



Environmental  
& Statistical  
Consultants

# Forest Bats of Minnesota

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# Bats of Minnesota



Eastern Red Bat in Flight

# Insectivores

- Bats save the agricultural community roughly \$3 billion dollars a year in pest control
- A single little brown bat, which has a body no bigger than an adult's thumb, can eat 4 to 8 grams (the weight of about a grape or two) of insects each night
- The loss of the one million bats in the Northeast has probably resulted in between 660 and 1320 metric tons of insects no longer being eaten each year by bats in the region

# Bats of Minnesota

- Tri-colored bat
- Big brown bat
- Silver-haired bat
- Eastern red bat
- Hoary bat
- Northern long-eared bat
- Little brown bat

# Bats of Minnesota



Tri-Colored Bat



# Bats of Minnesota



# Bats of Minnesota

- Big Brown Bat



# Bats of Minnesota



Silver-haired Bat



# Bats of Minnesota



Eastern Red Bat

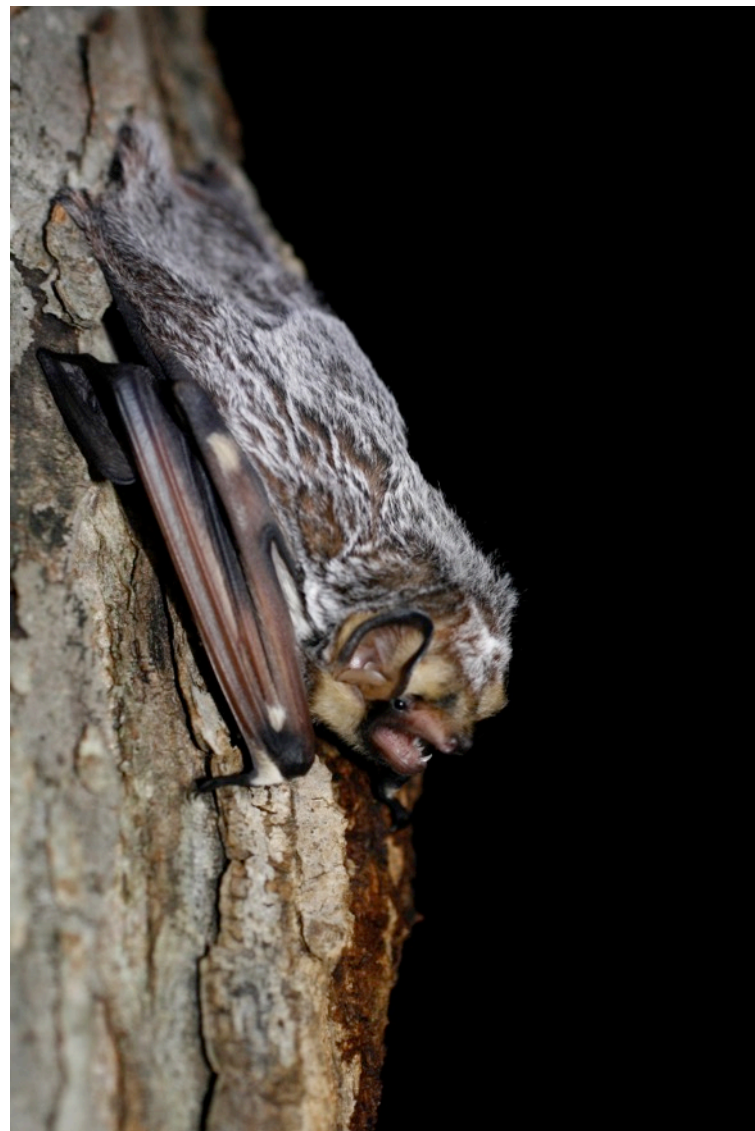






# Bats of Minnesota

- Hoary Bat





Northern Long-eared Bat

# Bats of Minnesota



- Little Brown Bat



# Lifecycle of bat

- Fall
  - August 15 – November
  - Swarming and mating
  - Move towards hibernaculum

# Fall Swarm



# Lifecycle of bat

- Winter
  - October – April
  - Move into hibernating locations
  - Typically caves and mines
  - 1 to 1,000's of bats together



# Hibernating Indiana Bats



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# Lifecycle of bat

- Spring
  - April 1 to May 14
  - Begin migrating to summer maternity sites
  - Can travel between 8 – 350 miles to maternity sites



