

Wisconsin Bat Monitoring News

Volume 1, Issue 1

May 2011

Special points of interest:

- At this point in the year, Wisconsin's bats are either leaving winter hibernacula to head to summer roosting habitat, or returning from southern overwintering habitat
- For more information about bat monitoring in Wisconsin see: <http://wiatri.net/inventory/bats/index.cfm>

Inside this issue:

BATLAS Project	2
Ledge View Nature Center	2
Bat Roost Monitoring Project	2
Wisconsin Bat of the Month: Little Brown Bat	3
White-nose syndrome Update	3
Acoustic Monitoring update	3
Wisconsin Bat Festival	5

Wisconsin Cave Bats Listed as Threatened

Statewide— The last week of September brought the much needed final push for the emergency listing of four cave bat species in Wisconsin. The Natural Resources board voted unanimously to emergency list the little brown bat, the big brown bat, the Eastern pipistrelle and the Northern long-eared bat as state threatened and emergency list the fungus associated with White-nose syndrome, *Geomyces destructans* as invasive. Listing the four bat species as threatened allows for protection of said species, and listing the fungus as invasive allows the WDNR to regulate the transport, transfer and possession of it. In October, the Natural Resources board voted to accept revisions to the invasive species law which will allow the department to better manage the spread of White-nose syndrome through early detection and requirements for decontamination. Any person en-

gaged in caving at this point forward must completely decontaminate their clothing and equipment before entering another site, and no caving gear used in a cave or mine outside of Wisconsin may be used in a cave or mine in Wisconsin. People taking a walking tour of a cave or mine are exempt from complete decontamination, however, they will be asked not to take anything into the cave that may have been in a cave or mine outside of Wisconsin. These rules are in effect to help slow the spread of White-nose syndrome, and give researchers the needed time to better understand the disease and investigate possible treatment options. On December 8 2010, the NR board voted unanimously to pass the same rules as permanent. Wisconsin's four cave bat species are now officially protected under Wisconsin law.



Little brown bats, one of the newly protected species, hibernating in winter

Survey Gives Wisconsin Bats a Clean Bill of Health Page 4

Wisconsin BATLAS Project

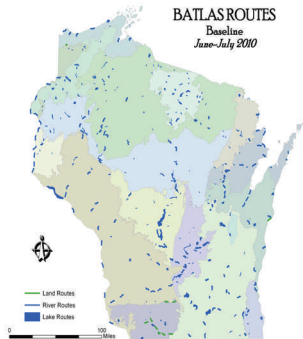
Statewide- Over the summer and fall of 2010, the Wisconsin bat monitoring program hired 15 contractors to complete 350 acoustic surveys and assess 800 cave and mine sites for bat hibernacula suitability.

Acoustic surveys were completed in every county, and ecological landscape. Every night from June 6 through July 31

contractors completed predetermined routes on rivers, lakes and on land. 8 km routes were chosen according to size and navigability of water bodies. Several walking routes were included in the southwest portion of the state where water is limited.

In August, contractors switched to locating and assessing cave

and mine openings for suitability as hibernacula for bats. Countless hours were spent locating and contacting landowners to gain permission for assessment. Underground crews visited over 100 caves and mines over the winter to complete population estimates and White-nose syndrome surveillance. Continued on page 2



Over 300 acoustic survey routes done by contractors and volunteers

BATLAS Continued

Many thanks and appreciation go out to our summer field crew.

Over 100 caves and mines were assessed and many bats have been found. Underground crews continued assessments until mid December. Full WNS surveillance took place January through April. Surveillance entailed looking for the fungus, conducting population estimates, and assessing preferred hibernacula conditions, such as temperature and humidity.



