If you see sick or dead bats in winter, please contact the program!

Volume 5, Issue 1 January 2016

BREAKFAST WITH THE BATS

Next summer's bat viewing field trips will occur before sunrise on Saturday, July 30 & Sunday, July 31 in southwest Wisconsin.

To learn more visit :
www.wisconservation.org

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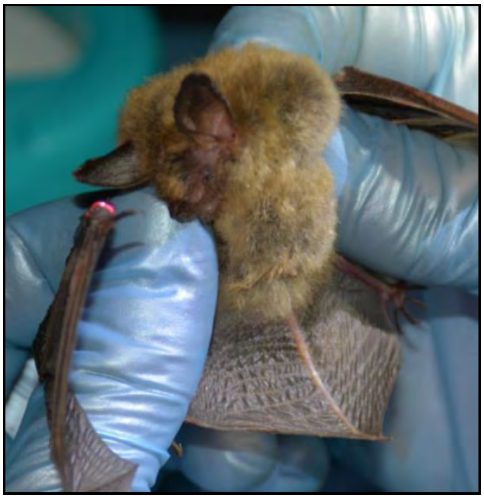
Bats of the Brule River

WBP Staff

The Wisconsin Bat Program coordinated acoustic and mist-netting bat surveys which were conducted on the Brule River State Forest property during the summer of 2015 as part of the Department's biotic inventory. The Bureau of Natural Heritage Conservation led the bat surveys which aligned with Department needs such as developing a greater understanding of species distribution and summer habitat use by cave dwelling bats, with emphasis on the recently federally listed northern long-eared bat.

In total, six of the seven bat species known to occur in Wisconsin were observed through two survey methods during the summer of 2015. The eastern pipistrelle (*Perimyotis subflavus*) was notably absent, although based on recent and historical observations, this species has only been found in the Western Cou-



Male northern long-eared bat in-hand. Red bands make this species easy to identify in caves & mines.

Continued on page 4

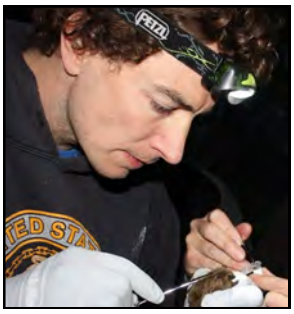
WBP Participates in Bat Week

Jennifer Redell

Bat Week is an annual, international celebration of the role of bats in nature. In 2015 Bat Week was October 25– 31. Partnerships are the key to Bat Week's success. This amazing collaborative effort builds upon partnerships and strategically leverages resources and networks to reach a large and diverse audience with key bat conservation messages. Together, Bat Week partners were able to reach over 159 million people during Bat Week! Additionally, **by joining forces, partners all over the world were able to host over 60 bat house building events around the world achieving a new World Record - the creation of 1,341 bat houses!** The WBP constructed 20 bat houses in contribution to the world record attempt.

The Dark Knight drills. Even Batman participated in National Bat Week by constructing a bat house with the help of volunteer Andria Blattner.

The WBP was highlighted on Wisconsin Public Radio's Larry Meiller Show and Madison's WISC-TV "Live at Four" as part of Bat Week. You can listen to the radio interview online by searching "Larry Meiller, bat week".



Acoustic Project Update

J. Paul White

I would like to thank everyone who donated their time and effort this year while conducting acoustic bat surveys for the Wisconsin Bat Program.

In 2015, Wisconsin experienced a colder than average spring which suppressed bat monitoring efforts, with the majority of surveys taking place in the summer residency period of June and July. In 2015, 399 acoustic bat surveys were uploaded to the WBP website. Of the 399 surveys, 367 returned complete acoustic results (92% success rate). Acoustic bat surveys were completed in 51 (71%) of the possible 72 Wisconsin counties, with Vilas (n=51) and Dane (n=46) counties contributing the most surveys this season (Figure 1, pg 12). Walking surveys consisted of roughly half of the acoustic surveys in 2015 at 179 (49%) successfully completed, followed by water surveys at 112 (30%) and driving surveys at 76 (21%).

The number of surveys increased dramatically from the spring movement period to the summer residency period. The mean number of bat encounters of all successful acoustic bat surveys followed the general trend of bat activity where bats are less conspicuous on the landscape in early spring as they migrate to Wisconsin or emerge from winter hibernacula to summering grounds; they then become more prevalent from May through August (Figure 2, pg 12).

Despite the invasive fungus that causes WNS spreading from one county in 2014 to seven additional counties by May 2015, little brown bats continue to constitute the majority of bat encounters on acoustic surveys in Wisconsin. However, Wisconsin is still early in the infection process, so the state may see significant losses of cave bat species (little brown, big brown, eastern pipistrelle and northern long-eared bats) in the coming years which reemphasizes the prominence of acoustic bat surveys now and in the future.

Somewhat surprising, was the data from the driving transects had the highest bat species diversity (3.9) in 2015 compared to the other methods (paddling 3.1 and walking 2.3), perhaps due to the large distances (20-30 miles) covered and as a

Continued on page 12

Roost Project Update

Heather Kaarakka

This summer's maternity roost monitoring effort was a great one. Volunteers found, reported and counted 19 new roosts; 93 total sites were monitored, and over 100 volunteers conducted over 400 emergence counts this summer! **THANK YOU** to our volunteers for their support and work this summer! We would not be able to continue the project without you.

Several sites were again monitored bi-weekly or weekly (or more often!) significantly adding to the important datasets from these sites. Sadly, several sites monitored often saw declines in populations. One site in Door County had half the population it has had in previous years and may already be seeing impacts from WNS.

We are happy to report that for the first time in the state, an eastern pipistrelle roost was monitored! 1-2 eastern pipistrelles roost on a porch near Somerset in the spring and fall during migration. We are very excited to learn about this site and look forward to next year's surveys!

As well, this year we started the **Great Wisconsin Bat Count**! This effort is similar to the Christmas Bird Count where we conduct as many surveys as possible across the state in a single weekend. Two Great Wisconsin Bat Counts were completed in early June and early August capturing the time periods before and after pups begin to fly, allowing us to look at recruitment. The June survey counted 7,800 bats and the August survey 10,400 bats! Feedback of the effort was positive and we will continue the Great Wisconsin Bat Count in the coming years. The project will help monitor bat colonies pre and post-WNS impacts in the state.

Our yearly Bat Blitzes at Yellowstone Lake State Park resulted in 3,071 bats in June and 3,086 bats in August. The post-volancy count this year may have been be conducted too late in the season after adult bats begin to leave, so the 2016 post-volancy efforts will be in late July to try and record all members of the colony.

This year's roost report is available on the Bat Program Website on the roost monitoring page (see page 16). Enjoy! As always, if you wish to participate in the roost project in any capacity, please contact me. (Contact info on back)•

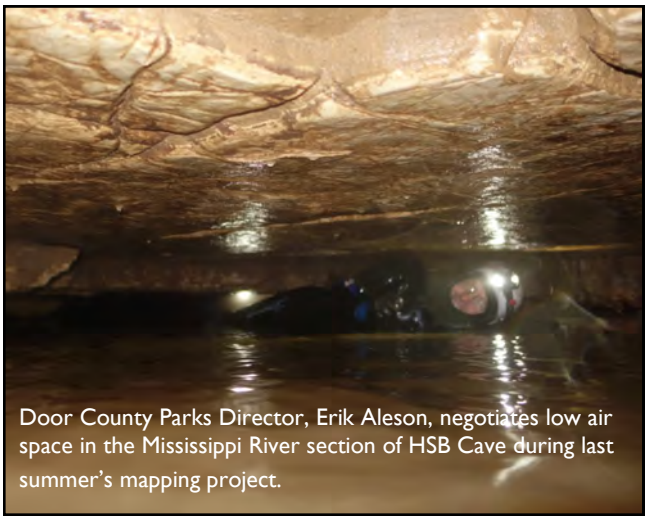
Cave & Mine Catalogue Update

Jennifer Redell

Highlights from the past year of subterranean work include a close encounter with a black bear in a bat cave, a resurvey of Horseshoe Bay Cave in Door County from the end of the current resurvey back to the Waterfall Room, the first public tours of Horseshoe Bay Cave, cave landowner outreach, installation of four bat-friendly cave gates, and several new hibernaculum discoveries.

