

Current Status of Bat White-Nose Syndrome



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US Fish & Wildlife Service


NSS Convention

Glenwood Springs, Colorado, July 2011



“White-nose Syndrome (WNS) is a devastating disease of hibernating bats that has caused the most precipitous decline of North American wildlife in recorded history.”





White-nose Syndrome



Science Strategy Meeting II

May 27-28, 2009
Austin, Texas

BAT CONSERVATION
www.batconservation.org



- Consensus Statement on WNS,
Proceedings of the
2009 Science Strategy Meeting

Continued spread poses a
grave threat to N. American
bat populations

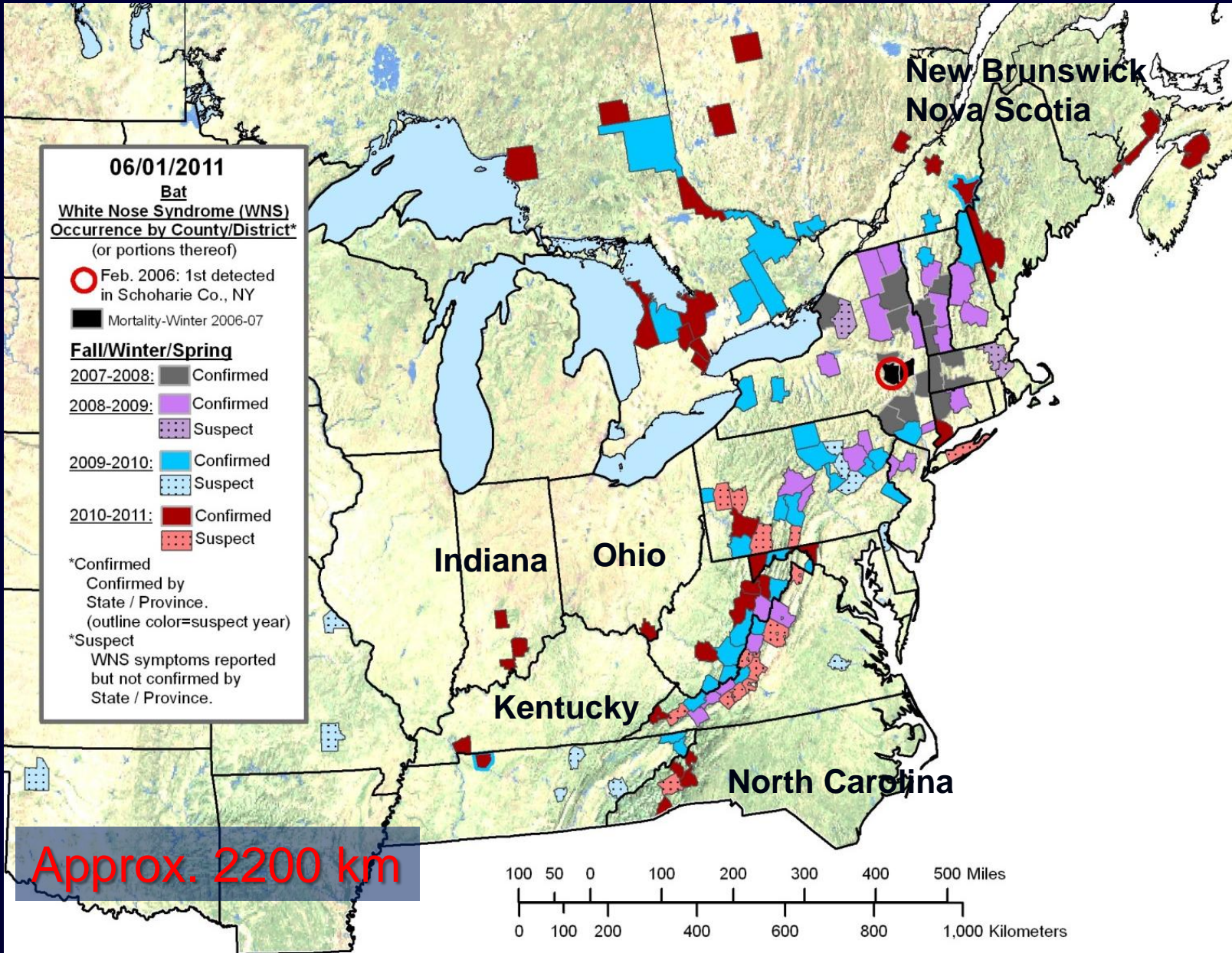


A Disease of Hibernating Bats

Hibernating Bats of North America

Species name	Common name
1 <i>Myotis auriculus</i>	Mexican long-eared bat
2 <i>Myotis austroriparius</i>	Southeastern bat
3 <i>Myotis californicus</i>	California bat
4 <i>Myotis ciliolabrum</i>	Western small-footed bat
5 <i>Myotis evotis</i>	Western long-eared bat
6 <i>Myotis grisescens</i>	Gray bat
7 <i>Myotis keenii</i>	Keen's bat
8 <i>Myotis leibii</i>	Eastern small-footed bat
9 <i>Myotis lucifugus</i>	Little brown bat
10 <i>Myotis occultus</i>	Occult bat
11 <i>Myotis septentrionalis</i>	Northern long-eared bat
12 <i>Myotis sodalis</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>Nycticeius humeralis</i>	Evening bat
18 <i>Parastrellus hesperus</i>	Canyon bat
19 <i>Perimyotis subflavus</i>	Tricolored bat
20 <i>Corynorhinus townsendii</i>	Townsend's big-eared bat
21 <i>Corynorhinus rafinesquii</i>	Rafinesque's big-eared bat
22 <i>Eptesicus fuscus</i>	Big brown bat
23 <i>Antrozous pallidus</i>	Pallid bat
24 <i>Euderma maculatum</i>	Spotted bat
25 <i>Idionycteris phyllotis</i>	Allen's big-eared bat

