Scientists Struggle to Save American Bats

Bob Locke

Scientists searching for solutions to White-nose Syndrome (WNS), the most devastating threat ever faced by North American bats, met in Austin, Texas, May 27-28, to review the latest research results and discuss the most critical priorities for the next three years.

WNS "has caused the most precipitous wildlife decline in the past century in North America," said John Hayes, Chairman of the University of Florida Department of Wildlife Ecology and Conservation Department.

"This could be the most important meeting any of us will ever attend with regard to the conservation of American bats," Merlin Tuttle, Founder and Executive Director of Austin-based Bat Conservation International (BCI), said in opening the session.

Tuttle and fellow bat biologist Tom Kunz of Boston University organized the Second WNS Emergency Science Strategy Meeting. The first was held in Albany, N.Y., June 9-11, 2008. Leaders of efforts to combat the disease are to testify before a panel of the U.S. House Committee on Natural Resources on June 4.

White-nose Syndrome, named for a fungus found on the faces, ears and/or wings of most infected bats, has killed more than a million hibernating bats of six species since it was first detected in a single New York cave in February 2006. Since then, it has spread rapidly across the northeastern states and beyond, reaching as far south as Virginia this past winter. WNS has killed up to 95 percent or more of bats in affected hibernation caves and mines.

Whole species, including the already-endangered Indiana and gray bats, are in imminent peril. Their loss could have serious consequences for the wellbeing of North American ecosystems, agriculture and human health. These bats are prodigious predators of night-flying insects, including many damaging agricultural and forest pests. Many bats, including the WNS-battered little brown bat, eat an average of half their body weight in insects each night from mid-April to mid-October. Kunz conservatively estimates that the million bats already lost to WNS would have eaten about 1.39 million pounds of insects each year. Without these bats, crop damage and pesticide use will almost certainly increase.

A dozen scientists and 14 state and federal wildlife managers attended the WNS strategy session, which was sponsored by BCI, Boston University, Disney Rapid Response Fund, National Caves Association, the U.S. Department of Defense and the National Park Service.

Their research priorities focus on several critical issues, especially the fungus that clearly is associated with WNS and is strongly suspected – though not proven – to be the cause. The fungus has been identified by a team led by David Blehert at the U.S. Geological Survey National Wildlife Health Center in Madison, Wis., as a previously undescribed species of the genus Geomyces (fungi) that is adapted to cold conditions like those in hibernation caves.

Scientists must now confirm whether it is, in fact, the primary cause of WNS. If so, a host of vital questions require urgent answers, including how the fungus causes bat deaths, how it is transmitted, how widely dispersed it might be, how long it survives inside and outside caves, how it can be stopped or its impact mitigated, and where it came from.

Another priority issue is why evidence consistently shows that infected bats arouse from hibernation far more often than normal. About 25 of the 46 U.S. bat species use caves or cave-like locations to some extent during winter, when their body temperature and metabolic rate drop to strikingly low levels to conserve energy. Every time they arouse from hibernation, their temperature and metabolism increase and they burn large amounts of stored fat. After a few extra arousals, they lack the energy stores to survive until spring and typically die of starvation. Scientists need to know exactly what causes these arousals and just what bats are doing during them.

Researchers also hope to learn whether some bats survive WNS infections, what characteristics make that possible and whether the spread of this frightful disease can be predicted, slowed or stopped.

“We’ve only begun. Much remains to be accomplished, but we’ve established a firm foundation upon which to base further research, conservation and funding decisions,” Kunz concluded.