2010 contractors for summer acoustic surveys and winter hibernacula surveys

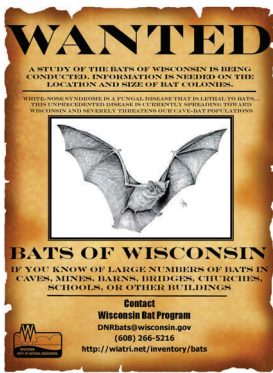
“The exclusion is an attempt to prevent their cave from being a jump site for the fungus to important, large hibernacula such as Neda mine”

Ledge View Nature Center

In early fall 2010, the Wisconsin bat monitoring program contacted Ledge View Nature Center to begin conversations about their cave and bat population. Because of their unique situation and because they are a tourist site, they agreed to attempt a study where bats were excluded from the cave for the winter. The exclusion is an attempt to prevent their cave from being a jump site for the fungus associated with White-nose syndrome to important large hibernacula such

as Neda mine. If a person brought the fungus into the cave, it won't be transferred to Neda mine now that there are few to no bats at Ledge View Nature Center. Many people visit the cave at Ledge View Nature center each year, and this is an attempt to slow the spread of the disease and eliminate the risk of human transfer. Protocols such as those use at Mammoth Cave National Park were implemented at the entrance. Visitors are asked whether they had been in a

cave or mine outside of Wisconsin in the last five years, and if so could they leave anything they took into that cave in the car or at the front desk. These simple protocols could prevent the transmission of the fungus by humans to tourist sites in Wisconsin. In addition, cavers who frequent the cave were provided with dedicated equipment to use solely at Ledge View nature Center cave.



“Bats Wanted” posted all over Wisconsin by contractors

Bat Roost Monitoring Project

Bat roost monitoring has been conducted by volunteers for the project for several years now, however due to the immediate need to gather baseline data about bats in Wisconsin before White-nose syndrome occurs in the state, a major push was put forth this summer to find all known summer roosts in Wisconsin. Several articles were published stating the programs need to know where bats were roosting, and “bats wanted” posters

were placed all over the state. While it will take time to locate all known roosts, the effort was successful. Over 300 people contacted the program letting us know where bats were roosting. Citizens who talked with us were asked if they were interested in monitoring their roost for us, and also learned about White-nose syndrome and how they can help. Many people agreed to monitor their roost for us, however, only 20 or so volun-

teers actually submitted data. We will continue the project every year. Roost monitoring data is as important as ever, and we hope to have many more sites monitored over the summer of 2011. Bats will begin returning to their roosts in May. Look for Big Brown bats and Little brown bats in spring as they begin using bat houses, barns and attics.

Wisconsin Bat of the Month

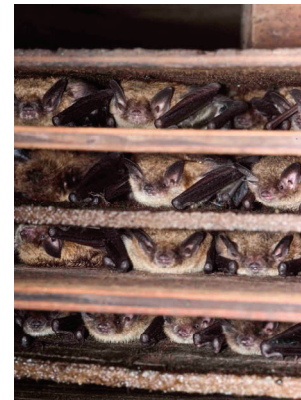
Little Brown Bat: *Myotis Lucifugus*

Currently, the little brown bat is the most common bat in Wisconsin. They are about the size of a human thumb, and have brown fur and black wings. In summer, little brown bats commonly use man-made structures such as bat houses, attics and barns for day roosts, but may also use tree hollows. Females form large maternity colonies of tens to hundreds of bats and prefer very warm temperatures, sometimes over

100 degrees. Males and non-reproductive females may roost singly, or with a few other bats, and do not prefer such high temperatures. Little brown bats prefer to forage over water or along edge habitat because both habitats have diverse insect composition. Little brown bats eat a diversity of insects including mosquitoes, flies, moths and beetles. Female little brown bats can eat their weight in insects each night, and a normal little brown bat can consume thousands of insects each night..

In winter, little brown bats make local long distant migrations of up to 250 miles to caves and mines around the state. While hibernating, these bats may form large clusters of hundreds of bats on the ceilings of caves and mines. Little brown bats may hibernate in the same sites as other cave bat species, although often in different parts of the site.

Little brown bats use echolocation to locate and capture prey, and have a high frequency call (above 35kHz).