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



Apparent Spread of *Geomyces destructans*

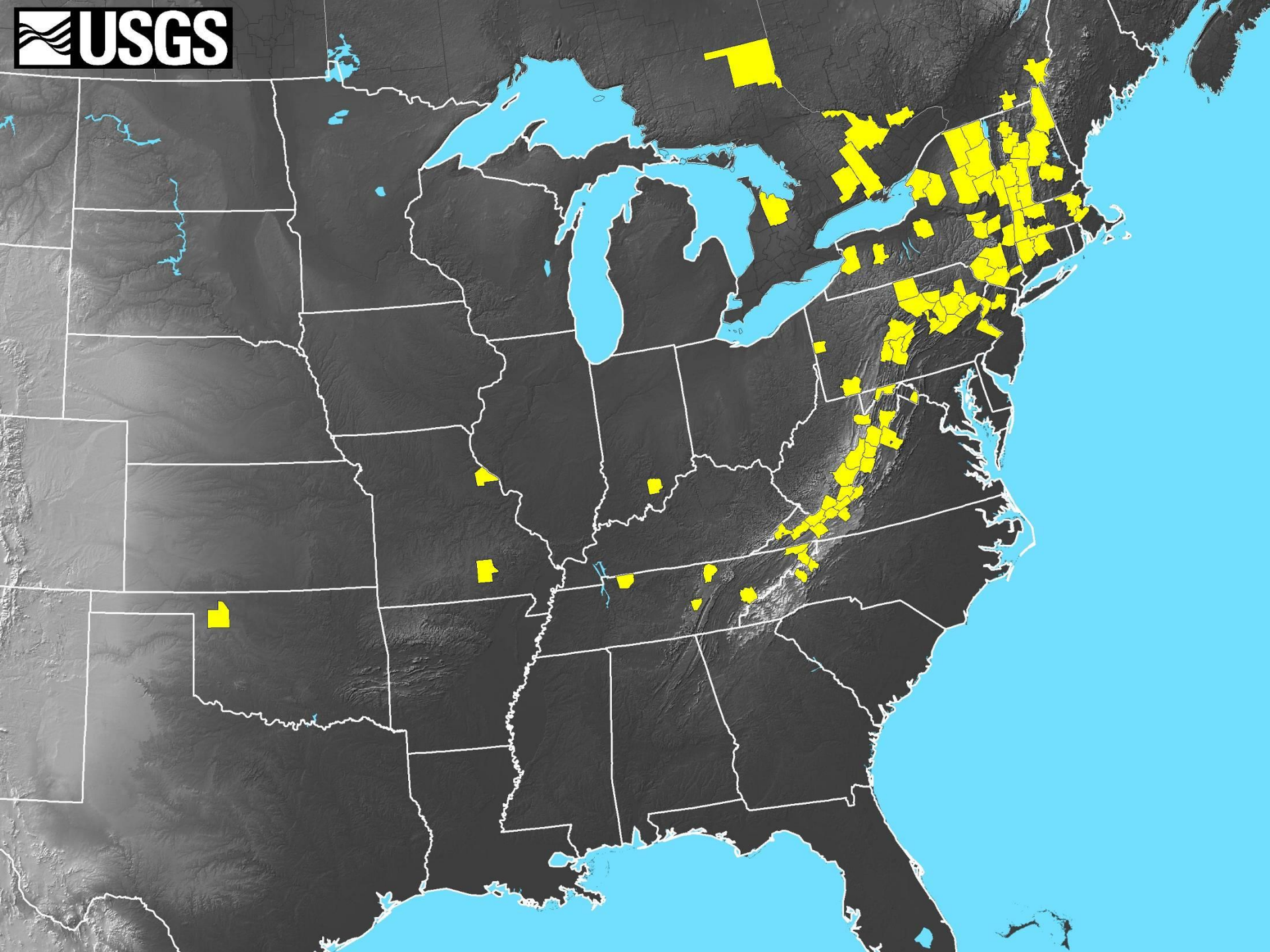


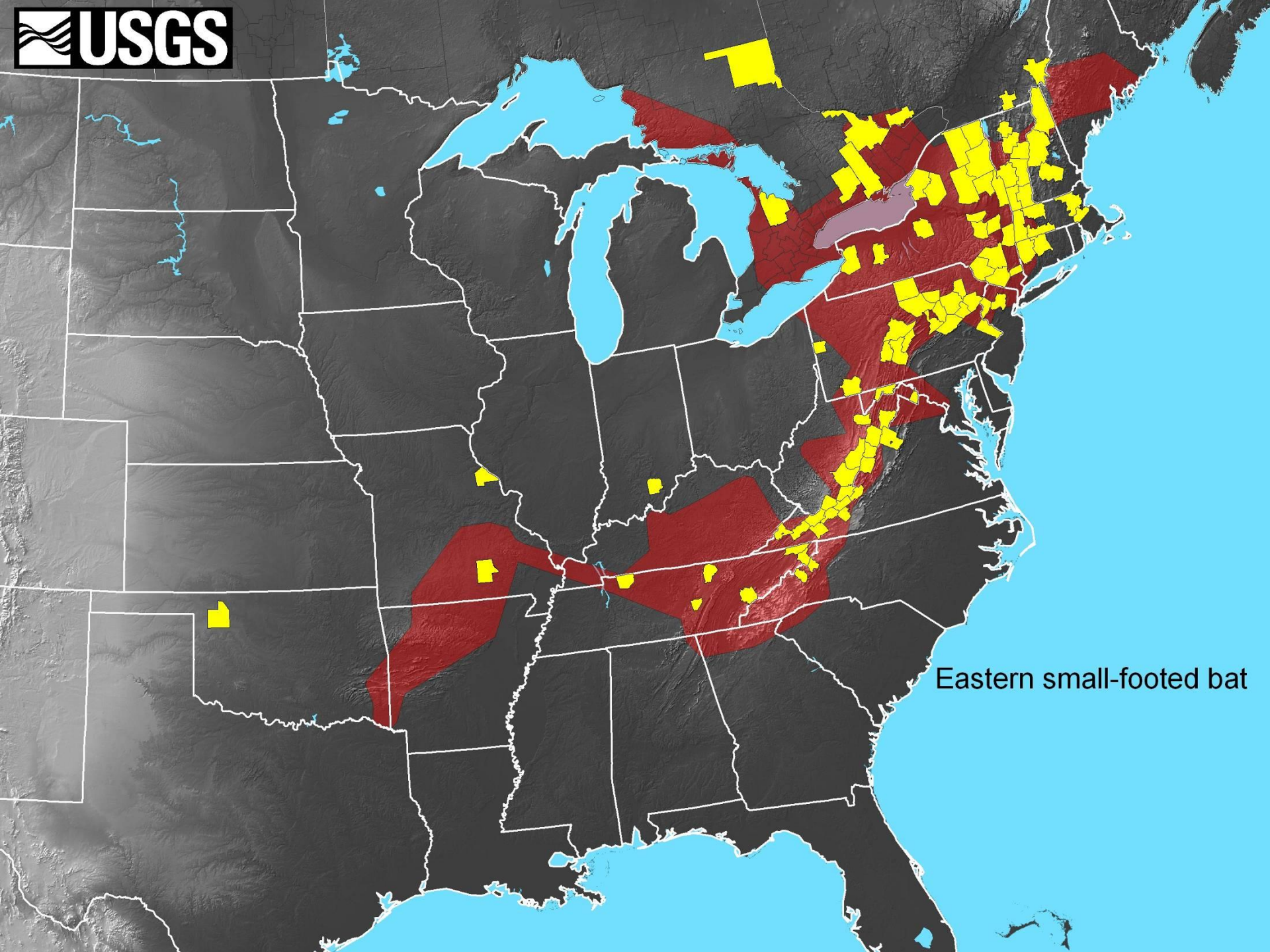