Unfortunately last year's WNS surveillance resulted in the disapointing discovery of the disease across Wisconsin at 13 new sites and a loss of 70% of the bat population at the initial WNS affected mine in Wisconsin. In March and November 2015 we again joined forces with the University of CA- Santa Cruz and our DNR neighbors in MI and IL to continue facillitation of WNS tranmission research. Because we share bats with our neighboring states we occasionally cross state lines to assist with bat projects in other areas of the midwest. Summer brought intensive banding efforts at a number of roost sites around Wisconsin—we hope to spot some of those banded bats under ground this winter and begin to trace the connection between individuals' migration movements.

Speaking of banded bats, research partners, and our neighbor agencies, we were so excited to hear from



Door County Parks Director, Erik Aleson, negotiates low air space in the Mississippi River section of HSB Cave during last summer's mapping project.

Continued on page 8

First Evening Bat Recorded in Wisconsin

Although southern Wisconsin denotes the very northern edge of its range the Evening bat *(Nycticeius humeralis)* has never been recorded in Wisconsin. In August the WBP was conducting mist-netting associated with radio telemetry searches for eastern pipistrelle roosts in southwest Wisconsin when this unexpected visitor landed in the net. **The photo on the right shows the captured juvenile male evening bat, similar in appearance to a big brown bat but smaller in size.**

The evening bat occurs throughout the eastern United States from central Pennsylvania and the southern Great Lakes, west to north-central Iowa, southeastern Nebraska, central Kansas, Oklahoma and Texas; it is much more widespread and common in the southern part of that range.

Evening bats are not typically found in caves, and most or all probably winter in southern states where they may remain active throughout the year. These bats likely return north during the latter part of April, and form summer colonies in both natural and artificial sites. In many areas, hollow trees are used primarily, but many evening bats roost in buildings and barns. There are even a few records of them roosting under bridges. Females gather into maternity colonies while males roost separately, perhaps often singly. Two pups are typically born to each female during June and are on the wing within a few weeks. This species forages in a variety of semi-open habitats from wetlands and stream corridors to woodland edges and parks. They prey upon a great variety of flying insects from small beetles to flies and moths.

Future captures and acoustic surveys may help determine whether this individual was accidental in the state or if this species is summering and reproducing within Wisconsin's borders.

Bats of the Brule River (continued)

Though we were not able to tag NLEBs in the Brule, using radio telemetry, we can track female NLEBs to their daytime roosts elsewhere in the State (in this case an aspen snag in central Wisconsin) after nighttime mist net capture, tagging, and release.

lee Region and Southwest Wisconsin due to its' affiliation to an oak dominated landscape. However, the diversity of bat species observed in the Brule River State Forest is likely due to the variety of forest community types from aspen/white birch to spruce balsam fir to grasslands and northern hardwoods; with the Bois Brule River and its' tributaries likely acting as the main corridor for commuting and foraging bats.

Low acoustic and hand capture rates of big brown bats is consistent with what we currently know of this species' range, though this may be due to survey areas differing from known big brown foraging habitat because it was not the target species. Low capture of eastern red bats and silver-haired bats was somewhat surprising as they tend to be common in northern habitats; though again, low capture is most likely due to surveys targeting northern long-eared bat habitat which differs from these species' known foraging habitat.

Through two years of targeting the northern long-eared bat (NLEB) in Wisconsin in the hopes of addressing key life history questions, this species has been found in a full range of live to dying to dead trees as well as different tree sizes and species. While our surveys did yield the presence of NLEB's in the forest, the results were limited to a few observations (no maternity sites identified). One issue that presented a challenge in capturing NLEB's was the lack of maintained roads or trails (recreational or logging) that accessed the interior of the forest.

NLEB's are commonly found foraging or commuting on closed canopy trails and, with the exception of the Afterhours cross country ski trail area, the BRSF was overwhelmingly devoid of easily accessible areas to funnel NLEB's into capture areas. Forest transition zones and canopy gaps (man-made or natural) could be used to target this species in the future, assuming surveyors had ample time to locate, access and pre-survey these sites.

In general, forest management practices that promote age diversity of trees; retain dead, damaged or dying trees, and aid in plant diversity can significantly benefit bats. Since it has been widely thought that bats perform valuable pest-control services, it is logical to continue to manage forests in a way that protects roosts, while maintaining foraging opportunities.

Wanted: Eastern pipistrelle roosts

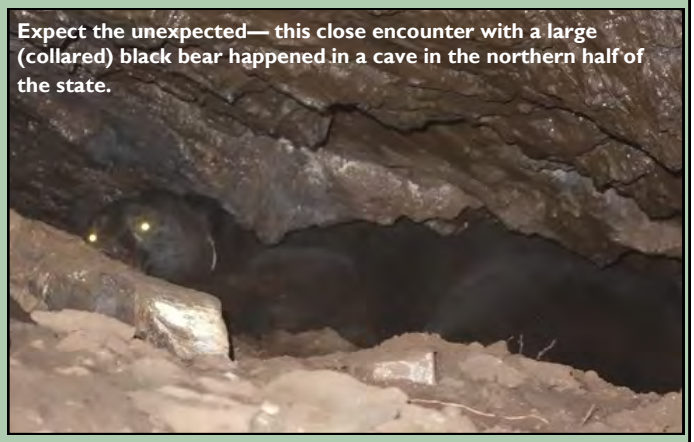
Imagine our delight when vigilant land owner Duane Deutmeyer, a DNR employee who works at Governor Dodge State Park, sent pictures of a bat he found roosting in a building on his property (below). The photo shows an eastern pipistrelle. This tawny colored species is easy to find hibernating in caves in winter but this is only the second record of a "pip" summer roost in Wisconsin. He reports observing one to four individual pips roosting in this former "outhouse" during past summers. Thanks Duane!

Male and non-reproductive female eastern pipistrelles are thought to be solitary and roost in the foliage of deciduous trees, where they disguise themselves as leaves for protection from predators. Reproductive female eastern pipistrelles may occasionally use human-made structures such as barns for maternity colonies, but they also normally choose to roost in clusters of oak and maple leaves. Both sexes appear to prefer to roost in dead and live leaf clusters on oak trees of upland, mature forests. Year-to-year site fidelity may be high for females of this species, but bats often switch roost trees over the course of the summer.

You can report bat roosts to Heather.Kaarakka@wisconsin.gov

Images from the field— beyond bats

An unlikely pair— a northern long-eared bat hibernates next to a fox snake in an eastern Wisconsin cave.



Expect the unexpected— this close encounter with a large (collared) black bear happened in a cave in the northern half of the state.

The quills of a porcupine are barely visible in a corner of this Door County cave.

Although bats are the only mammals capable of true flight flying squirrels occasionally land in our mist-nets during summer surveys.

One Old Bat!

Natural Heritage Conservation staff discovered one of the oldest little brown bats ever recorded while searching hibernation sites in 2015 for signs of the deadly bat disease white-nose syndrome. The male bat was banded in 1983, making it at least 33 years old, well over the species' typical lifespan of six to 10 years. The bat's discovery testifies to its resilience and to Wisconsin's investment in banding bats to be able to trace their movements and migrations, site fidelity and longevity. *We are pleased to report that this story reached over 1 million people on Facebook!*

2015 WNS Update: Field trials implemented in Wisconsin

Paul White

There have been substantial strides made in less than a decade to understanding white-nose syndrome (WNS). Potential disease treatments and management tools continue to be a major focus. Researchers and state, federal and tribal partners have identified and classified WNS, learned how the disease works and kills bats and directed more than $25 million toward research, including disease treatments.

