringent regulations with one exception – Fed rule preempts state regs on transit through state

USDA CWD Rule - 2014

- 5 years of CWD testing of all deaths >1 yr old on farm for herd to be certified as low risk for CWD
- There is no “certified CWD-free” status
- No testing requirement if die off-farm in facilities not in CWD program, unless required by state



USDA CWD Rule - 2014

- Is 5 years of monitoring enough?
- Animals shipped interstate from certified herds in which CWD later was detected or traced to
 - Minnesota 2012, Iowa 2012, Pennsylvania 2012, Pennsylvania 2014
 - CWD not found in animals shipped interstate from certified herds, but animals have gone to herds in several states & CWD has been moved intrastate

A map of the state of Minnesota, showing its county boundaries. The map is colored in shades of orange and yellow, with blue areas representing water bodies like Lake Superior and Lake St. Clair. Overlaid on the map is bold black text.

**Minnesota: Red Deer Herd
CWD+ May 2012**

Monitored for 12 years

**‘Shooters’ shipped to:
FL, IA, MO, PA, TN, TX**

IOWA: Breeding Facility

- Monitored over 9 years: 10/25/02 - 1/9/12
- Sent deer to MO and 13 Iowa herds: 2 Iowa facilities wound up with CWD

500 WTD quarantined, feed bill/yr = \$180,000



Pennsylvania, 2012



- Monitored more than 9 years
- 32 PA premises quarantined
- Deer shipped from CWD+ index herd to 7 states: IL, IN, MN, OH, LA, NY & OK
- Deer escaped from CWD+ herd in PA (killed and tested ND 2 months later) and from IN herd that imported deer from PA herd - IN deer unrecovered

Pennsylvania, April 2014

- Epidemiological investigation ongoing
- Apparent source herd (CWD+ deer there from 9/2009-10/2012) monitored since 2002
- Dispersal sale in 2013:
 - 79 deer went to 39 PA facilities (45 alive in 24 herds as of 6/2014)
 - Deer shipped to 9 states: IA, IL, IN, LA, MO, NY, OH, OK, and WI
- Traces – 1 additional CWD+ deer in another PA herd that also was dispersed: 7 deer alive in 4 PA herds, animals shipped to IL, MO, OH

CWD in North America, June 2014



National Wildlife Health Center
Madison, Wisconsin
Updated April, 2014

Distribution of Chronic Wasting Disease in North America

- CWD in free-ranging populations
- Known distribution prior to 2000 (free-ranging)
- CWD in captive facilities (depopulated)
- CWD in captive facilities (current)

All locations are approximations based on best-available information

**PREVENTION IS THE ONLY TRULY EFFECTIVE METHOD FOR
MANAGING DISEASES IN FREE-RANGING WILDLIFE**