Approx. 2200 km



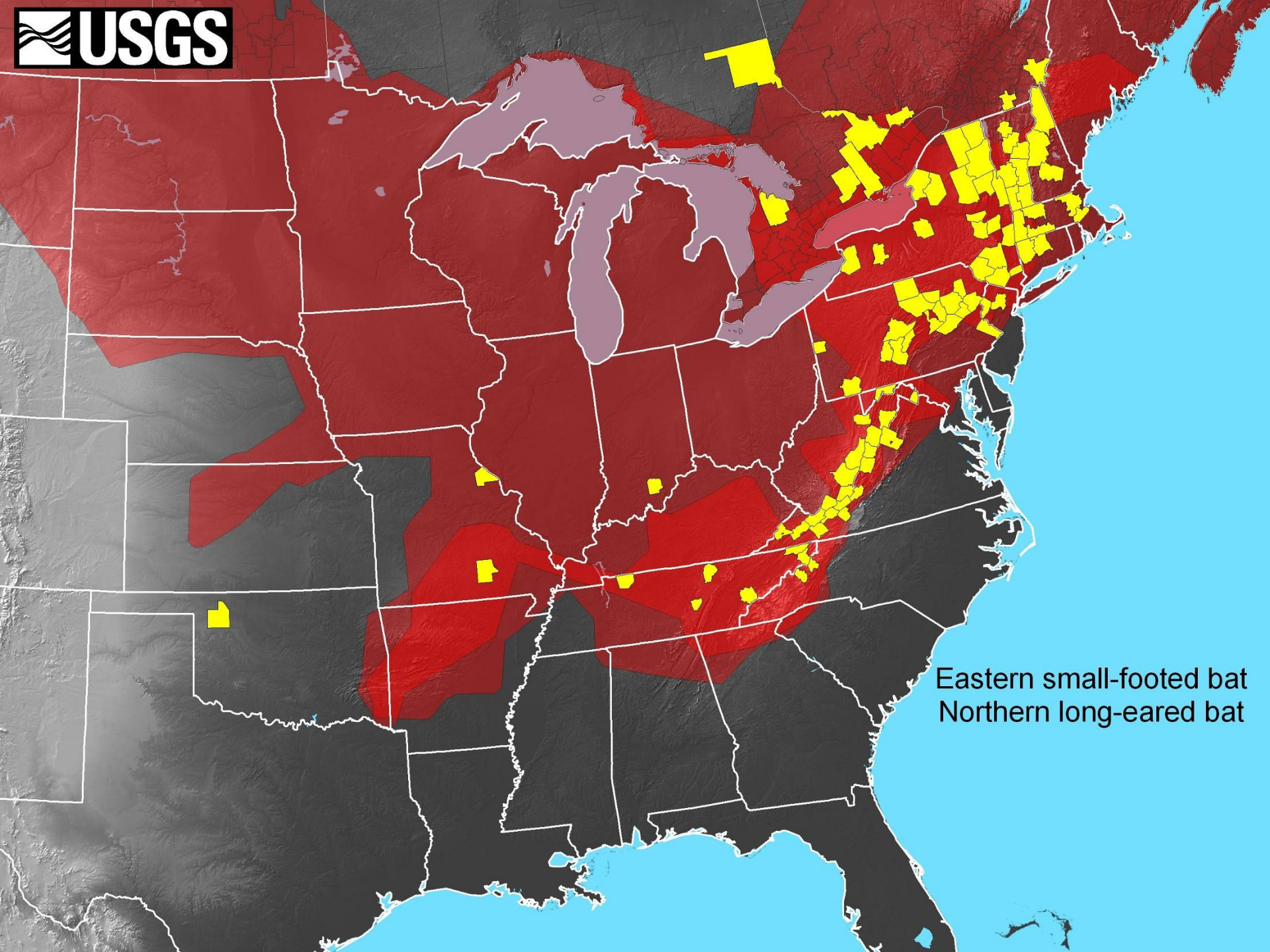
Alan Hicks



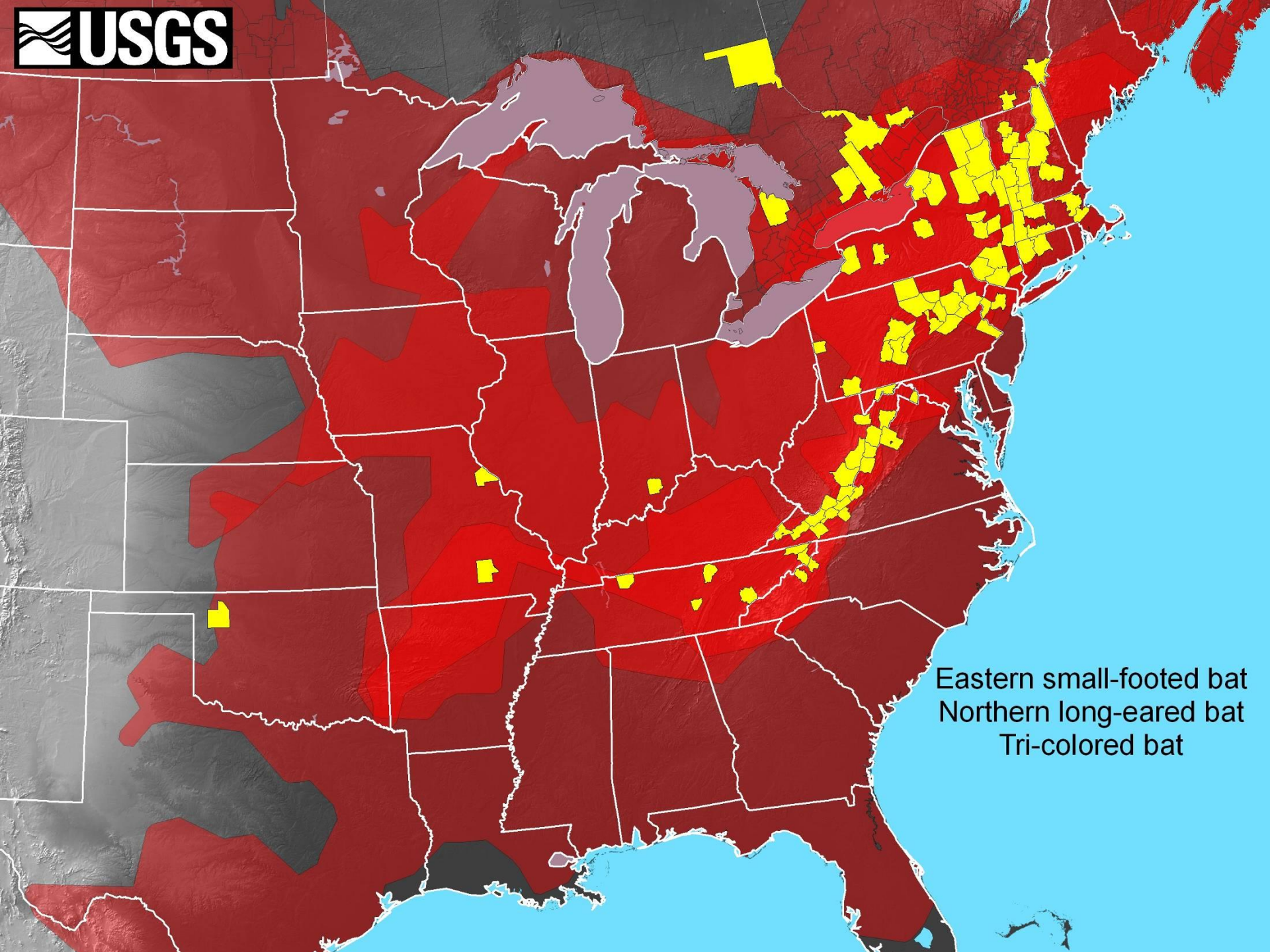




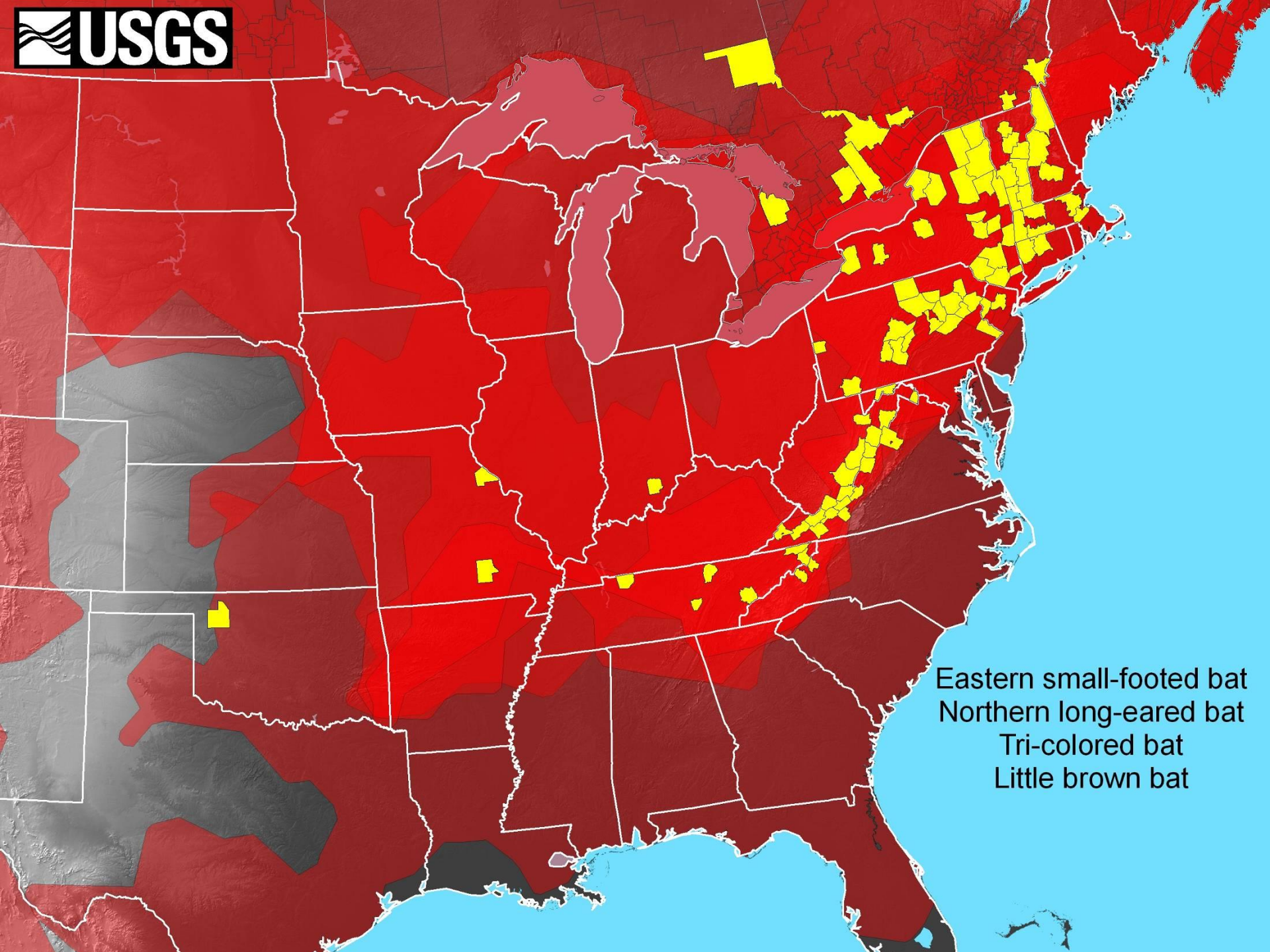
Eastern small-footed bat