# Lifecycle of bat

- Summer
  - May 15 – August 15
  - Females form maternity colonies (30 – 60 bats)
  - NLEB forage and roost mainly in upland, mature forests with occasional foraging over forest clearings, water and along roads
  - Give birth and raise pups
  - Pups able to fly within 3 – 5 weeks
  - At the end of season maternity colonies will begin to disperse to head to fall swarming sites

# Maternity Roost



# Foraging and Roosting Habitat

- NLEB foraging habitat:
  - Typically more cluttered, interior forest than other species
  - Smaller foraging range than other species (~1,000 ha in Indiana)
- NLEB roosting habitat:
  - Switching roosts ~ 3 trees every 5 days
  - Use a variety of different species of trees and different size trees
  - Smaller ranges than other forest bat species

# Survey Methods

- Fall swarm and migration
  - Use harp nets around known swarm sites and hibernaculum to get a census of species using the hibernaculum
- Spring migration
  - Again use harp nets to capture bats exiting the hibernaculum and attach transmitters to know direction and distance for spring migration



# Harp Traps





# Survey Methods

- Winter hibernaculum
  - Full cave surveys to count and ID species present
  - Also check for presence of White Nose Syndrome (WNS)

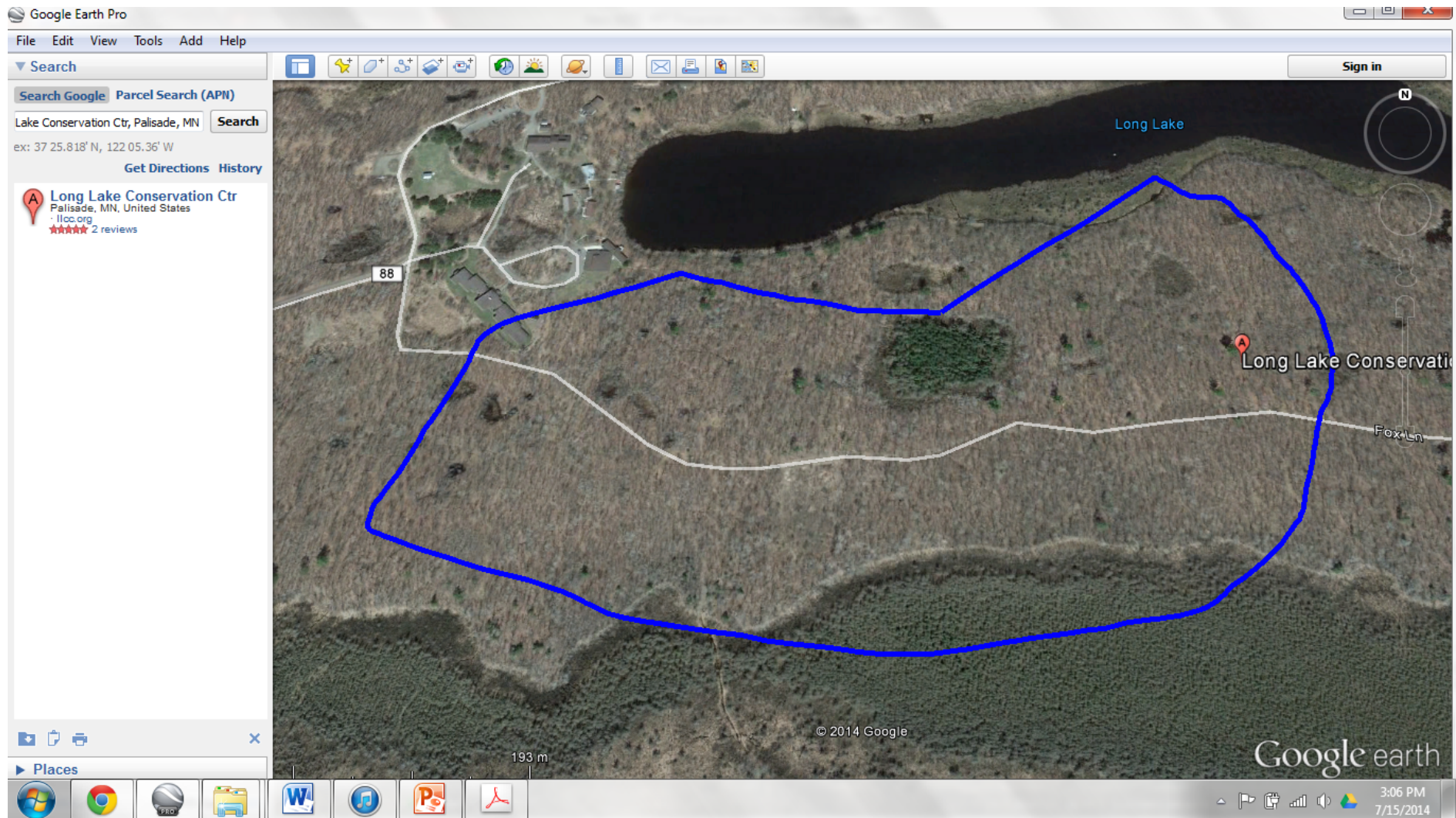


# Survey methods

- Summer surveys
  - For NLEB and MYSO it is spelled out by USFWS
  - Surveys between May 15 and August 15
  - 1) Habitat assessment
  - 2) Acoustic surveys
  - 3) Mist-net surveys
  - 4) Radio telemetry



