

BATS HAVE NOWHERE TO HIDE

White-Nose-Syndrome Headed To A Cave Near You

In the span of just five winters, a deadly new disease called white-nose syndrome (WNS) that devastates bat populations has spread rapidly across the country from east to west. The bat illness was first documented in a cave in upstate New York in 2006, and in the spring of 2010, the white-nose pathogen had been reported as far west as western Oklahoma. As of spring 2011, the disease, or the fungus associated with it, has been detected in 18 states and four Canadian provinces. Well over one million bats have died, and several species are approaching regional extinction, including the once-ubiquitous little brown bat, which is virtually gone from the Northeast United States.

In affected bat colonies, mortality rates have reached as high as 100 percent, virtually emptying caves once harboring tens of thousands of bats and leaving cave floors littered with the innumerable small bones of the dead. At least six bat species are known to be susceptible, and the fungus associated with the disease has been found on another three species. Two federally listed endangered bat species are among those affected thus far. Scientists and conservationists are gravely concerned that if current trends continue, one or more bat species could become extinct in the next two decades or sooner.

Biologists believe WNS is transferred primarily bat to bat, and

possibly also from infected caves to bats. However, there is strong evidence that the WNS pathogen — a newly described fungus — can be transmitted from site to site by people, as well. The fungus has been identified in Europe, but does not appear to sicken bats there. It was first documented at a heavily visited commercial cave in New York. The fungus is found in cave soils at WNS-affected sites. Scientists thus theorize that the fungus, *Geomyces destructans*, was introduced to North America from Europe by an unwitting caver. Fungal material appears to be easily transferred between caves via clothing, boots and other gear, suggesting that human transport may play a significant role in long-distance transmission of the disease.

WNS has not yet been discovered in the western U.S. Scientists think it may only be a matter of time before the disease shows up in the West, but there is some evidence that bat populations do not mix a great deal between eastern and western regions. This may provide some protection to western bats, which reach their greatest species richness in the desert regions of the Southwest and southern California. However, scientists still fear that humans could cause a leapfrogging of the disease into the West, through the transport of the white-nose fungus on contaminated caving gear, clothing, or other material. The control of human access into bat caves and mines, and the reduction of the risk of fungal transmission by people, is the only way currently known to stem the spread of this wildlife epidemic.

Throughout much of North America, bats are the primary consumers of night-flying insects. While scientists are only beginning to understand the importance of bats through quantitative measure, it is clear that bats provide enormous ecological benefits by eating moths, beetles and other insects whose populations would otherwise go largely unchecked. The little brown bat, a species commonly found across much of the continent and severely affected by WNS, can eat at least half its weight in insects every summer night.¹ In an agricultural region of Texas, a study found that the value of bats' pest-eating services to local farmers totaled an estimated \$741,000 per year, for a crop worth \$4.6-6.4 million.² A recent scientific paper estimated that the value of bats' pest control services to agriculture was \$3.7 to \$53 billion annually.³

Not only are entire bat species at risk, but other cave-dwelling organisms, many of them rare and little studied, may also be in jeopardy. Bats bring nourishment, through their guano and bodies, into sites where full-time cave denizens, such as springtails, millipedes, spiders and many other creatures directly or indirectly



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Little brown bat; close-up of nose with fungus

depend on the influx of organic matter bats provide.⁴ Ultimately, the bat die-off precipitated by WNS could lead to the unraveling of numerous bat-dependent relationships in both the natural world and in human systems such as agriculture and forestry.

Given these risks, it is critically important that all feasible precautionary measures be taken to slow the spread of the disease and reduce its impact on surviving bat populations. While researchers continue to investigate the disease, with a hoped-for goal of discovering an effective treatment, wildlife and public land managers, and members of the public, need to support and cooperate with restrictions on non-essential human access into caves and abandoned mines (also important habitat for bats in the West). These closures can and should include allowances for emergency access and vital activities, such as search and rescue and scientific research, particularly that relate to white-nose syndrome.

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However, cave recreation is not an “essential” activity, and for the time being, this pursuit must be laid aside in order to give bats a chance at survival. For those whom caving is a treasured activity this sacrifice is significant, and yet, for bats, WNS is a matter of life and death.

Decontamination measures, while helpful, are quite painstaking and even if carried out well are not a complete guarantee that fungal material will be removed from contaminated clothing and gear. As the white-nose fungus has been consistently found in soils of WNS-infected caves, “wild” or off-trail caving (as opposed to guided tours on developed paths) tends to pose the greatest risk of fungal transport, as boots and other gear can become quite muddy.

In the eastern United States, caves and mines on national forest lands have been closed by emergency order since 2009. Likewise, a number of eastern national parks have completely or partially closed their caves. Caves within the jurisdiction of the Tennessee Valley Authority are completely closed as of late 2009, and caves and mines within all national wildlife refuges nationwide have been closed since fall 2010.

In the western United States, cave closures have been far more limited. The Rocky Mountain Region of the Forest Service closed all caves and abandoned mines in 2010 in response to the western Oklahoma discovery. Several national parks have either partially or completely closed caves within their borders in response to WNS. In New Mexico, the Bureau of Land Management has recently implemented a partial closure, restricting access to approximately two dozen caves. Most western national parks with cave resources are in the process of tightening access to caves, subjecting all caves that had been previously unregulated to permitting systems. Most national parks will be issuing few, if any, permits in



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the near future until more is learned about WNS.

The limited extent of closures in the West to date leave bat caves and mines on the vast majority of federal public lands open and vulnerable to the inadvertent transmission of WNS by people. These federal jurisdictions include the remaining regions of the U.S. Forest Service in the lower 48 (Southwestern, Northern, Intermountain, Pacific Northwest and Pacific Southwest); and virtually all Bureau of Land Management lands.

Unfortunately, many western federal land managers are delaying action at the very time when action could be most meaningful and effective — in other words, *before* the bat disease reaches the West. Rather than delay closures of bat caves and mines until WNS is closer to, or actually documented in, western states, federal land managers must move quickly to declare closures of all bat caves and abandoned mines, allowing access only for essential scientific research and safety purposes. While there is yet time to take meaningful action against this risk, federal land managers must do so, or leave bats and ecosystems unnecessarily exposed to an overwhelming threat of devastation and loss. ♦

Mollie Matteson works as a conservation advocate for the Center for Biological Diversity, out of the Northeast field office. She studied wolves for her Masters degree in wildlife biology, but she also really loves bats.

¹For accompanying footnotes to this article please see the “Notes” section of www.desertreport.org

DESERT COMMITTEE MEETING

The Summer meeting of the Desert Committee will be held August 6-7, 2011 at the Nelson Group Camp in the White Mountains. John Moody will chair the meeting. The Autumn meeting will be held November 12-13, 2011 at the White-water Preserve. Pat Flannigan will be the chair. We encourage local citizens in the area to attend, as many of the items on the agenda include local issues. Email Tom Budlong at tombudlong@roadrunner.com or call 310-476-1731 to be put on the invitation list.