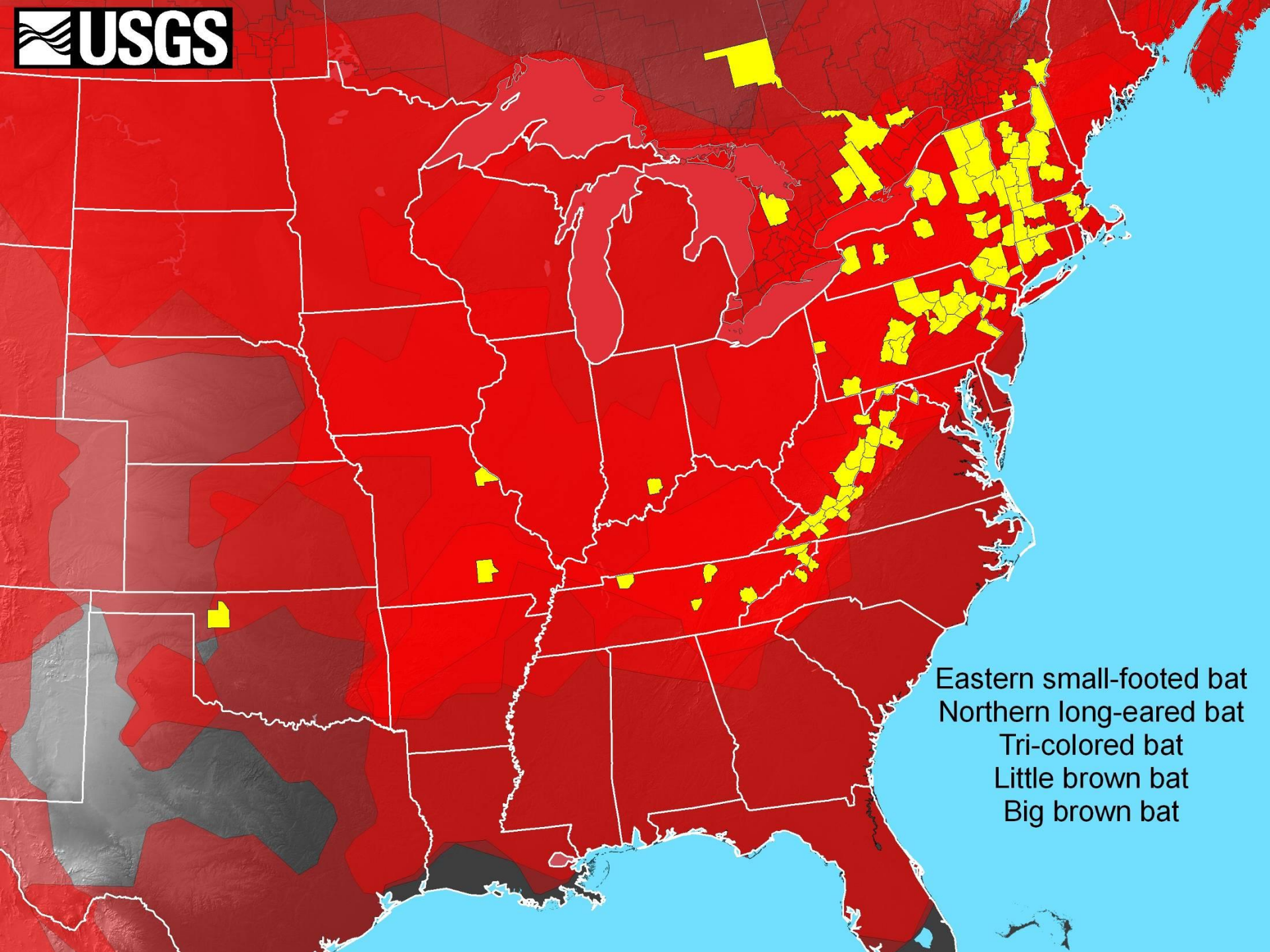
Eastern small-footed bat
Northern long-eared bat



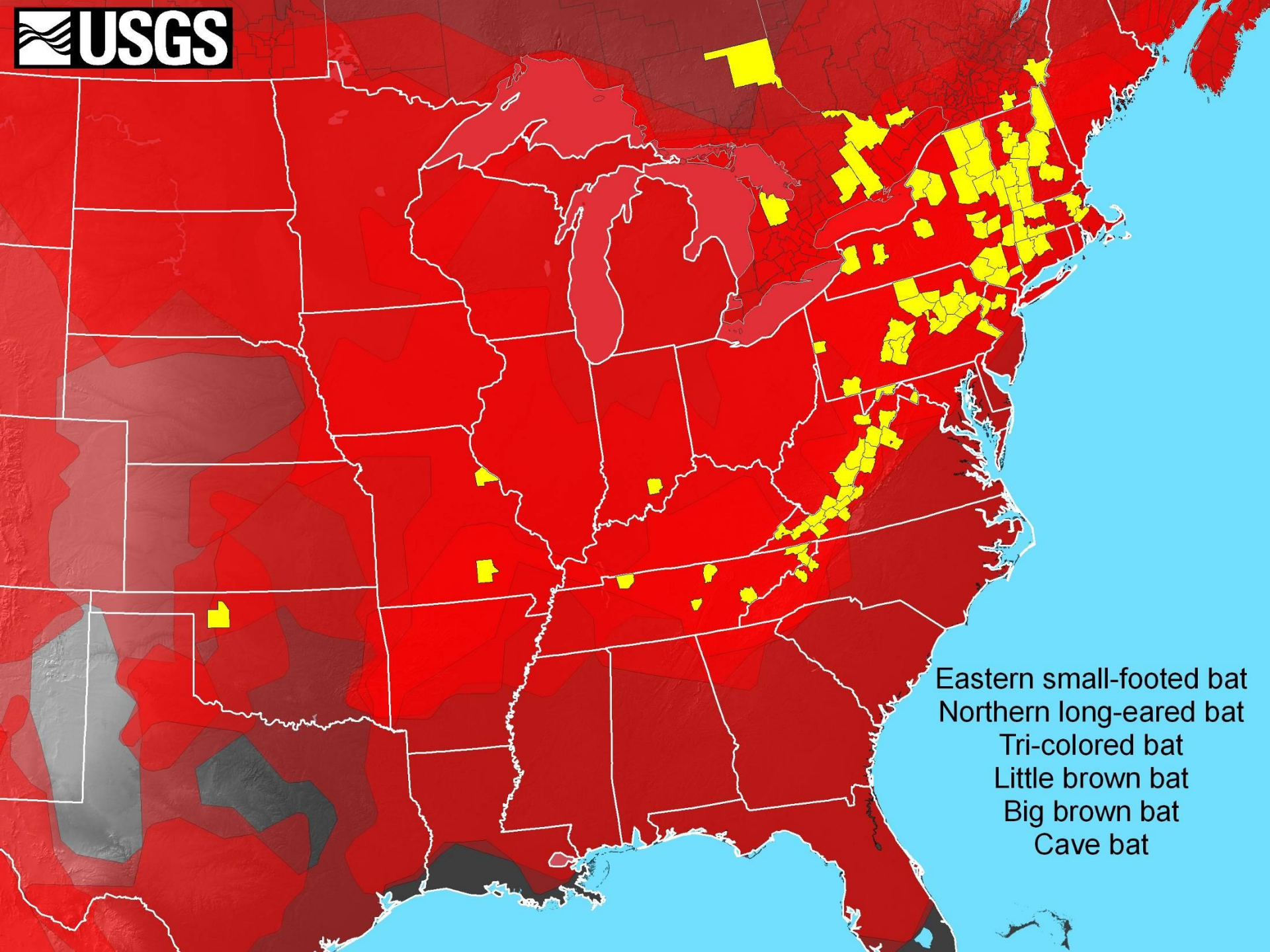
Eastern small-footed bat
Northern long-eared bat
Tri-colored bat



