

Bats live mostly out of sight and out of mind. But their falling numbers are a reason to look up and worry

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It's the time of year when ghouls and goblins, mummies and monsters are out in force. But unlike many Halloween creatures, bats live in more

than the imagination, making their homes in caves and hollowed-out trees in Illinois and the urban parks of Chicago.

The elusive winged mammals who make special appearances in decorations and throughout popular culture during the fall are under increasing threats across the state and the Midwest, the victim of a stubborn and spreading disease, shrinking natural habitat and a growing wind turbine industry. And with new changes to the Endangered Species Act, scientists and environmental advocates fear additional species of bats may be under siege from encroaching development and a changing, warming climate.

"It's really important to protect those remaining in the landscape so the bats do have a chance to reproduce," said Winifred Frick, the chief scientist at Bat Conservation International, adding that she believes it will be harder to prove that certain habitats are critical for the survival of a species in order for them to qualify for protected status in the future. "Anything that would hinder our ability to protect their habitat or their maternity habitats is less than ideal."

Mostly out of sight and out of mind because of their nighttime lifestyle and solitary flight tendencies, a dozen species of bats regularly call Illinois home, at least during the [summer months](#), and the animals can be found throughout the Midwest. Aside from their rare nuisance appearances in attics, bats play a positive, critical role in the ecosystem, scientists say.

The animals can be found in a variety of places across the city and the suburbs, scientists said, including city parks, forest preserves, golf courses and under roof tiles. Bats benefit humans during the summer by eating pesky insects, including mosquitoes, and provide important protection for Midwestern crops like corn and soybeans by feasting on bugs that could otherwise ravage farmland. In addition to pest control,

bats—there are more than 40 different species that live in the U.S. - help pollinate plants and disperse seeds. And contrary to popular myth, less than half of 1% of bats carry rabies, according to the U.S. Fish and Wildlife Service.

Three species, the Indiana bat, the gray bat and the northern long-eared bat, are federally protected. The northern long-eared bat population is shrinking rapidly, scientists said, in large part because of [white-nose syndrome](#), a fungus that attacks bats while they hibernate in caves or mines for the winter. Two other species, the little brown bat and the tri-colored bat, may be up for protection in the future. All of those varieties of bat live in Illinois.

The endangered Indiana bat, which is closely monitored by the U.S. Fish and Wildlife Service and researchers, has declined from more than 700,000 in 1981 to about 537,000 this year, according to [wildlife service](#) statistics. The population has dropped significantly in the Northeast and Appalachia regions since white-nose syndrome arrived in 2006, though the numbers in the Ozark-Central region, which includes Illinois, have been mostly stable since the disease appeared. More than 69,000 bats live at the Magazine Mine in downstate Illinois, where the population has remained flat the last two years.

Because bats tend to hibernate in dense clusters in caves and mines, they are difficult for scientists to count. Scientists are working to develop a North American system for monitoring and analyzing all bat species in the near future. But ongoing studies show bats' population is on the decline.

"In a nutshell, most bat species in N. America are not doing well," Andrew King, a fish and wildlife biologist in the wildlife service's Indiana field office in Bloomington, Indiana, said in an email. "They've been hit by a double whammy of white-nose syndrome and wind energy."

WNS has killed millions of bats of multiple species that hibernate during the winter and an ever-growing number of wind turbines continues to kill thousands of bats every fall as they migrate south for the winter."

Scientists say 5.7 million bats have been killed by white-nose syndrome since it was first spotted in upstate New York in 2006. The once-common little brown bat may be reduced to just 1% of its pre-white-nose syndrome population by 2030, according to Bat Conservation International.

Scientists across the Midwest, including in Chicago, have been monitoring bat populations in order to obtain a sense of how the creatures are faring. At the Lincoln Park Zoo, Liza Lehrer, the assistant director of the Urban Wildlife Institute, and a team of scientists are monitoring bats at sites across Chicagoland, setting up acoustic monitoring stations to count species and monitor bat activity at locations in the city and suburbs. Lehrer uses recordings of the bats' calls to identify and electronically visualize the types of species in order to tally how many are at different locations.

Lehrer said data from the monitoring program has shown that most bat species are experiencing a downward trend across Cook County. Recorded calls from three species in particular, the little brown bat, the northern long-eared bat and the tri-colored bat, have dropped significantly. During previous summers, Lehrer said close to 100 calls per species were tallied, while this year only 10 calls each were recorded by the program.