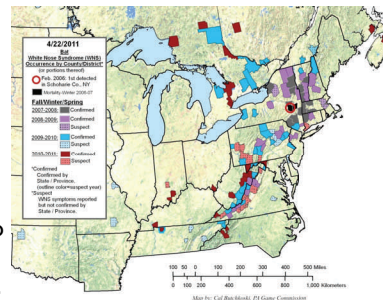
Little brown bats roosting in a bat house in Casseville Wisconsin

White-nose Syndrome Update

New insights into White-nose syndrome and the fungus *Geomyces destructans* (Gd) is produced every month by researchers. Paul Cryan and others in a recent study propose extreme dehydration as a cause of death in WNS infected bats. The wings of bats play a large role in thermoregulation and homeostasis. Bats infected with the fungus Gd most commonly have holes and loss of wing integrity when the fungus invades the tissue. Cryan sug-

gests that the invading fungus may increase evaporative surface area or may wick water away in areas of intense fungal infection. Bats seen leaving hibernacula in winter may be looking for water in addition to insects to feed on.

As of April 2011, neither WNS nor Gd have been found in Wisconsin's cave hibernating bats. Look for updates as we continue monitoring Wisconsin's bat populations.



Recent USFWS map of sites with WNS and *Geomyces destructans*

“The invading fungus may increase evaporative surface area or may wick water away in areas of intense fungal infection”

Acoustic Monitoring Update

Because of the BATLAS project, most acoustic detectors around the state were in use every night possible by contractors and were not available for citizen monitors to conduct surveys, however a few volunteers accompanied contractors, and a few conducted surveys by themselves. Data is still being analyzed, however, no doubt almost all species were recorded by volunteers, Surveys conducted by volunteers also allow for inferences into

which types of habitat bat species prefer to forage.

The program has several new detectors located around the state for volunteers to use. The program and its regional coordinators will also conduct several training sessions around the state for those interested in conducting acoustic surveys. Contact the Wisconsin Bat Program for more information about training sessions. Acoustic surveys season begins again

in April of 2011 and continues thru September. Baseline data that can be gathered before White-nose syndrome occurs in Wisconsin is extremely useful in looking towards the future of bats in the state, and aid in conservation and recovery efforts.



Acoustic Survey in Milwaukee

Survey Gives Wisconsin Bats a Clean Bill of Health



A healthy Eastern pipistrelle hangs hibernating in a cave in southwest Wisconsin

A recently completed state-wide survey of known bat wintering sites in Wisconsin showed no sign of white-nose syndrome, a fungus that kills bats by invading their skin and depleting their energy reserves during winter hibernation. The invasive fungus currently exists in 18 states and four Canadian provinces and has been linked to the death of more than one million bats since 2007. White-nose syndrome (WNS; scientific name *Geomyces destructans*) has been confirmed within 190 miles of Wisconsin, well within the dispersal range of Wisconsin's most common bat species, the little brown bat.

"It is a relief to not find any signs of the disease in Wisconsin this winter, but it is likely only a matter of time before it does appear," said David Redell, a bat ecologist with the Department of Natural Resources. "Since it is a near certainty WNS will show up, possibly as soon as next winter, we are moving rapidly to survey our known bat colonies, seek out and document new colonies and develop plans aimed at minimizing the spread and effects of white-nose syndrome in Wisconsin." Bats congregate in large numbers during winter weather in Wisconsin hibernacula (caves and mines). As many as 300,000 bats winter in the state with up to 143,000 in a single hibernaculum in east central Wisconsin. Redell says the arrival of white-nose syndrome in a large colony like this could easily kill many thousands of bats and spread the fungus to other bat populations as surviving bats emerge in spring to carry the fungus to other locations.

Survey crews monitored more than 100 possible hibernacula

in the state representing more than 90 percent of the known underground locations over the winter of 2010-11. Redell says this effort represents one of the most extensive and thorough surveillance efforts in North America. The DNR has been aided in this endeavor by private landowners protecting sites, commercial cave operators educating their visitors, and recreational cavers practicing decontamination of their gear.

