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Mosquitoes 1, Bats 0

Endangered Indiana bat faces deadly new disease

An insidious, usually fatal disease is closing in on thousands of potential Indiana victims.

Even though the victims of the impending scourge are misunderstood, maligned and feared by the general public, state natural resources officials are taking prudent steps to protect the Indiana bat from the disease scientists have nicknamed “white-nose syndrome.”

Photo courtesy of Indiana Department of Natural Re

Indiana bats hibernating at Big Wyandotte Cave form colonies that can reach densities of more than 300 bats per square foot.

Already on the list of endangered species, the Indiana bat is one of the six species of bats threatened by the deadly syndrome that has killed hundreds of thousands of bats in the Northeastern states. And while some may find it difficult to muster sympathy over the demise of “sky rats,” they should be concerned.

Bats serve the beneficial purpose of acting as nature’s insecticide.

If the bats die off, insect populations will skyrocket and decimate food crops. Farmers will be forced to increase the use of pesticides leading to an increase in agricultural pollution. The demise of bats means less money in farmers’ pockets, less food and more environmental pollution.

In efforts to stem the disease’s spread, the government has closed hundreds of caves in Indiana and beyond. Caves are becoming more frequently off limits to public exploration. Even Mammoth Cave in Kentucky is scrutinizing visitors in hopes of stemming the mysterious disease of unknown origin that could potentially wreak havoc on entire species of bats and cause serious long-term damage to the environment.

Photo courtesy of Indiana Department of Natural Re

Indiana bats hibernating at Big Wyandotte Cave form colonies that can reach densities of more than 300 bats per square foot.

White-nose is a mold disease that is killing hibernating bats in record numbers. The disease was discovered in the winter of 2007 in upstate New York and was dubbed white-nose syndrome because the infected bats have a fuzzy white ring around their noses. The fungal fuzz also appears on bats’ wings and is caused by a type of mold called fusarium. The mold normally infects plants – tomato gardeners are likely too familiar with the blight – but until recently, animals had not normally been its target.

“There is uncertainty in the scientific community about the origin of the disease and whether or not the Geomyses fungus on the bats’ dermal tissue is the cause or a secondary manifestation of the disease,” said Scott Johnson, a non-game biologist with the Indiana Department of Natural Resources. The disease keeps bats from gaining enough body fat reserves to make it through winter hibernation.

White-nose causes the bats to exhibit atypical behavior. The bats are leaving the caves during hibernation, likely in search of non-existent food, resulting in the bats freezing to death.

“White-nose syndrome has not been detected in Indiana – yet,” said Molly Matteson, an advocate with the Center for Biological Diversity. “The closest location is West Virginia and western Pennsylvania. But it may be here within the next year given what we have seen.”

In May, the center sent out a letter to members of Congress educating them about the disease and begging for increased research funding. White-nose syndrome has been found in nine northeastern states so far.

“Overall, the threat to bats is very real and not just the Indiana bat, but other bat species as well,” said Georgia Parham, spokeswoman in the Bloomington office of the U.S. Fish and Wildlife Service. “If it gets to Indiana, it could have a devastating effect on the Indiana bat. Indiana is an important hibernating area for Indiana bats. It’s an at-risk species, and it’s a definite concern for biologists.”

The demise of the bat should concern Hoosiers who face the threat of mosquito-borne illnesses such as the West Nile virus. According to Parham, one bat can eat between 600 and 1,000 mosquitoes and other insect pests in just one hour.

Johnson said the mosquito is actually a relatively small part of the Indiana bats’ diet because the pesky insect offers too little sustenance for the bat. The bats’ more beneficial dietary habit is eating insects that prey on crops.

“People should be aware this is an unprecedented type of threat with the possibility to wipe out large populations or even total species,” Johnson said.

He also said the caves in Indiana contain more than half of the Indiana bats in existence. “So, yeah we have a pretty precious resource that’s really worth protecting.”

Scientists think the disease is spread bat to bat, but they also think people exploring caves are exacerbating the

Photo courtesy of Indiana Department of Natural Re

Researchers affix bands to bats’ wings to track them, providing information upon recapture or recovery.

Photo courtesy of Indiana Department of Natural Re

Animals like Indiana bats, above, that live in caves at least part time are cavernicoles. True cave animals, highly adapted to life in caves, are troglobites.

Photo courtesy of U.S. Fish and Wildlife Service

Bats showing a fuzzy white ring around their noses are infected with a mold disease that is killing hibernating bats in Northeastern states in record numbers. Indiana officials are taking steps to defend against it.

spread of the disease. The state Department of Natural Resources wisely has already taken steps to prevent the spread of the disease. The agency prohibited public access to all state-owned caves and is monitoring those caves for the fungus.

About a year ago, the state also contracted with John Whitaker, a professor of biology at Indiana State University and the head of the Center for North American Bat Research and Conservation, to study the disease and collect baseline body fat data on Indiana bats in Indiana.

Whitaker is collecting data and also investigating a potential way to help bats survive the disease by increasing their body fat. The bat research center is collecting money for research.

The loss of the Indiana bat is a grave concern. But it is the overarching issue of what the decline of the bat and so many species says about the sustainability of the environment. Scientists, for example, have linked the demise of species of frogs to global warming and birds to pollution. If the world is becoming so polluted that it can not sustain these animals, will it eventually become impossible for humans to survive?

"Our bats are valuable to us for what they eat. As far as night-flying insects, they are our major control on these insects," Whitaker said. "But this is also another indication to us about what is happening to our environment. If the bats and the frogs and the birds are in danger, what does it say about what's going to happen to us in the long run?"

Mammoth Cave

Mammoth Cave in Kentucky is a popular summer destination for many Hoosiers. The U.S. National Park Service, which overseas the caves, are also taking steps to prevent the spread of white-nose syndrome.

"It's just two counties away from us in Virginia," said Vickie Carson, public information officer for Mammoth Cave. "We're still open for business, but you will be asked questions. We have pretty stringent procedures in place."

There are more than 300 caves in the park, but only Mammoth cave is open to the public. And only 10 of the cave's 300 miles are open. Only researchers have limited access to the park's other caves.

"Access to Mammoth Cave is very controlled; that's always our standard operating procedure," she said. Park staff are screening visitors and requiring some visitors to disinfect their shoes before entering the cave.

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