Two of those species, the little brown bat and the tri-colored bat, may be the ones most affected by new changes to the rules of the Endangered Species Act. Not currently protected at the federal level, they would be subject to the modified rules for listing new species. The new rules, touted by President Donald Trump's administration as lifting regulatory

burdens, likely will make it harder to designate critical habitat and require specific criteria for each new species, scientists and environmental advocates said. Those new rules may make it harder for the little brown bat and the northern long-eared bat to earn protections, even as work continues to bolster the fascinating creatures' chances to thrive.

The modified rules "will be very burdensome," Frick said. "They'll be less protections identified."

The U.S. Department of the Interior says the changes to the regulations are designed to "increase transparency and effectiveness." The new regulations impose a "heightened standard" for unoccupied areas to be designated as critical habitat. The U.S. Fish and Wildlife Service must now craft species-specific rules for each future threatened species, instead of more broad language. The new rules also say the economic aspect of listing a species for protection should be taken into consideration, a phrase that has bat scientists bristling.

"I hope that the U.S. Fish and Wildlife Service will consider the economic ramifications of not listing the species," said Joy O'Keefe, associate professor of biology and director of the Center for Bat Research, Outreach and Conservation at Indiana State University.

Bats often roost near roads or bridges, using underpasses and culverts for protection. They also have begun to flock to the towering wind turbines that are being built across the Midwest, mistaking the towers for trees. The hoary bat, which migrates long distances south from Canada across the Midwest, is particularly susceptible to wind turbines in Illinois, Iowa and Indiana.

These new threats, O'Keefe said, could place the bats in serious trouble.

Scientists and environmental advocates said the changes to the Endangered Species Act are not likely to affect already protected [species](#), unless they are de-listed in the future and then need protection again.

By late October and early November, most bats that have spent the spring and summer across the area have headed for caves downstate or warmer locales elsewhere. It is there that they become the most susceptible to white-nose syndrome, the disease that has been ravaging bats across the eastern U.S. for more than a decade.

White-nose syndrome arrived in Illinois during the winter of 2012-13. The disease has not impacted bats living in Illinois as much as it has in New York, but it still has scientists worried. White-nose syndrome is a fungus that strikes bats when they hibernate, usually in caves. Frick describes it as a really bad case of athlete's foot, or lesions, that cover the bat, causing them to wake up from their winter slumber. The bats, hiding in tightly packed groups in caves or mines, especially in the southern part of the state, wake up because they become too cold, then begin using energy and starve.

Scientists say climate change also is affecting bats, in some ways that are not yet fully understood. Warming temperatures may affect bats' sensitivity to roost temperatures or the conditions in caves and the insect populations they need for food.

Like migratory birds, bats make their way south, often using the shoreline of Lake Michigan as a navigational aid, meaning that some even end up in the concrete jungle of the Loop. Late last month, Stephanie Beilke, conservation science manager at Audubon Great Lakes, photographed a bat downtown during volunteer work with the Chicago Bird Collision Monitors.

"We find a few bats here and there every day during collision monitoring

which occurs downtown, though not as many as the birds we find. The bats that I found were near my office, close to the Sears Tower, but that's just because that's where I was monitoring," Beilke said in an email message. "It can be a bit unpredictable when and where they show up."

Bats, Beilke said, stand to benefit in similar ways as birds do in terms of habitat conservation and efforts to fight climate change.

For a long time, bats were often portrayed in a negative light—think huge, blood-sucking fangs and beady eyes—but that image has begun to change, advocates say. Scientists say many people tend to be more fascinated by bats than scared of them, perhaps helped by education and outreach efforts, especially presentations in front of school groups. And the Halloween season is prime time for bats, from signs to graphics on television to the holiday decorations that line grocery and big-box stores.

"There's more of a cool factor when it comes to bats these days than an ick factor," Frick said.

And Lehrer said she also believes that the more people hear about bats under threat, the more they begin to think about conservation and ways in which they can help during their everyday lives, much the same way people have become concerned with dwindling bee populations.

That [bats](#) have been "under a lot of conservation threats has really helped their image, unfortunately, or fortunately," Lehrer said. "I'm not sure which."

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