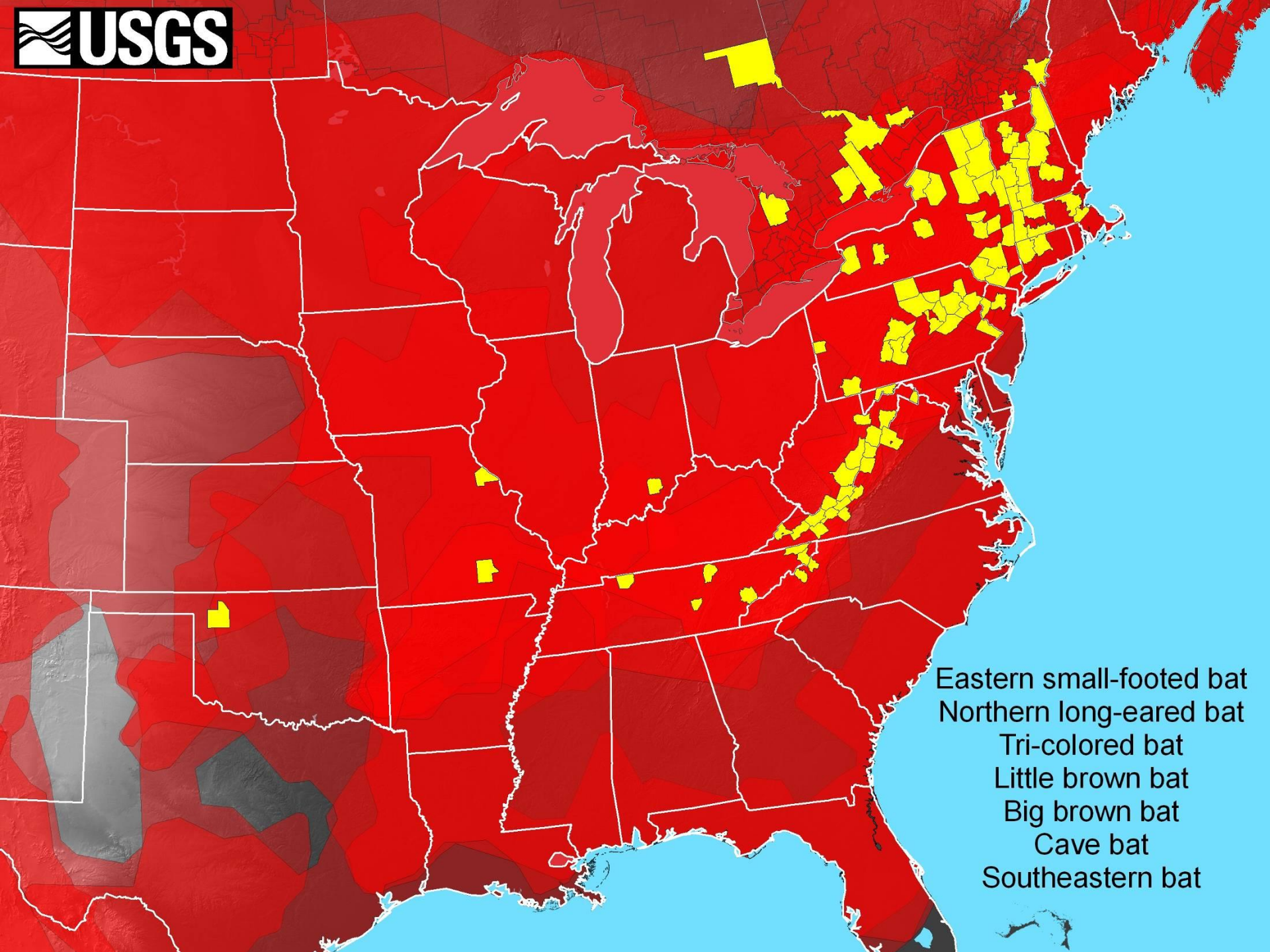
Eastern small-footed bat
Northern long-eared bat
Tri-colored bat
Little brown bat



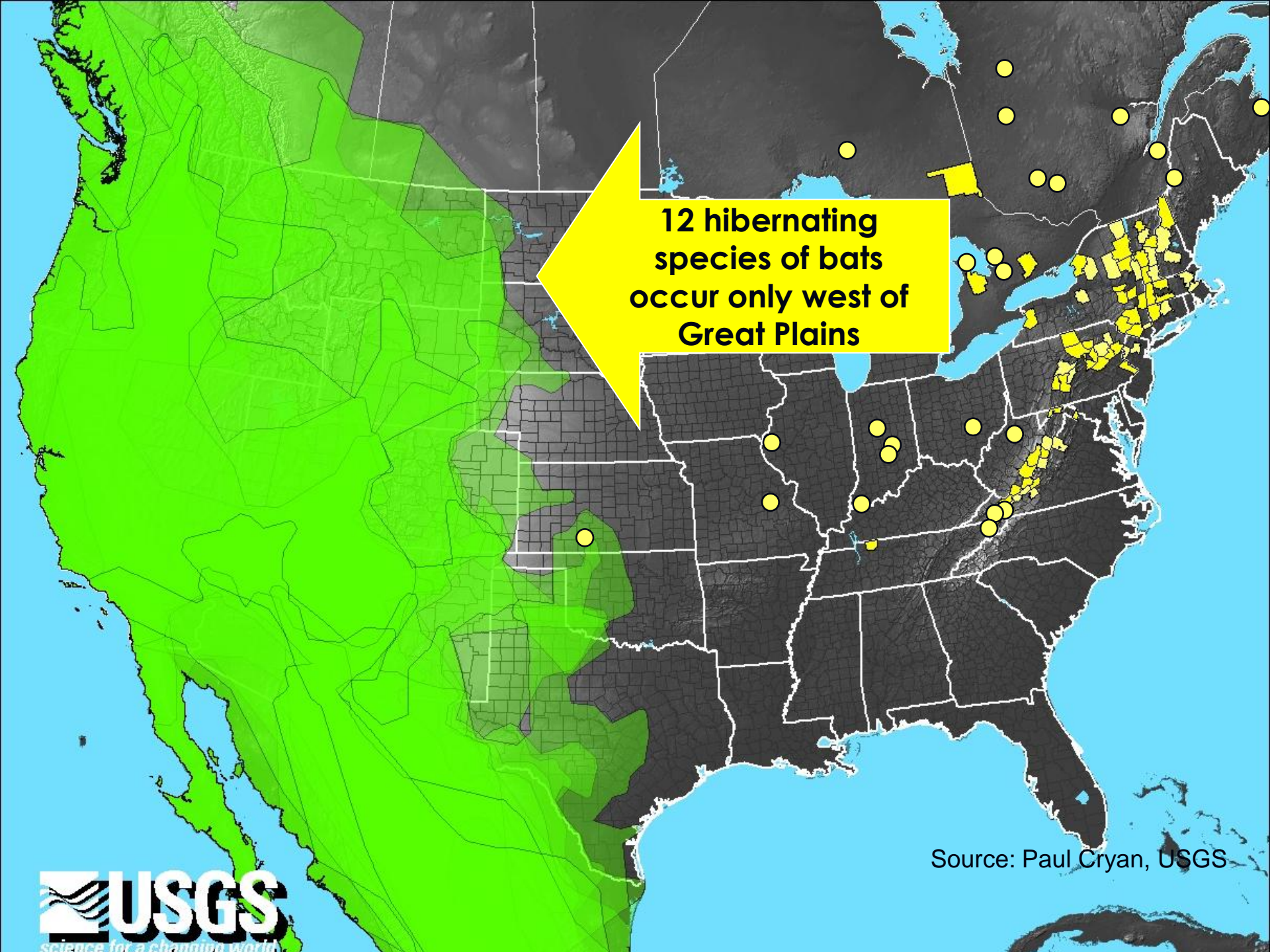
Eastern small-footed bat
Northern long-eared bat
Tri-colored bat
Little brown bat
Big brown bat



