

# As Disease Continues To I

By Kevin R. Hess

Little brown bats, big brown bats, tricolored bats, and northern long-eared bats in Michigan continue to suffer the effects of white-nose syndrome (WNS) and their populations continue to decline rapidly.

"We may reasonably have regional extinction of some of these species because of WNS," said Dan O'Brien, veterinarian specialist with the Michigan Department of Natural Resources (DNR) Wildlife Disease Laboratory.

While it is called white-nose syndrome, the fungus grows on the nose, ears, wings, and tails. It irritates bats, causing them to wake during hibernation and use up their winter fat reserves long before spring arrives. They often leave their caves in mid-winter, only to starve or freeze to death.

Eagle Scouts constructed and donated six bat houses to Mackinac Island, where bats once thrived, to provide the creatures a safe and warm environment so they would stay away from caves where the disease spreads, but numbers continue to decline. In the past, bats were a familiar sight on the Island, swooping to prey on insects fluttering around the streetlights on spring, summer, and autumn nights. Mackinac Island State Park ranger Justin Wright installed the houses in summer 2015 on the southern end of the Island within the park. He says that while the numbers are still low, he has seen more bat activity this summer than last, and he is hopeful that the population will begin to recover.

"It was horrible seeing them out

in the winter and finding many of them in the snow," he said. "It's nice to see some back and I'm hopeful the worst of the disease is over."

Little brown bats, however, now are in danger of regional extinction. Other species' numbers have decreased by as much as 95% in some areas. In the three years the disease has been in Michigan, the bat populations in those areas have decreased an average of 80%.

WNS was introduced to the United States in a tourist cave outside Albany, New York, in 2006. It is an invasive fungus from Europe that was spread by humans and has since invaded at least 33 states and five Canadian provinces, from the East Coast as far west as Washington and as far south as Texas and Mississippi. It is a new disease to which American bats had not been introduced, therefore they have not yet built an immunity to it.

The disease was discovered in the Straits of Mackinac area in the winter of 2014. It began to be seen throughout the Upper Peninsula by the winter of 2015. It thrives in cold weather and in caves and mines where bats like to hibernate during winter months.

More than half the 47 species of bats in the U.S. and Canada rely on hibernation for winter survival. Nine bat species, including two endangered and one threatened species, have been confirmed with WNS in North America. Six more species have been found with the fungus without official confirmation of the disease.

At many of the sites studied in

## New Housing on Island Could

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and committee member Michael Hart.

"This is about making sure we have plumbers, electricians... [that] our teachers and bankers can live here year-around," Mrs. McGreevy said.

She said there is strong community support. There's more planning and preparation to do, but the construction of additional private dwellings on Mackinac Island could begin as early as spring 2018,

which were supposed to be filed by the nonprofit Mackinac Island Housing Corporation. Two lots there are available for duplexes, but most of the development is reserved for single-family dwellings.

Mark Erickson, general counsel for Cinnaire, submitted several annual reports to the state on behalf of the Housing Corporation. He's also preparing an updated master deed for the development and a lease agreement for the lots. The corporation tentatively scheduled an

# Deplete Bat Population, Ho



Eagle Scouts constructed and donated six bat houses to Mackinac Island in 2015. They were installed on the southern side of the Island in the state park. As white nose syndrome continues to effect bats throughout Michigan, bat houses like this one, seen from the ground and up close, can help to keep bats in warmer environments and out of the caves and mines where the disease grows and spreads quickly. It is painted black, is the size of a large pizza box, and weighs approximately 35 pounds. The disease has spread into 37 states and five Canadian provinces, and has killed more than seven million bats since the disease was discovered in New York in 2006. *(Photograph courtesy of Justin Wright)*

Michigan, and especially throughout the Upper Peninsula, researchers have seen 70% to 92% mortality rates. In 27 of 31 sites researched, there were population declines of more than 60% - from thousands of bats to just hundreds of them.

At some sites, populations have

## Begin in 2018

for new home construction without updates to the lease agreement and master deed.