Despite these accomplishments, the fungal disease continues to spread into new regions; exposing new bat species and naïve ecosystems to this deadly disease. In April 2015, Iowa was the 26th state to become infected with WNS. The fungus had previously been detected in caves at Maquoketa Caves State Park in 2011, 2012, and 2013, but it was not detected in the last two winters. Also in April 2015, a positive result for the invasive fungus was located in the very eastern part of Nebraska (Cass County). This detection appears to the furthest west report of the fungus to date. Internationally, the fungus was detected in bat populations in China by researchers from University of California Santa-Cruz. While the findings have expanded the disease distribution immensely, it is the hope that researchers can develop an understanding of possible evolved resistance or tolerance of the disease, because preliminary results indicate that bats in Europe and Asia aren't as mortally affected as their US counterparts.

The focus for Wisconsin has remained preventing human-assisted transmission of WNS by educating cave/mine visitors about proper biosecurity measures while limiting disturbance to hibernacula especially during the winter season when bat population are extremely vulnerable to disturbance. In addition to preventative measures, the DNR Bat Program is assisting research partners with small-scale field trials of treatments that have shown promise in the lab at reducing the impacts of WNS on individual bats. We are hopeful that the disease treatments will reduce disease impacts on bats and help stabilize or even increase populations. We also know that it will likely take an integrated pest management approach, where one single treatment/management action won't be the cure-all, rather implementing a combination of effective disease treatments and management actions could reduce impacts on bats. We are hopeful for what 2016 will bring and look forward to sharing results from our ongoing projects.

Above: WBP staff and partners from US Forest Service, U of CA– Santa Cruz, Western Michigan University, and Ball State University.

Above: WBP staff and partners from US Forest Service, University of CA– Santa Cruz, and MN DNR.

WAYS TO GET INVOLVED

The Wisconsin Department of Natural Resources' Wisconsin Bat Program relies heavily on grants and funding support from citizens who are interested in bat conservation. Get involved and help Wisconsin's bats in one of several ways:

- Become an acoustic monitor
- Conduct a summer roost count
- Put up a bat house in your yard
- Help out at the WI Bat Festival
- **Donate** to the ***Wisconsin Bat Conservation Society*** *at the DNR* - your gift is tax deductible (www.dnr.wi.gov keyword "bats")

Partner Profile: North Lakeland Discovery Center

The North Lakeland Discovery Center (NLDC), in Manitowish Waters, is a place where people go to connect to the natural world. NLDC is a nature-based education and community center that offers a variety of nature and stewardship educational programs. NLDC has housed an acoustic monitoring system and has coordinated acoustic volunteers and local surveys since 2010 under the guidance of naturalist Licia Johnson, who provided answers to the questions below. Thanks Licia!

How many volunteer projects is NLDC involved with? *On some level or another, the NLDC is involved in 15 different surveys/projects. We are involved with the Christmas bird count, Great Backyard Bird Count, Crane Count, AIS, Lake Level Monitoring, Picture Post, Wolf Howl Surveys, Monarch Tagging, WI Breeding Bird Atlas, Acoustic Bat Monitoring, WI Frog and Toad Survey, Marshbird Survey, Nightjar Survey, Owl Survey, Bird Banding station.*

How many people volunteer for the Wisconsin Bat Program? Approximately how many trainings and/or bat presentations do you hold annually? *We have anywhere from 30-40 folks actively conducting surveys- although I have trained over 75 volunteers. We hold two trainings and a refresher course for those already trained each spring. In 2014 I did 27 bat programs, ages 3-100 (school group (elementary- college level), public programs, library programs, etc) for a total of 630 folks. In 2015 I have done 22 different programs, for a total of 629 folks. I trained 15 new survey volunteers this year.*

Have you noticed a common thread among volunteers that makes them special?
The really ENJOY contributing to conservation- they like to be a part of things, feel that they are an important part of the puzzle. They also love to LEARN- always asking questions, wanting to learn/do more. They are the best!

The following are some stories and thoughts shared by acoustic monitoring volunteers from the North Lakeland Discovery Center:

- *As a result of being out late on the water we have seen the most spectacular sunsets, moon rises, stars and northern lights - things we never would have seen if not out on the lake!*
- *The grandsons were really excited when they learned we'd be going around the lake at 10:30 PM. They just didn't realize how slowly we'd be going. But they enjoyed learning to use the monitoring equipment and reminding us how to use it too. As we all know, 12 and 14 year old brains trump 60-something year old brains when it comes to technology.*
- *I became a volunteer monitoring bats because I wanted to know if there were bats in my neighborhood, and which kind. I thought it was so exciting to have the monitor "erupt" when it spotted bats, it gave both auditory and visual signals, and I thought that was very neat. I patrolled my area once by walking, twice in a kayak.*

"...we'd never realized before how much ambient light there was from stars or even a small moon."

Continued on page 16

Bats of Wisconsin Posters Now Available From the University of Wisconsin Zoological Museum

$30 each 24 x 43 inches
Posters are printed individually in the Museum, using archival exhibition-quality media.

Posters from the UW Zoological Museum showcase the allure of Zoological subjects and offer basic information useful for schools, conservationists, and wildlife enthusiasts of all ages. Artwork was created by experienced biological illustrators and annotated by zoologists with expert knowledge of the material. This poster was created by Jacki Whisenant, a WBP volunteer!

All store proceeds help purchase supplies and equipment for Museum projects and students.

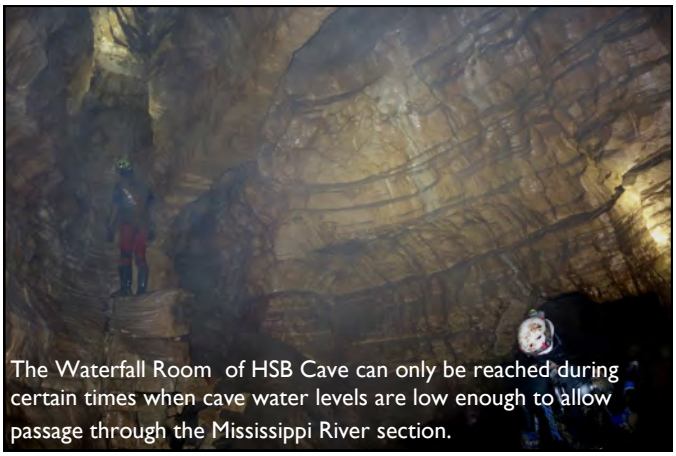
Order online at:
https://charge.wisc.edu/zoology/items.aspx

Cave & Mine Catalogue (continued)

our MI DNR neighbors that a juvenile female little brown bat we banded at HSB Cave in 2013 was observed in a hibernaculum in the Upper Peninsula. The straight-line distance between the two hibernacula is 169 miles (see map), assuming she flew in a straight line over Green Bay (Lake Michigan), or 265 miles if she followed the coastline. Regardless of whether it's 169 or 265 miles, this is the first record of a Wisconsin bat traveling more than 150 miles from banding site to recovery location.

Over the summer Door County enlisted visiting geologist Johanna Kovarik, cave and karst coordinator for the US Forest Service, to re-survey (map) parts of Horseshoe

Map (below) illustrating the movement of a banded individual little brown bat between HSB Cave and a mine in the Upper Peninsula of MI.



The Waterfall Room of HSB Cave can only be reached during certain times when cave water levels are low enough to allow passage through the Mississippi River section.