Eastern small-footed bat
Northern long-eared bat
Tri-colored bat
Little brown bat
Big brown bat
Cave bat

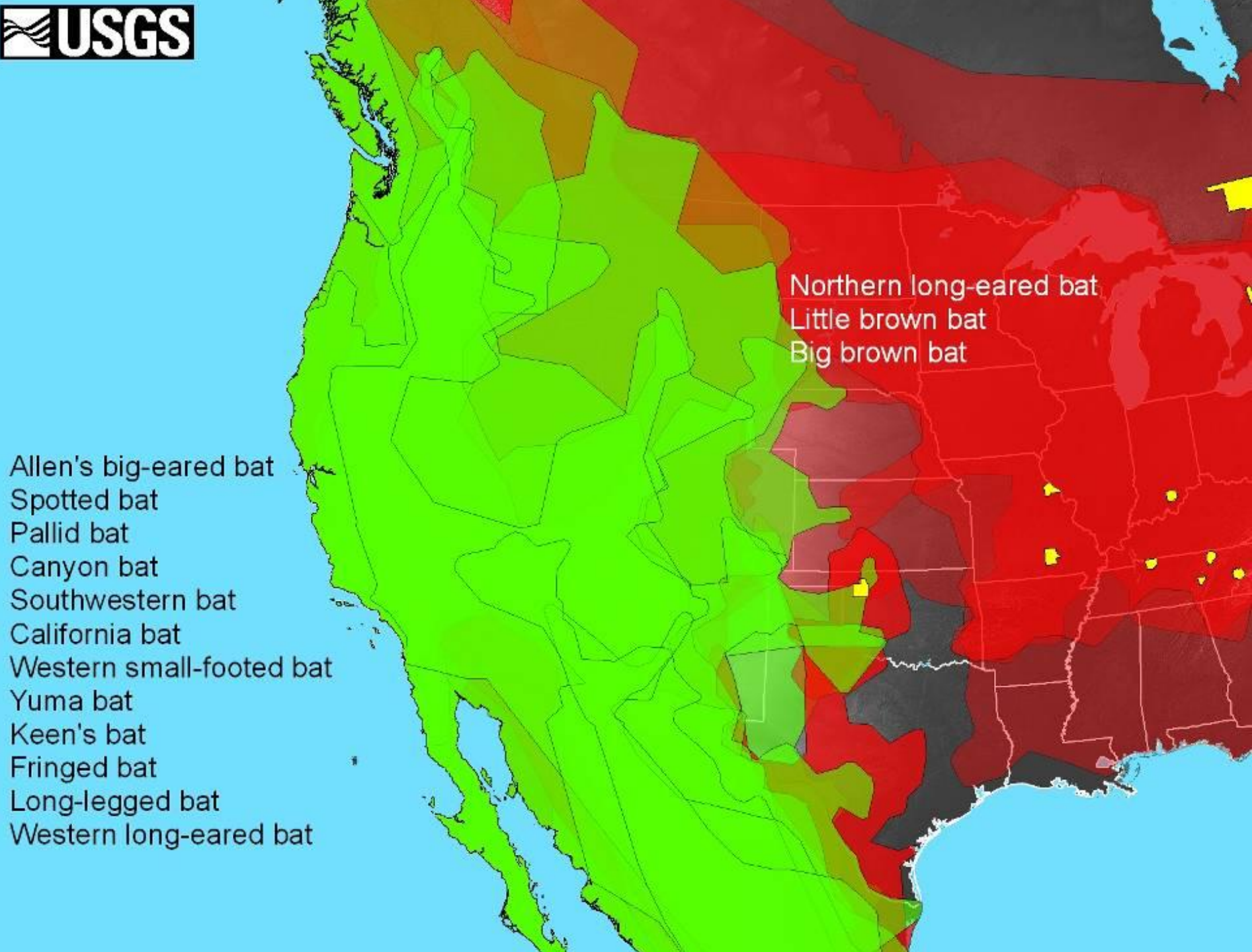


- Eastern small-footed bat
- Northern long-eared bat
- Tri-colored bat
- Little brown bat
- Big brown bat
- Cave bat
- Southeastern bat