DNR staff and partners also are working to establish volunteer agreements with hibernacula owners, hold stakeholder meetings and increase the number of outreach and education programs. Scientists and others working on the problem will concentrate on coming up with workable and effective solutions for the disease when it arrives, hopefully saving as many bats as possible for recovery efforts. Protecting hibernation sites in Wisconsin is important because of the state's high concentration of bats.

"Wisconsin has one of the highest concentrations of hibernating bats in the Midwest," said Redell. "Bats from our neighbor states Illinois, Indiana, Minnesota, Iowa and Michigan spend winters here so anything that happens to our hibernacula has far reaching impacts on the summer landscape."

A recent study, published in the journal *Science*, summed up the potential impacts that loss of our bat populations might produce. The cooperative study, authored by scientists from the University of Pretoria (South Africa), U.S. Geological Survey, University of Tennessee and Boston University, estimate that pest-control services provided by insect-eating bats in the United States range from a

low of \$3.7 billion to a high of \$53 billion a year. Bats also eat mosquitoes, which are not only pests but can carry deadly diseases like the West Nile Virus, and harmful invasive species such as gypsy moths.

Wisconsin currently is home to four species of at-risk cave bats. The little brown bat, the northern long-eared bat, the eastern pipistrelle and the big brown bat all have suffered drastic declines in states where bats have become infected with WNS, with losses approaching 100 percent of cave bat populations. A mortality rate this severe means that these cave bat species face a very real threat of extinction.

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 according to the *Science* researchers. This amount represents the entire body weight of each individual bat, which is equivalent to a 100 pound human eating about 400 quarter-pound cheeseburgers every night. In terms of the number of insects eaten it adds up--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, say the *Science* authors.

"The lost consumption of this amount of insects could have many effects to the economy and ecosystem services these animals provide," adds Redell. "In addition to agriculture, insects impact forest and human health. More than two-thirds of all bat species in the world are insect-eaters which includes all 8 species of insectivorous bats found in Wisconsin."

WISCONSIN DNR
WISCONSIN BAT
MONITORING
PROGRAM



[http://wiatri.net/
inventory/bats/index.cfm](http://wiatri.net/inventory/bats/index.cfm)

Wisconsin Bat Festival

April 16th 2011 marked the first Wisconsin Bat Festival. The festival was a great success when over 1500 people attended. The festival consisted of kids activities, a build-your-own bat house workshop and speakers throughout the day, including the headlining speaker Rob Mies from Organization for Bat Conservation who brought live bats to the fest. Kids activities included a "be a bat scientist" station, a life-sized cave, as well as face painting and other bat-related activities. In the "be a bat scientist" station, participants removed toy bats from a net and completed measurements of the bats. Participants wishing to explore the cave donned caving equipment and decontaminated after exiting the cave. The build-your-own-bat house workshop was a success with

50 bat houses leaving the fest fully completed and ready for mounting. The bat houses were made from recycled barn wood that came from a barn that was built in 1890.

Many thanks to the over 70 volunteers as well as Natural Resources Foundation, Wisconsin DNR, ATC and Organization for Bat Conservation who helped make the 2011 festival a success. Look for more information about next year's bat festival in the coming months.



Festival attendees look at Camilla the Malayan Flying fox as Rob Mies shows her to the audience. Photo: Jennifer Schehr

The Wisconsin Bat Monitoring Program is run through Wisconsin Department of Natural Resources, and relies entirely on grants and funding support from Wisconsin's citizens and individuals interested in bat conservation. Get involved and help Wisconsin's bats in several ways:

Become a citizen monitor and conduct acoustic or roost surveys in the summer

Donate to the Wisconsin Bat Fund (<http://www.wisconservation.org/>)

Put up a bat house in your backyard to provide habitat for bats. Bat house plans and other information can be found on our website:

(<http://wiatri.net/inventory/bats>)



If you have suggestions for articles, or have a story you would like to contribute, contact Heather Kaarakka at heather.kaarakka@wisconsin.gov or 608-266-2576.



**ENDANGERED
RESOURCES**