Bay Cave with assistance from our program. Low water levels allowed us to access the far reaches of the cave and navigate to the Waterfall Room, where we discovered 100 hibernating bats in 2014. In September I participated in the first county organized school and public educational tours of the cave. Over two days we ushered 112 students and teachers from local schools and 90 members of the public through the first 150 feet of the cave to the point where standing water begins. When we return to HSB Cave in March, 2016 we anticipate observing significant declines in the bat population; unfortunately WNS arrived at the site last winter.

The Bat(house) Man

Heather Kaarakka

Above: Kent Borcherding demonstrates bat house building . Below: Kent has conducted hundreds of roost emergence counts at the bat houses he's built like this group at Yellowstone Lake State Park.

Anyone watching the bats at Yellowstone Lake State Park in southwest Wisconsin, or building a bat house for their back yard owes thanks to Kent Borcherding. Kent has been invaluable to the development of successful bat houses across the Midwest and the country through his partnership with Bat Conservation International and other bat conservation groups. Kent consistently tinkers with design and form of the boxes he installs to refine just what makes a bat house attractive to bats.

> Kent has built over 600 bat houses… effectively providing summer habitat for tens of thousands of bats

He didn't start out as a bat house builder though; he is a retired cheese maker who grew up on a farm where his interest in bats began. After retiring from cheese making, he started carpentry and thus began his work creating wildlife habitat. He began partnering with Bat Conservation International (BCI) in the early 1990s when BCI started a comprehensive survey of bat houses across the US. Through work by Kent and others, BCI was able to gather reliable data about what successful bat houses look like, and any bat houses built today are based off designs stemming from this incredible effort.

In his over 30 years of building, Kent thinks he has built over 600 bat houses that have gone up across the country, effectively providing summer habitat for tens of thousands of bats every year. Examples of Kent's work can be observed in action at Yellowstone Lake State Park and Stonefield Historical Site. Each site is home to more than 3,000 little brown bats in the height of summer. Kent says he likes placing bat houses in areas like these where he knows the bat houses won't get removed in the future, and are providing alternate habitat for bats living in surrounding buildings. He was pleased to work with Yellowstone Lake State Park because they were open to the concept of bat houses at a time when much remained to be learned about bats.

So, Thank you Kent! The citizens and bats of Wisconsin and owe you much.

You can learn more about Kent and how to build a bat house on the DNR's Youtube Channel: https://www.youtube.com/user/WIDNRTV

Beer and Bats: the Unexpected New Purpose of a Historic Brewery

Jennifer Redell

Bat conservation is on tap in the Geiger Brewery Park in Osceola. From 1867 to 1881 (or 1878 according to multiple sources) Veit Geiger operated a brewery in Osceola where small man-made "caves" hewn out of the sandstone provided cool 50 degree aging and storage for beer casks when the brewery was in business. Although the beer and brewery are long gone (only a foundation remains) these small caves still play a very important role—they are critical to the winter survival of bats!

Geiger, a brewer while in Germany, migrated to America in 1854, and was almost certainly not intending to create a bat hibernaculum. He was drafted and fought in the Civil War as part of Wisconsin's "Iron Brigade" and his family then farmed near Farmington until opening the brewery in Osceola. Beer was an important beverage during times when the local water was not trustworthy and beer was consumed by the entire family at all ages. With his knowledge of European brewing methods and equipment Geiger's operation steadily expanded to eventually manufacture and store 200 barrels of beer annually.

Brewing was both an important social and business enterprise in small communities, and in response to the Geiger brewery and adjacent mills, mercantile business and saloons were established nearby. Breweries evoked strong social and political feelings on alcohol and prohibition in the second half of the 19th century in Wisconsin and across the country. After his brewery closed, Geiger operated a general store until his death in 1891. Eventually most closed and abandoned breweries, including Geiger's site, were seen as derelict and dangerous and as a result were torn down and the associated caves sealed, collapsed, or filled. However, stabilized temperature and increased humidity were the unintended result of an attempt to fill in the Geiger cave entrances years ago.

Most Wisconsin beer caves are on a single level; however, the Geiger site is unusual because it has two levels. A small round room approximately 10 feet in diameter and only 4-5 feet high forms the upper part of the site. Today, bats fly down what a human must climb in order to access the lower level of the Geiger site-- a narrow 15 foot "chimney" and drop from a hole in the ceiling 8 feet down to the floor. Breweries often operated on a gravity system where fluids drained from the upper to lower levels. Upper drying spaces for malt and hops, and large vats for making wort (the precursor to beer) were underlain by caves or cellars where piping would drain beer to be aged and kegged.

The lower level at Geiger consists of two small rooms approximately 10 by 20 feet. They originally would have

One of two small rooms that comprise the historic Geiger beer "cave"

A modified "cupola" style bat-friendly gate now protects the Geiger beer "cave" hibernaculum

been accessible through a lower entrance in the cliff face, which has since completely filled. The interior of the site is, of course, completely dark but a flashlight reveals iron-stained layers of sandstone exposed in the walls of the site. Broken rock covers the sandy floor. A bit ironically, the site now stores dozens of (empty and crushed) modern beer cans. Carved and spray painted graffiti mar the walls and ceiling serving as further evidence of repeated human visitation in recent history.

Years after the Geiger cave entrances were filled vandals

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Bats of the Chequamegon-Nicolet National Forest

Brian Heeringa, USFS Wildlife Biologist

Collaboration between the Wisconsin Department of Natural Resources (WDNR) Bat Program and the USDA Forest Service has resulted in a greater understanding of the demographics, health, and habitat of the state's bat population and how to manage our public lands for this important group of species.

The Wisconsin DNR Bat Program has accomplished important work on behalf of bats such as roost monitoring, citizen-based science, education, research, innovative technology and is one of the most robust programs in the country. The bat program often collaborates with a variety of individuals, organizations, universities, and agencies, including the USDA Forest Service. My work as the Wildlife Biologist – Bat Specialist on the Chequamegon-Nicolet National Forest and Northern Research Station's lab in Rhinelander focuses on the conservation and protection of this interesting and important group of animals. The Forest Service and the WDNR Bat Program have worked together for nearly five years to monitor Wisconsin's bat population and fight white-nose syndrome (WNS).

The Chequamegon-Nicolet National Forest (Forest) comprises approximately 1.5 million acres in northern Wisconsin. When I began the bat program on the Forest in 2006, I participated in a week-long bat conservation and management training hosted by Bat Conservation International. This training taught me a lot about survey techniques, habitat assessment, bat handling and identification. However, when it came time to learn a bit more about Wisconsin's bats, what was already being done, and how the Forest could become involved, I called the WDNR and had the privilege of speaking to Dave Redell, State Bat Ecologist. His knowledge and advice were instrumental in furthering the development of the Chequamegon-Nicolet National Forest's bat program. Today as we see bat populations continue to face many threats, the Chequamegon-Nicolet and Northern Research Station, like many other Forest Service units, support and participate in efforts to slow down and stop WNS, better understand affected bats, and research their habitat and requirements needed for survival. This information helps the Forest Service better manage our public lands to conserve bats.

Although the Forest has been monitoring bat populations by gathering bat house and mist net data since 2005, in 2009 monitoring efforts expanded across the Eastern Region of the Forest Service. A large scale mobile acoustic survey protocol was developed for the 15 National Forests and 1 National Tallgrass Prairie within the Eastern Region. The protocol and equipment used for these acoustic bat routes is similar to those used by the WDNR bat program across Wisconsin. Data collected from these Federal and State routes can be used to monitor bat activity and species distribution at a landscape level. Furthermore, some of the Chequamegon-Nicolet National Forest acoustic routes have been adopted by the WDNR as part of their acoustic monitoring program.