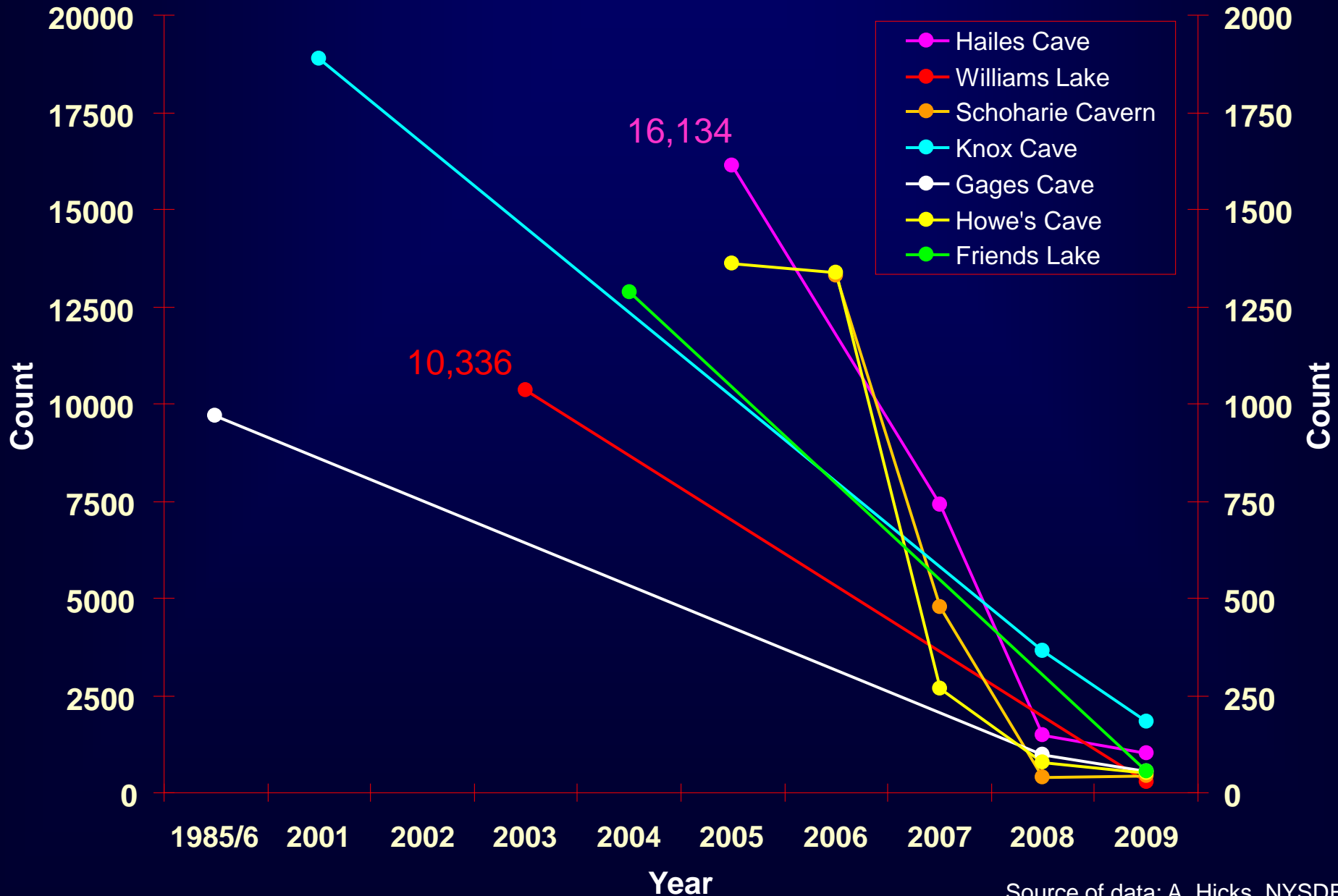


12 hibernating
species of bats
occur only west of
Great Plains

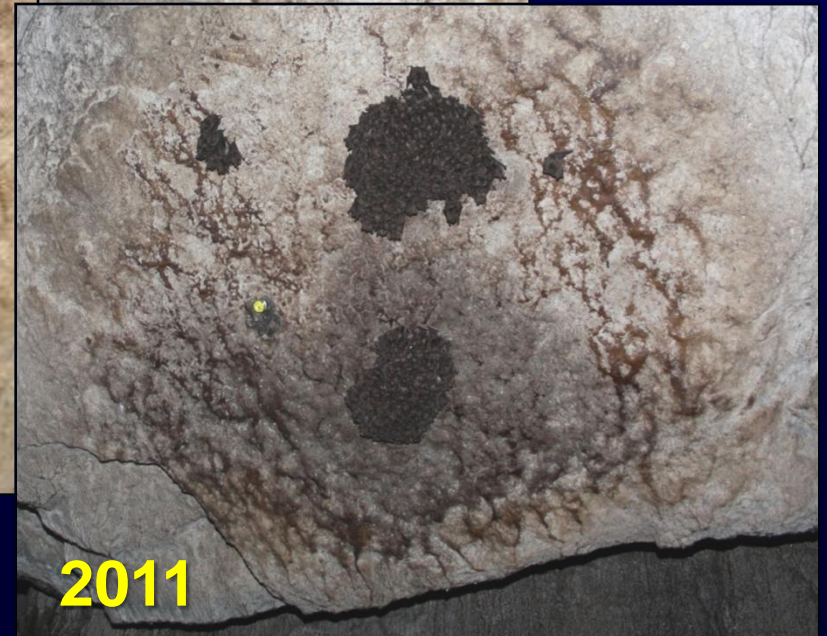
Source: Paul Cryan, USGS



New York Sites - Complete Counts



Glen Park, NY



Photos Courtesy of Ray Rainbolt, Fort Drum
and Robyn Niver, USFWS

Simulations of Extinction for *Myotis lucifugus*

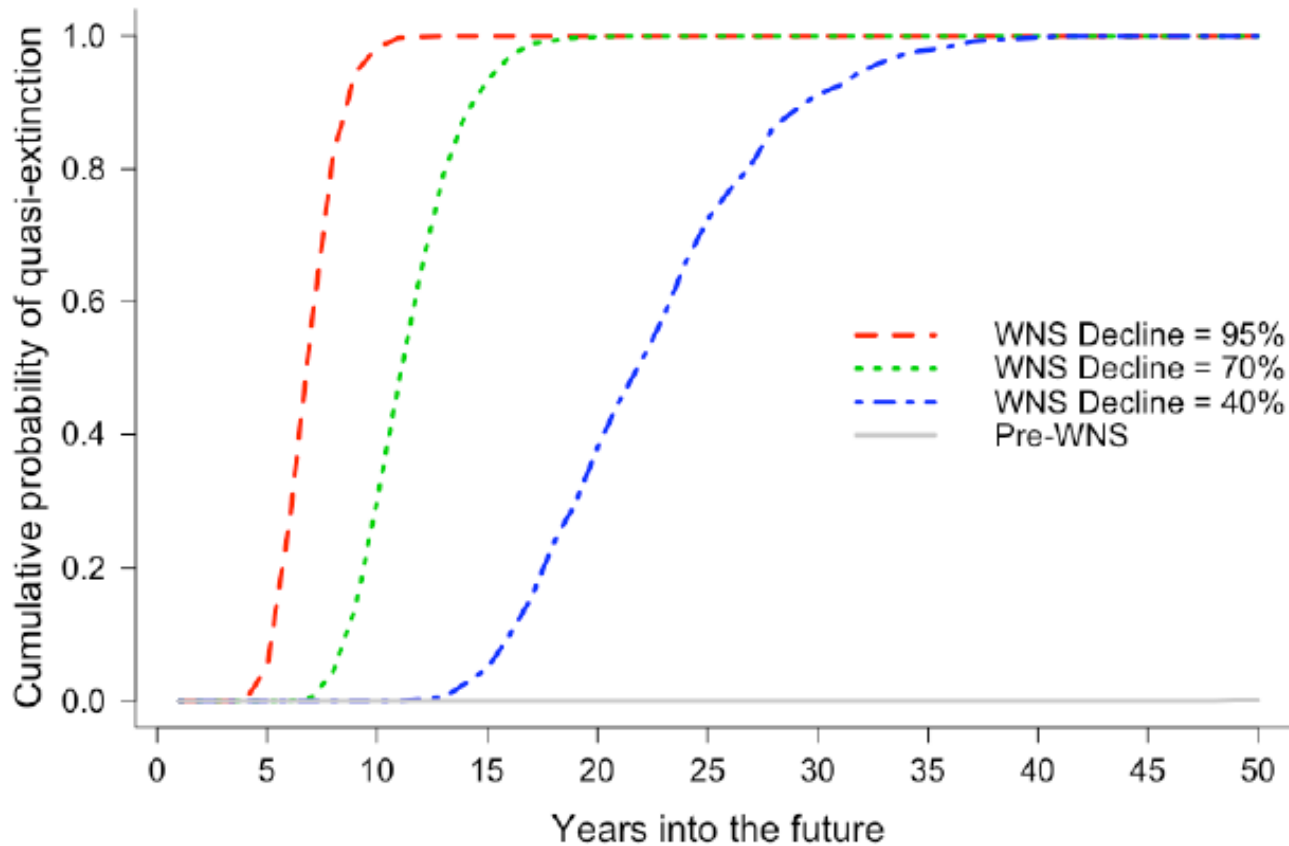


Figure 4.

Frick, Reynolds, Pollock, and Kunz - 2009



What We Know About WNS

Impacts to bats:

- Over 95% mortality at many affected hibernacula
- Behavioral and physiological effects
- 6 cave bat species affected, w/ fungus detected on 3 additional
- Susceptibility may differ by bat species or with microclimate



What We Know About WNS

The Disease:

- Specific fungal infection is common to affected sites and defines the disease
- Bats can become infected from an affected environment
- Bat-to-bat transmission has been demonstrated – NWHC



What We Know About WNS:

The Fungus:

- Optimal growth at 5-14° C
- Genetically similar fungal isolates found at affected hibernacula and in sediment
- The fungus can persist in caves in the absence of bats
- Conidia (spores) have been found sticking to exposed gear
- Genome has been sequenced - Broad Institute, NWHC
- *G. destructans* has been found on European bats, without the disease