# Summer Surveys

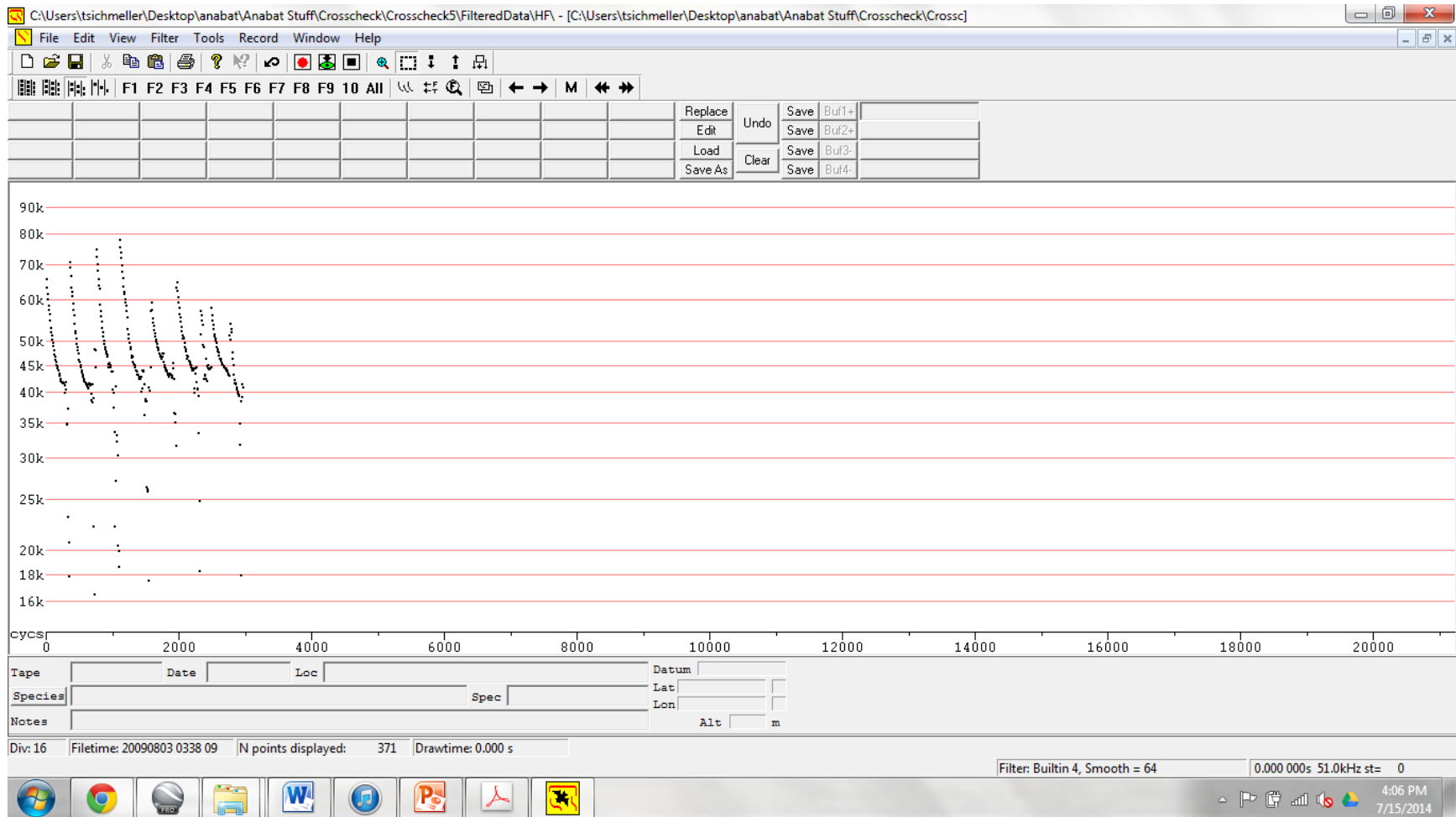




# Summer Surveys



# Summer Surveys





# Summer Surveys



# Summer Surveys





# Summer Surveys



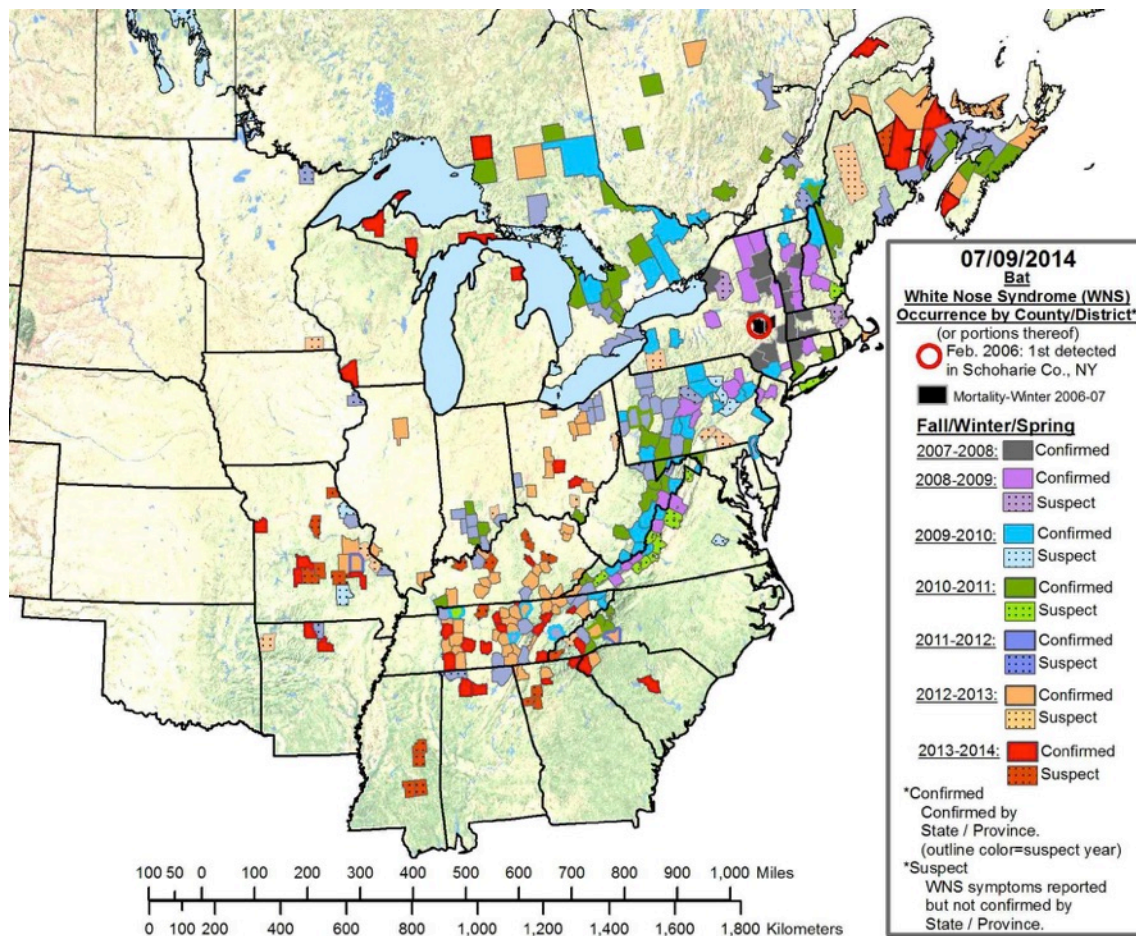
# Threats to bats

- White Nose Syndrome (WNS)
  - Confirmed at Soudan Underground Mine State Park and Forestville/Mystery Cave State Park
  - Spreading west
  - WNS has killed more than 5.7 million bats in eastern North America.
  - In some hibernacula, 90 to 100 percent of bats have died





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Map by: Lindsey Heffernan, PA Game Commission

# Threats to bats

- Other threats
  - Wind turbines
  - Habitat loss
  - Hibernaculum disturbance



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