Brian Heeringa and Heather Kaarakka use an antenna and receiver to search for bats tagged with radio transmitters during last summer's northern long-eared bat habitat assessment in the Chequamegon-Nicolet National Forest.

Research has been an integral part of the USDA Forest Service since the agency was formed in 1905. The Forest Service's Research & Development program works at the forefront of science to improve the health and sustainability of our Nation's forests and grasslands. In Wisconsin we are fortunate to have two Forest Service Research & Development locations; the Forest Product Laboratory in Madison and the Northern Research Stations' lab in Rhinelander, the Institute for Applied Ecosystem Studies. Since 2014 I have been working with Deahn Donner, Project Leader and Landscape Ecologist with the Northern Research Station in Rhinelander, on several important studies looking at how bats are using their environment pre- and post-WNS infection. Working at a landscape scale, many of the projects take us outside Wisconsin, and even outside the Great Lakes Region. Some examples of the interesting and exciting studies underway can be found below. In addition to these projects, the Rhinelander lab is cooperating with several other agencies and universities to support their vital work relating to bats and WNS.

Much is still unknown about the secondary effects of WNS and how surviving bats are responding to the disease. One way bats may be responding is by developing resistance through an adapting immune system, potentially influenced by naturally occurring skin microbiota, such

Continued on page 17

Acoustic update (continued)

result, many different habitats surveyed over the course of one survey.

With over 30 acoustic bat detection systems positioned in various locations in Wisconsin, the WBP has greatly benefitted from the remarkable effort that volunteers and regional coordinators have put forth since the projects' inception in 2007. Statewide maps that define species range would remain largely incomplete if not for the information collected by the WBP's citizen scientists. Seasonal trends that highlight bat phenology might go unnoticed if state biologists were the only collectors of information. The significance of citizen-based monitoring efforts cannot be understated, not only for data collection, but perhaps just as importantly, for education and awareness of issues surrounding bat conservation. While the numbers indicate that there have been over 1,000 volunteers participating in acoustic bat surveys since the project began in 2007, the data doesn't accurately account for the outreach that has stemmed from those participants. From training sessions to school projects through word of mouth, bat conservation issues in Wisconsin have been brought out of the darkness and into the light more so than at any point before; for that, we have citizen scientists of Wisconsin to thank.
THANK YOU!

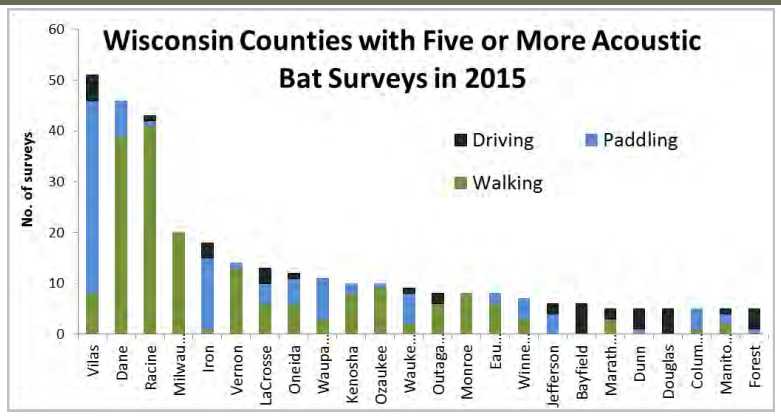
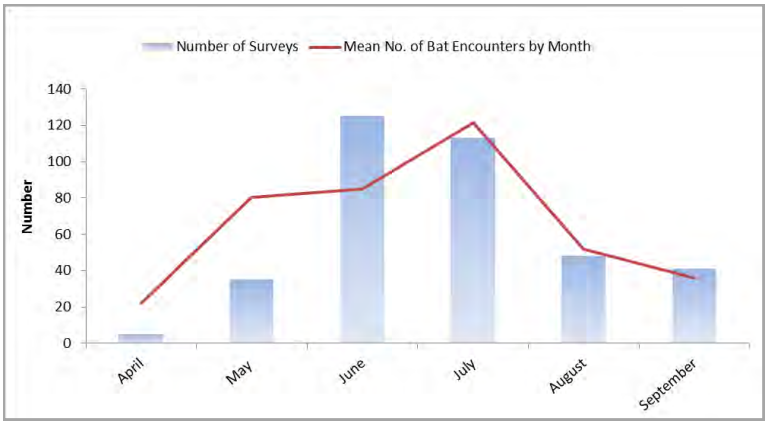


Figure 1 (above) Number of Acoustic Bat Surveys by County and survey method. Not shown are counties with 4 or less surveys completed (n=27).

Figure 2 (below) Illustrates the number of acoustic bat surveys by month along with the mean number of bat encounters of all surveys within a given month. Only includes successful (n=367) survey attempts.



Bats and Beer (continued)

digging their way in opened this new habitat to wildlife. Large orb spiders, cave crickets, and occasional mice and raccoons have taken up residence. At some point in the past few decades bats, naturally inquisitive mammals who seek out safe places to dwell, discovered the small secret cave.

While Wisconsin has approximately 150 natural caves and man-made mine bat sites the animals will occasionally select other similar habitats and structures for overwintering. Basements, tunnels, rock crevices, and beer "caves" can mimic the cool, dark, humid cave environment that bats rely on for sustained hibernation. The former Geiger beer cave is just one of these unique artificial hibernacula. Three bat species hibernate in the Geiger site.

Historically Veit Geiger served an important role in his community by operating the brewery. Currently the dozens of Geiger cave bats serve an important role for many communities across Wisconsin and neighboring states— upon emerging in spring they may fly as far as 280 miles out across the summer landscape to forage over backyards and farm fields. Each fall, year after year, the same individuals return to the Geiger cave. A single little brown bat can live as long as 35 years in the wild.

Concerns over human safety and bat disturbance led to a partnership between the Village of Osceola Parks Department and the Wisconsin DNR. In August, 2015 a bat-friendly gate was installed over the small entrance to the cave, with funding provided by the Wisconsin DNR, and the Village of Osceola providing equipment and additional labor. The purpose of the heavy iron gate is to protect bats from unauthorized human entry during hibernation.

So, if the Geiger Brewery were to reopen and begin production again today, a suggestion for naming their first batch: Brews Wayne.

To the Bat Cave!: First Public Tours of Horseshoe Bay Cave a Success

Jim Lundstrom, originally published in the Peninsula Pulse, September 25, 2015

Millions of years of evolution took place between cave-dwelling Troglodytes and the 21st century human being, but some modern humans just can't wait to get back into a cave.

When the Door County Parks Department announced it was giving tours of county-owned Horseshoe Bay Cave on Sept. 19 in one-hour slots from 9 am to 3 pm, with 10 people in each group, the allotted 70 slots filled up in a week and a half.

"So we added two more tours, at 4 and 5," said Door County Parks Director Erik Aleson. "Those filled up and we still had about a 65-person waiting list going into the weekend."

And several more who showed up for the tours without reservations on the day were also turned away, but not before being soundly and congenially informed about the cave by either Aleson or Door County Corporation Counsel Grant Thomas, who has taken a particular interest in the cave. Thomas and Bill Schuster, head of the county's Soil and Water Conservation Dept., famously explored the cave for the county to take stock and assess potential as an addition to the Door County Parks system.

"I'm surprised at the interest. I hate turning them away," Thomas said, adding what he had been telling people who showed up without a reservation, "You can go up and take a look [at the cave entrance], I'll tell you what I know about it and we'll put you on a waiting list."

And when those politely rebuffed people left, they did so with good humor and better information about the cave than when they arrived. They also promised to return, and most signed up for future cave tours.

Door County Corporation Counsel Grant Thomas helps a caver adjust his helmet. Photo by Jim Lundstrom.

