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BU SCIENTISTS RELEASE ALARMING DATA ON REGIONAL BAT POPULATIONS

Estimates Show Over 99% of Northeast's Little Brown Bat Population May Become Extirpated in 20 Years Due to White-Nose Syndrome

(Boston) – A new study led by Boston University College of Arts & Sciences researchers predicts that one of North America's most common bat species, the little brown myotis, will be all but extinct in the Northeast in 20 years due to an emerging disease affecting hibernating bats in eastern North America called White-Nose Syndrome (WNS).

The study, by a team including BU post-doctoral researcher Winifred F. Frick, BU biology Professor Thomas H. Kunz, and former BU Ph.D. student D. Scott Reynolds, documents a rapid decline of little brown myotis populations because of WSN, first discovered in 2006 in New York State and now affecting at least seven species of bats. The findings will be published as the lead story in the August 6 issue of *Science* magazine, with Frick the lead author of the paper.

"This is one of the worst wildlife crises we've faced in North America," said Frick. "The severity of the mortality and the rapidity of the spread of this disease make it very challenging and distressing. Researchers have been working very hard since it was first discovered four years ago to try to better understand the disease and find potential solutions to the problem."

The researchers analyzed data from the past 30 years to establish that the regional populations of little brown myotis were healthy and thriving before WNS was discovered in 2006. They then combined this with current data on winter mortality of little brown myotis populations to determine the adverse effects of WNS from the millions of bats dying from this disease.

The research shows that the regional population of little brown myotis is expected to collapse to less than 1% within 20 years of what its population size was before WNS, even if mortality slows through time. They conclude that loss of so many bats may result in unpredictable changes to ecosystem structure and function and will most likely become a nation-wide problem as the disease spreads further west and south and into Canada as well.

"Each of the bat species affected by WNS are obligate insectivores -- many of which feed on insect pests of agriculture, garden crops, forests, and at times on insects that annoy or pose risks to human health," said Kunz. "The little brown myotis is known to consume up to 100% of its body weight in insects each night. This level of insect consumption provides an important ecosystem service to human kind, and to the balance of natural and human-altered ecosystems, which in turn can reduce the use of pesticides often used by humans to kill insect pests."

Geomyces destructans, the newly described cold-loving fungal species associated with WNS,

grows on the nose, wing membranes and ears of bats while they hibernate. The fungus attacks bats when they are hibernating in caves and mines during the winter, causing them to wake up frequently and thus starve to death before spring. This fungus has spread very rapidly since it was first discovered in 2006. By the end of the hibernation season in 2010, the fungus had been reported on bats in eastern Canada as far south as Tennessee and as far west as Oklahoma.

"Given the rapid geographic spread of this fungus over the past four years," said Kunz, "we can expect that WNS will adversely affect bat species that form some of largest hibernating bat colonies in the U.S, including two federally-listed endangered species that occur mostly in the mid-western states."

These hibernating colonies are comprised of hundreds to hundreds of thousands of bats of several species occupying a given cave or mine. In late spring, bats leave these winter roosts and females form maternity colonies in the summer to raise their young. Many aspects concerning the mechanisms of transmission of the fungus associated with WNS remain unknown. But researchers suspect, based on how rapidly it has spread, that normal movements of bats during different seasons may be important.

While research is on-going about the potential origin of the fungus in North America, recent evidence has shown that the same species of fungus occurs on hibernating bat species in Europe, suggesting that it may have been inadvertently introduced into New York State by human traffic.

"There are many pressing questions we still need to answer about WNS," said Frick. "Our research demonstrates the seriousness of the impact that this disease is having on bat populations, but we need more research on how and why the disease is killing so many bats and, most importantly, what we can do to stop it."

Founded in 1839, Boston University is an internationally recognized private research university with more than 30,000 students participating in undergraduate, graduate, and professional programs. As Boston University's largest academic division, the College and Graduate School of Arts & Sciences is the heart of the BU experience, creating an extensive global reach that enhances the University's reputation for teaching and research.

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