Edgewood homeowner Larry Rickley recently joined the Housing Corporation board, giving residents of the area a voice in new development and ensuring a quorum for the meeting. He already has noted that, as the result of a 99-year lease, required when homes are built, only First National Bank of St. Ignace is willing to provide loans.

Mrs. McGreevy said Central

dropped to nearly zero. In the Porcupine Mountains, the numbers decreased from 18,000 to just 93 bats that researchers could find in their most recent assessment. Most of those 93 were sick with the disease.

The little brown bat is the most common species found in the Straits of Mackinac area and there has been a dramatic decrease in its population since 2014. Some sites report no bat activity.

WNS is a new disease agent that must "make its way through," said Mr. O'Brien. He said the worst should be over in a year, but it will take a long time for bat populations to recover. While healthy bats can live to be more than 10 years old, females only have one pup per year, meaning it will be a slow growth over time.

"Some species will be better off than others, but many have taken

Rickley, Carolyn I

# Houses May Help on Island

significant hits," he said. "It has been sad to watch but, as a researcher, it has been impressive in the sense of how much damage the disease has done in just three years."

The decline of the bat population is impressive in several ways, but the mostly in reduced consumption of many types of insects. Bats consume an average of half of their body weight in insects per night, amounting to hundreds of insects per hour. Without bats to eat them, the insects can thrive and affect crops and forests, possibly causing substantial damage.

Because bats consume so many insects, crops and forests benefit from them. Without their prodigious insect consumption, other protective measures may have to be considered, including pesticides. The bat population decline leaves an ecological void another insect-eating critter might step in and exploit, Mr. O'Brien said. Bats haven't received the same research attention as have other animals, he said, so little is known about them.

"It's open to question whether that will happen here or not, but it will be interesting to watch," he said. "That's typically how ecology works: when one species is unable to fill its role, another usually steps in. We don't have a lot of information right now about their ecology. We can't predict what will happen."

Bill Scullon, field operations manager at the DNR office in Norway, said a decrease in the hundreds of thousands of bats that consume almost their body weight in insects each night is a cause for concern.

"People aren't seeing as many bats, but they will certainly be seeing more insects," he said.

Mr. Scullon, Mr. O'Brien, and many others are working on ways to treat the disease and protect the bat population from further damage. Researchers on a regional and national scale are searching for agents to treat the fungus.

Wisconsin's DNR is partnering with a team from University of Southern California, Santa Cruz on ways to treat the fungus. Biological and environmental scientists from

Western Michigan University and Ball State University in Indiana also are working on a WNS treatment.

"The goal is to find something that you could have in the environment that will help treat the bats without having to topically treat them each year," said Mr. Scullon. "We've found ways to control the disease in the lab, but we're not sure yet if it can be released into the environment."

Mr. O'Brien is not as confident as some about the prospects of bat disease treatments for Straits-area and Michigan bats.

"If these agents help with the outbreak, it will really be for populations west of where we are," he said. "The damage will have already been done here."

Mr. O'Brien said the biggest problem is not the treatment itself, but how it would be delivered.

"Bats are in mines and caves that are not easily accessible," he said. "The success of treatment is contingent upon the bats returning to the site. I'm not confident that this will be productive for us" in Michigan.

Mr. Scullon said Michigan DNR staff members are endeavoring to protect the bats' habitat.

"This is a disease issue, not a habitat issue," he said. "We continue to treat the disease and protect their habitat so that when they are treated, they have a habitat to return to."

Since the disease was discovered in America, the U.S. Fish and Wildlife Service estimates, more than 7 million bats have died. In July, the Fish and Wildlife Service awarded more than \$1 million in grants to 37 states and the District of Columbia. Since 2009, the agency has given more than \$7 million in financial support toward finding ways to prevent the spread of WNS while increasing survival rates of the affected species.

Humans can carry the disease fungus on their clothing, bags, and other personal items, but there is no evidence WNS affects them. While research continues on WNS, there are many more questions than answers. Only time will tell the full affect it will have.