Thomas made it a family affair, with his wife, Heidi, helping to lead tours into the cave, and his son, Tyler, helping wherever needed.

Photos of the legendary Thomas-Schuster expedition were on display with other photos of the cave, and a map of the cave, showing its entire length and the names that have been given to its various parts – intriguing names such as Onyx Room, Elephant Room and Waterfall Room. However, Mud Tube and Mud Bank Room are not so intriguing.

What is the big attraction for modern man and woman to go back into caves?

Jennifer Redell talks about the bats who inhabit Horseshoe Bay Cave before the group enters. Photo by Jim Lundstrom.

"A lot of people are just curious about what it looks like in there. We've gotten a lot of good feedback," Aleson said. But he makes a point to tell cave visitors in a pre-visit session that this is no Carlsbad Caverns. In fact, visitors were limited to the first 250 feet of the 3,000-foot cave because beyond that they would have had to don wetsuits.

"There's a lot of standing water from recent rains," Aleson said.

Still, a 250-foot trip inside was a 45-minute experience. Aleson explained that to traverse the entire length of Wisconsin's longest wild cave could be a 13-hour journey.

Continued on page 15

WISCONSIN BAT PROGRAM VOLUNTEERS & PARTNERS
THANK YOU!!!

Above & below: Research and management partners include staff from multiple state and federal agencies, universities, and land owners and managers who allow access to hibernation sites.

Left: An acoustic volunteer from North Lakeland Discovery Center conducts a survey by boat.

Acoustic Monitoring

Countless nature centers, universities, regional coordinators and volunteers help make hundreds of acoustic surveys happen every year.

Roost Monitoring

Homeowners and bat counters keep both eyes on their residents and report their counts each summer.

Citizen Managers

Hundreds of public and private partners help manage critical bat habitat including more than 150 cave and mine owners and managers, and 100's of bat house homeowners and managers.

Bat Rehabilitators

Nine licensed and permitted wildlife rehabilitators take in injured and winter -rescued bats.

Research Partners

US Fish & Wildlife Service
USGS National Wildlife Health Center
UW– Madison
USDA Forest Service
UC– Santa Cruz
Western MI University
Ball State University
PA Department of Fish & Game

To the Bat Cave (continued)

The previously mentioned cave map highlights another feature that may be an attraction for many – a chance to see bats in their native habitat.

"It's the largest natural cave hibernaculum in the state," Aleson said. "There are anywhere from 1,000 to 1,500 bats that hibernate there."

That is why there will be no more public tours this year. The cave is closed from Oct. 1 through May 15 to allow bats to hibernate undisturbed. In order to minimize the possibility of tour groups spreading the bat-fatal White-nose Syndrome, the first thing cave visitors must do is get outfitted in a county-provided jumpsuit, rubber boots, gloves and lighted helmets.

Bat ecologist Jennifer Redell, a cave and mine specialist with the Wisconsin Department of Natural Resources, was on hand for the tours. She has been an integral part of the process of making the cave a county park and opening it to the public. After a briefing by Parks Director Aleson on the history of the county cave and how the project to open to the public was done in conjunction with Horseshoe Bay Golf Club, and talking about the cave specifics and plans for the cave touring program, the groups were turned over to Redell for the actual cave tour (Aleson took over the tours after the noon group).

Redell brought each group up the rather steep path into a mossy, forested area, where, with the help of an electronic tablet, she talked about the geology of the cave, the bats and other critters that call the cave home and other salient cave details that only a cave specialist would know. She also pointed out that the visitors would see bats on the tour.

"Engaging" was a word heard several times in reference to her performance as a tour leader.

On the day before the public tours, Aleson, Redell and Thomas gave tours to more than 100 Door County students of all ages from Southern Door, Sturgeon Bay and St. Peter's Lutheran.

What was the reaction?

"A lot of smiles and excitement, just like we've seen today," Aleson said.

"Third and fourth graders were so interested," Thomas said. "Jennifer was able to capture a bat and put it in her pocket and brought it out. The reaction of the high school kids was fear and repulsion, but the third and fourth graders, we had to hold them back because they wanted to go up and touch it."

The subject of children was on the county's mind in opening the cave to tours, and as one tour comes down the incline from the cave entrance, they are led by a young girl in a very big jumpsuit that she has to carry all bunched up as she walks.

A tired caver after a tour. Photo by Jim Lundstrom.

"We didn't know where the age cutoff was," Thomas said. We put an age limit at 5, and she showed up at 3," Thomas said, referring to the young girl in the expansive jumpsuit.

"We don't know," he continued. "I haven't had a 3-year-old around my house in 19 years. Her parents said she could stick it out and she did. It all depends on the kid."

He adds as an afterthought: "We'll have to get some age-appropriate equipment."

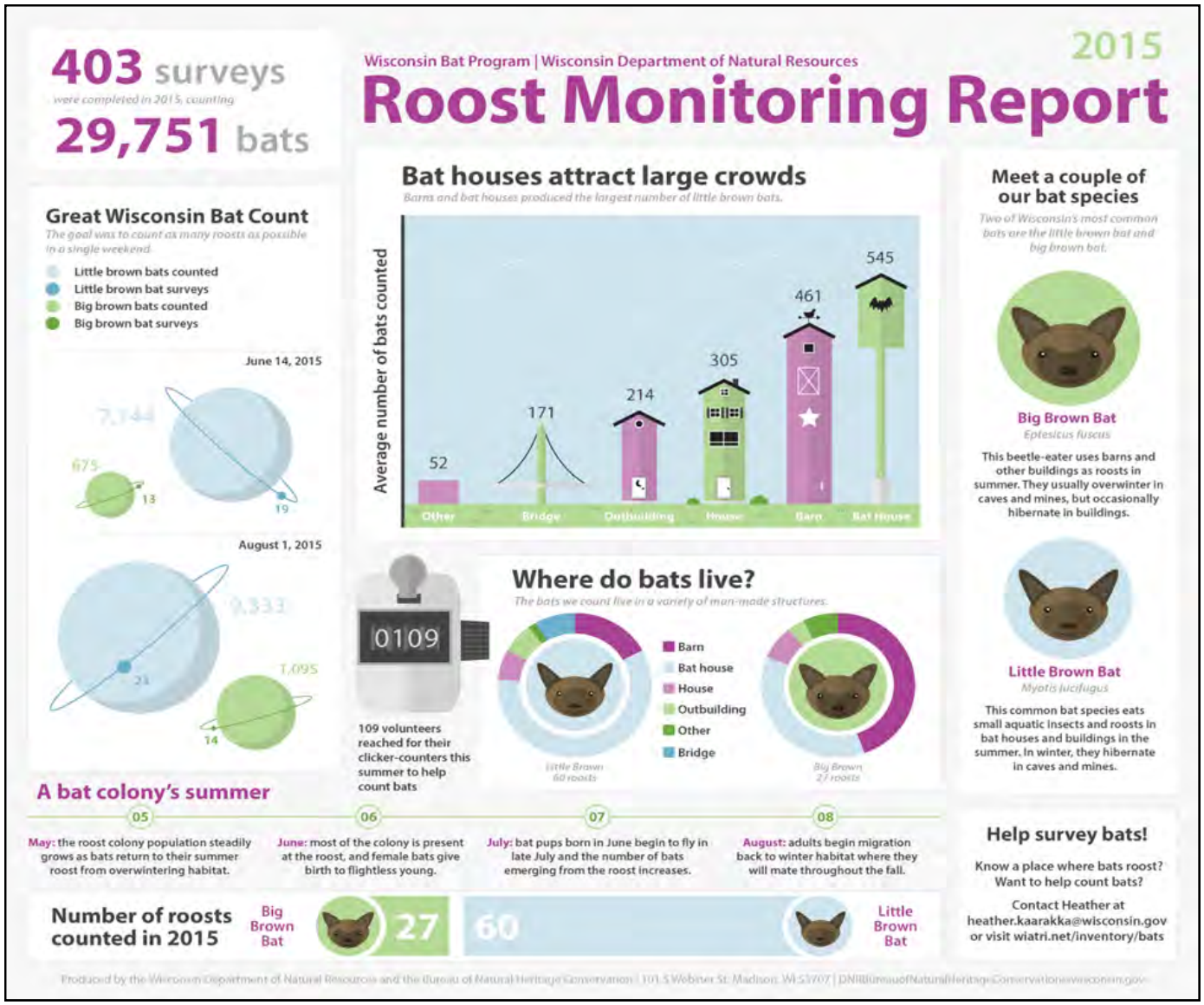
Aleson asks you to stay tuned for the 2016 tour schedule.