Geographic Spread

Transmission: Bat-to-bat

Little brown bat movement to summer colonies from Mt. Aeolus, VT hibernaculum

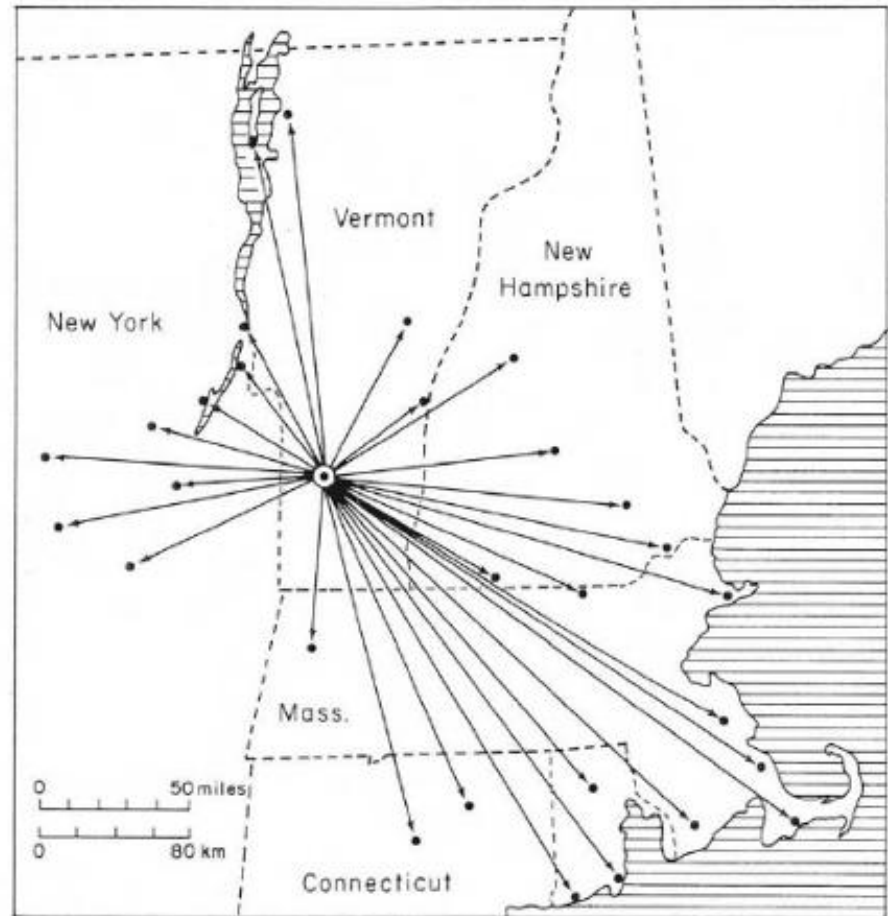


Fig. 2. Recoveries of *Myotis lucifugus* banded at a large hibernating colony on Mt. Aeolus. Many additional recoveries were also secured by W. H. Davis and Hitchcock (1965), and only the more distant places of recovery are shown here.

Geographic Spread

Transmission:

Bat-to-bat

Little brown bat movement to summer colonies from Mt. Aeolus, VT hibernaculum

Anthropogenic

Movement of people from cave to cave



General Research Priorities

- Disease transmission
- Cause of mortality
- Treatment and control
- Diagnostics and surveillance
- Etiology and persistence of *Gd*
- Conservation
- Population monitoring



Some Accomplishments in Managing WNS

- WNS investigation team and partnerships
 - Coordination structure and Task Groups established in 2008
- Support for research and state response
 - ~\$7 million FY 07-10 (~77% of total FWS expenditure)
- Guidance:
 - Containment
 - Structured Decision Making (SDM) initiatives
 - Protocols: rehabilitation, surveillance-monitoring, genetics...
- National and state planning



WNS National Plan - Purpose

- Guides Federal, State, and Tribal agencies, and partners in response to WNS
 - Meant to integrate with, not replace, state or local planning
- Establishes an organizational structure with oversight up to the Washington level
- Formally establishes 7 working groups



WNS National Plan

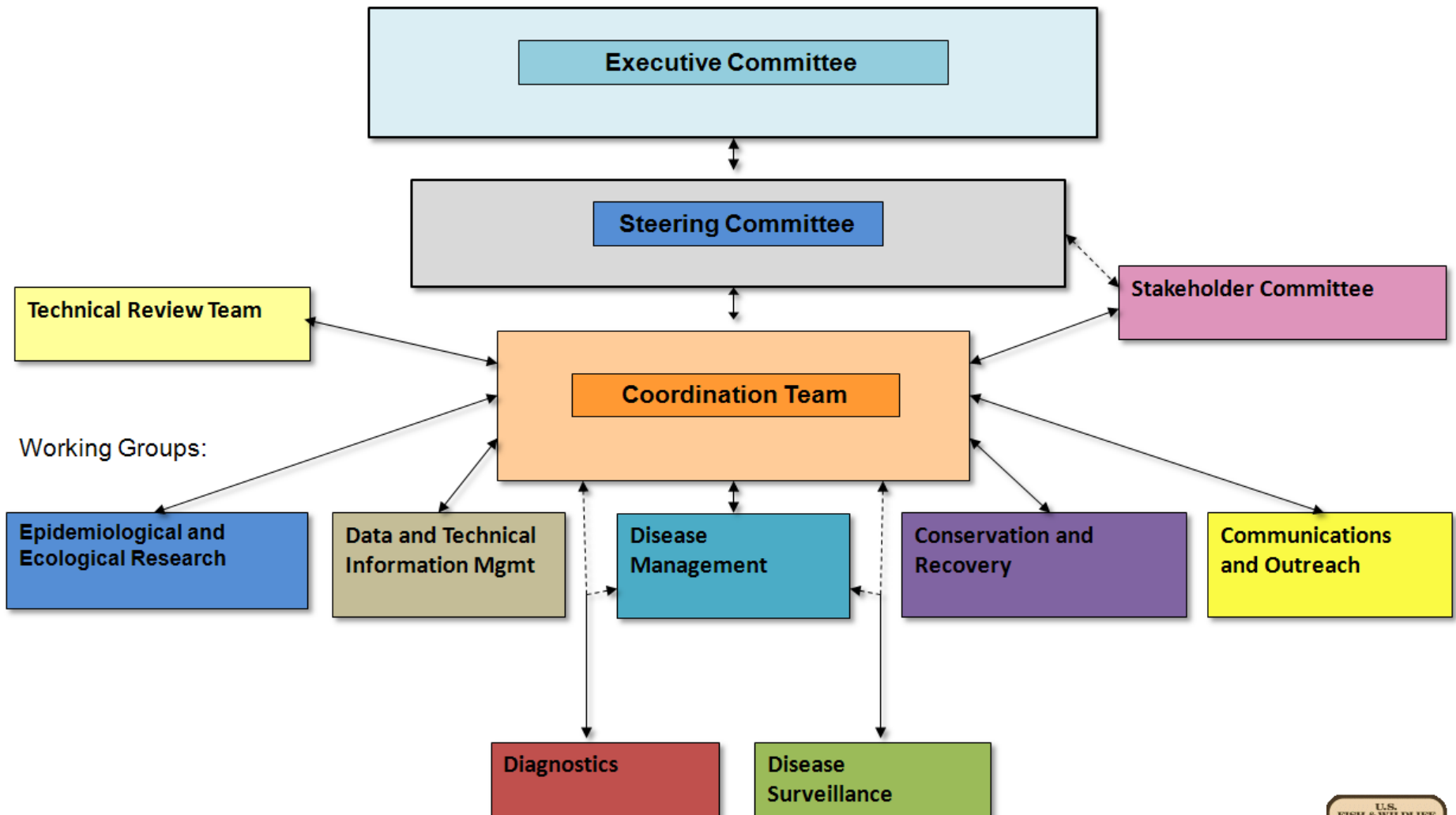
Two stages:

- National Plan
 - The framework - not prescriptive
 - A static document
- Implementation Plan
 - Identifies players & costs
 - Provide guidance
 - Adaptive plan, web based

(coming soon: www.whitenosesyndrome.gov)



WNS Organization Structure (Draft 7.6)



WNS National Plan

How can you contribute?

- Keep updated: NSS or FWS websites
- Participate in working group or committee
- Share your expertise and experience
- Coordinate w/ FWS Region and State POC
- Decon, contact land managing agency before caving
- Outreach: Get the word out about WNS



Thank you for your attention and the opportunity
to present on this devastating disease