"We're hoping starting next summer we can do June, July, August tours, and then focus the school tours during the fall and spring," he said. "At some point as the program grows, we might be able to offer them more regularly. It all depends on staffing, volunteering and budgets. But I do think there's enough interest."

Partner Profile (continued from page 7)

- *Our most entertaining evening was one night it was absolutely pitch dark----there was a thick cloud cover, as well as a new moon. We were out in our boat, as we always had been on earlier surveys, too. But we'd never realized before how much ambient light there was from stars or even a small moon. We determined to watch the calendar for future surveys, to find a time on the moon cycle that would contribute a little light to the sky. We didn't run into any shoreline or dock, but we did come home feeling we'd had an adventure.*

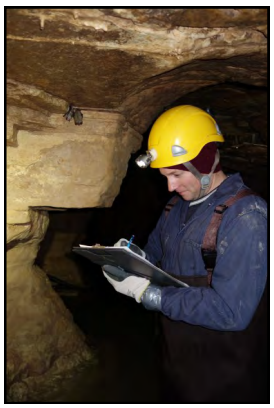
- *My reading glasses fell off my head into the water. Luckily we were right next to Melinda's dock and she actually found them! Another time it was very windy. The leaves were congregating in an area on Papoose Lake that we call "The Inkpot". Huge clumps of weeds got caught up in the motor and we barely limped back to Melinda's dock.*



Chequamegon-Nicolet (continued from page 11)

as bacteria, which may slow the growth of the WNS fungus. Samples from bats in pre- and post-WNS populations in Wisconsin, New York, Minnesota, Michigan, Pennsylvania, and Vermont, are being compared to look for adaptive immune responses. Why it matters: Conservation of populations that are resistant to a disease is important to recovery efforts. By identifying and protecting these populations, we can better focus our management and conservation actions and ensure the best chance of species recovery.

Regional and landscape-scale movement patterns of bat populations, particularly the connectivity between winter hibernacula and summer roosting habitats, are largely unknown. Genetic samples from bats in Wisconsin, Minnesota, and Michigan are being used to identify where summer resident bat populations are migrating from. Additionally, data from mobile and stationary acoustic monitoring are being used to compare habitat use and patterns of bat activity. Why it matters: Determining the movement behavior of bats and habitat use across the landscape helps land managers provide preferred habitat along these movement pathways. Quality habitat is important for bats as they move to and from hibernation sites as well as during recovery stages post-WNS infection.



As with much of the work and research that takes place surrounding bats and WNS, cooperation and partnerships are vital to success. The WDNR Bat Program and the Forest Service's Chequamegon-Nicolet National Forest and Northern Research Station cooperate for education and outreach, survey and research support, and data sharing. This interagency collaboration, to steal a phrase from the WDNR Bat Program, works to "Keep bats here, and keep them healthy, for as long as possible."

Brian Heeringa (right) is a Wildlife Biologist-Bat Specialist for the Chequamegon-Nicolet National Forest and Northern Research Station Institute for Applied Ecosystem Studies. He received his degree in Wildlife Management and Biology from the University of Wisconsin-Stevens Point. Brian has worked with bats and bat conservation for over 10 years. He is involved with the Wisconsin Chapter of the Wildlife Society, the Chequamegon Audubon Society, and the Midwest Bat Working Group.

WBP Education & Outreach: 2015 Measureable outcomes

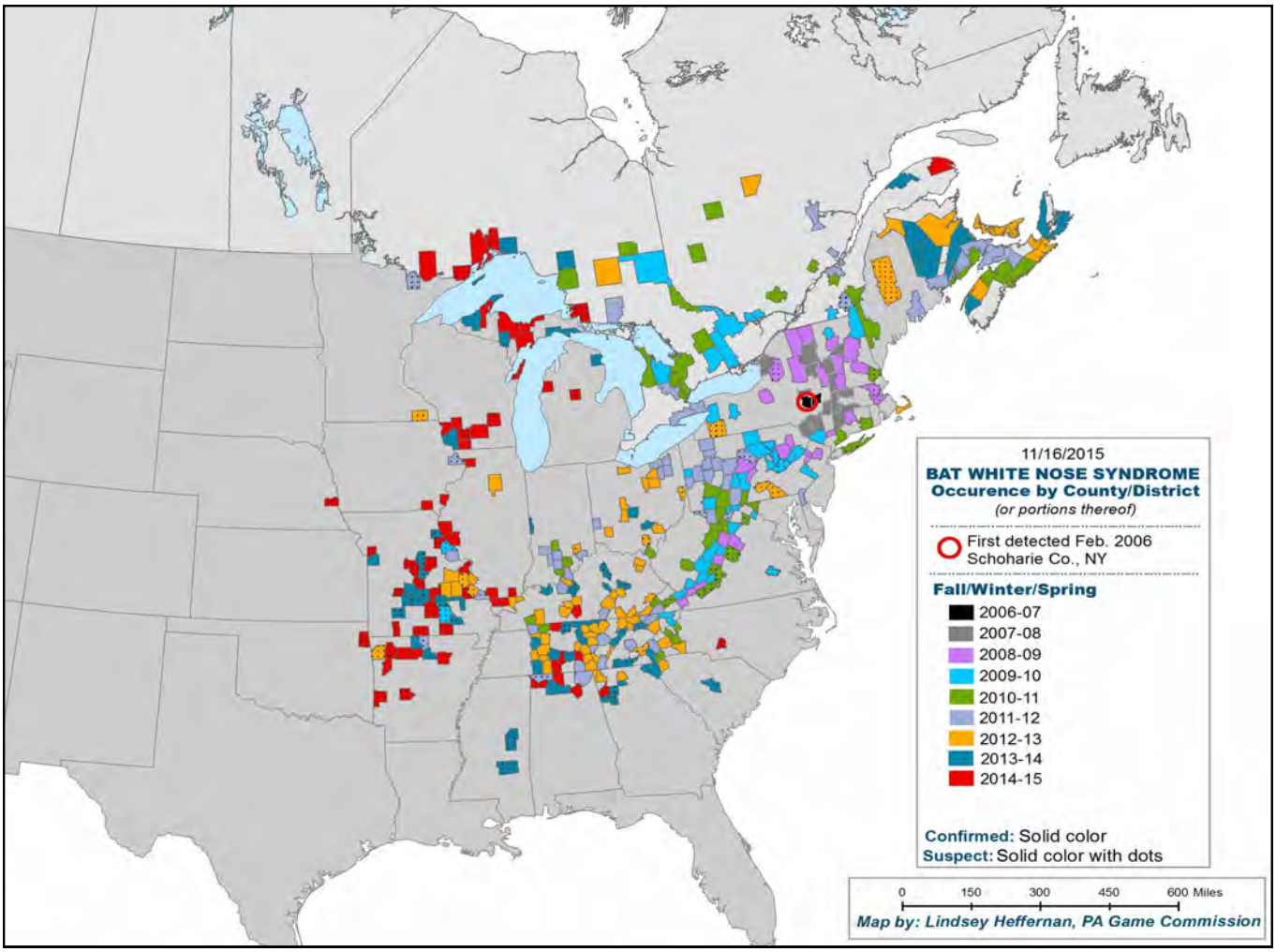
Jennifer Redell

- 24 individual Wisconsin Bat Program (WBP) presentations provided to 24 different audiences in 16 counties
- More than 1,500 adults and students attended WBP bat presentations and field trips
- Thousands of people were reached through the WBP newsletter- *The Echolocator*
- The "one old bat" Facebook post featuring a 32 year old banded bat recovered in Wisconsin received over 55,000 "likes, comments, & shares" and reached over 1 million people.
- 200 hibernacula & roost owners were reached through mailings, newsletter, phone calls, and face-to-face meetings
- Tens of thousands of people across WI, neighboring states, and nationally were reached via mainstream media: DNR press releases, radio, television, and newspaper interviews and specials featuring the Wisconsin Bat Program.
- Thousands of people visited DNR bat webpages and CBM bat site
- $8000 were generated for NRF's WI Bat Conservation Fund ($5182) and NHC's WI Bat Conservation (Society) gift account ($3000) from speaker honorariums, t-shirt sales, field trip fees, and cash donations at bat programs.
- WBP partners (nature centers, commercial caves, etc.) provided dozens of bat presentations to a wide variety of audiences statewide. WBP partners provided bat education to thousands of individuals statewide.

Above: Rafiki the straw-colored fruit bat visits students at Highland Elementary School. Photo: Kim Wahl

Featured Bat: Silver-haired bat *Lasionycteris noctivagans*

Silver-haired bats have dark brown or black fur which is tipped with white or light yellow on the back giving the bat its name. In fall silver-haired bats migrate south to overwinter in areas where below-freezing temperatures are unlikely. They overwinter in tree crevices and rarely in caves and mines at higher latitudes. Silver-haired bats are found state-wide from early April through early September, although they are more abundant in the northern part of the state. Silver-haired bats feed primarily on flies and moths, but are also known to eat beetles and wasps.



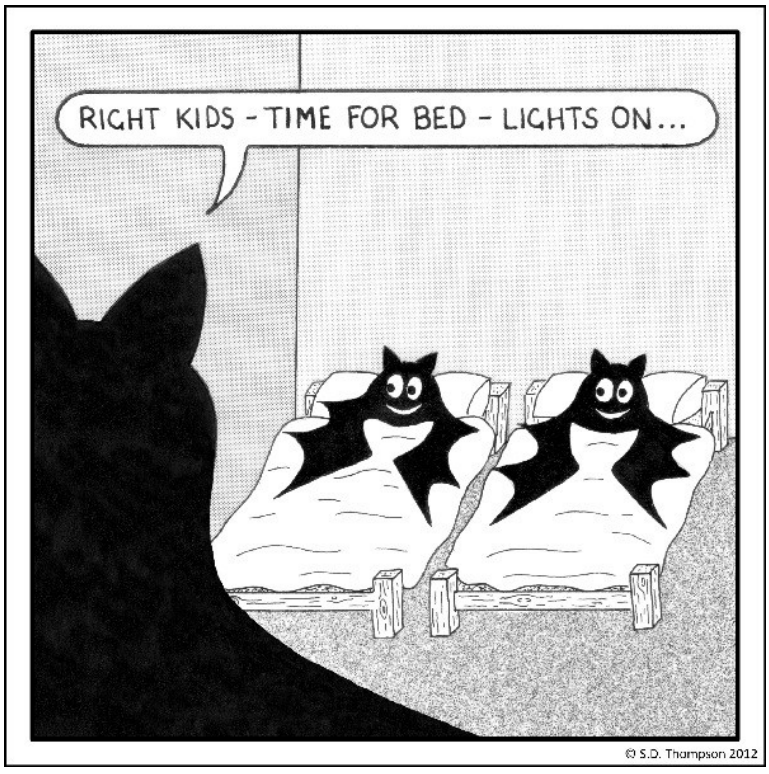
What do I do if I find dead or flying bats this winter?

As white-nose syndrome (WNS) invades Wisconsin, landowners have the potential to find infected bats. Dead bats at summer roost sites in January-February, and flying out of caves and mines in January-February are both signs of WNS. Knowing of these occurrences helps the Wisconsin Bat Program (WBP) track the disease and potentially make management decisions based on the information.

If you see either of these behaviors, please take the following actions:

1. Alert the Wisconsin Bat Program of the occurrence by calling the bat call line: 608.266.5216, emailing dnrbats@wisconsin.gov. or submitting a dead bat report on our website: http://wiatri.net/inventory/bats/Reporting/. Please describe in detail what you saw. Also note that the call line does not have personnel on 24 hours a day, so please leave a detailed message. Someone will return your call or email as soon as possible. An option to **upload a photo** now exists on the reporting form, please utilize if you can as this will expedite identification of species and condition of the bat.
2. If the bat is still alive, DO NOT pick up the bat. Photograph the occurrence, and take notes on behavior. Alert the WBP by one of the following methods above. Please also note your location in your message.
3. If the bat is dead, USE GLOVES to double-bag the carcass in plastic bags and place it in a safe, cold place outside or in a freezer. Alert the WBP and someone from the program will arrange to collect the bat from you if it is needed for testing.

Thank you in advance for watching for usual or atypical behavior of bats this winter.



Wisconsin Bat Program t-shirts available!

Share your favorite bat vocabulary with "Word cloud" Program t-shirts are available! Women's, men's and kids sizes available. $10 each E-mail Jennifer.redell@wisconsin.gov for purchase information.

State of Wisconsin
Department of Natural Resources
Box 7921

To subscribe or unsubscribe to the WI Bat Program mailing list, please visit the GovDelivery site or follow the mailing list link on the Bat Program website.

Unless specified all photos in this newsletter were taken by the Wisconsin Bat Program.

If you have suggestions for articles, or have a story you would like to contribute, contact:
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Report colonies, caves, or unusual bat behavior at DNRbats@wisconsin.gov or by calling 608-266-5216

Scan this barcode with your smartphone to go directly to the Wisconsin Bat Program Website!

http://wiatri.net/inventory/bats

Did you know?

The Wisconsin Department of Natural Resources' Wisconsin Bat Program relies heavily on grants and funding support from citizens who are interested in bat conservation: donate in one of two ways below:

*The **Wisconsin Bat Conservation Society** is an annual membership where groups and citizens can support bat projects that need immediate funding. Specifically, these funds will be used for WNS research, landowner support in WNS prevention and control, surveillance, inventory, monitoring, applied management, and education about the benefits of bats.*
For details about how to donate head to: www.dnr.wi.gov keyword <bats>

Support the Wisconsin Bat Conservation Fund

The Wisconsin Bat Conservation Fund is a permanent endowment managed by the Natural Resources Foundation of Wisconsin. Contributions to the Fund will support bat conservation needs in Wisconsin.

Yes! I would like to make a contribution to the Wisconsin Bat Conservtion Fund.

Gift Amount
_____ $25
_____ $50
_____$100
_____$250
_____$500
$____Other
_____ Please send me information on how I can leave a bequest to the Fund through my estate plan.

Name(s)_____

Address_____

Phone (_____)_____-_____

Email _____

Make checks payable to the Natural Resources Foundation and mail to: Natural Resources Foundation of Wisconsin, Attn: Wisconsin Bat Conservation Fund, PO Box 2317, Madison, WI 53701. The Natural Resources Foundation is a 501(C)3 tax-exempt organization. Receipt of gift will be officially recognized by the Foundation. Contributions are tax deductible to the extent allowed by law. Visit www.wisconservation.org