Land Letter

11. WILDLIFE: Fatal bat syndrome moves West, prompting more cave closures

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Eryn Gable, special to E&E

The Forest Service is considering closing caves in national forests and grasslands in the Rocky Mountains to prevent the further expansion of a bat-killing disease that has spread rapidly from its original epicenter in upstate New York four years ago.

The closures would limit human access to caves on Forest Service lands in Colorado, Kansas, Nebraska and most of Wyoming and South Dakota in hopes of stemming white-nose syndrome, which scientists believe people can transport on clothing, boots, caving gear and other equipment.

Janelle Smith, a spokeswoman for the Forest Service's Rocky Mountain Region, said the agency is still weighing whether to issue a closure order. "It is something we are considering, but we are yet to make the final decision," she wrote in an e-mail.

The closure order, which could be announced within the next couple of weeks, is expected to be in effect for at least 12 months. The closure, if issued, would also likely limit access to some trails that are used to access caves.

The Rocky Mountain Region is not alone in trying to develop a response to the epidemic. In the Southwest, Forest Service spokeswoman Karen Carter said the agency is expected to make a decision on its response to the disease, including cave closures, in the next few weeks.

Fred Luiszer, left, and Donald Davis, both of the Colorado Grotto of the National Speleological Society, at the entrance of Colorado's popular Fulford Cave south of Eagle. The cave would be off-limits if an expected Forest Service closure order applies to all caves within national forest lands in the Rocky Mountain Region. Photo courtesy of Richard Rhinehart.

Caves on Bureau of Land Management land also remain open, but BLM has indicated it will coordinate with the Forest Service in responding to white-nose syndrome.

"The BLM has not closed any caves or mines, although closure is under consideration," BLM spokesman David Quick wrote in an e-mail. "In the meantime, we have implemented decontamination procedures at some locations."

Caves in national forests in the South and East have been closed since the spring of 2009. Some states have also closed caves to protect bats, and a few other federal land units, such as Great Smoky Mountains National Park, home to the largest hibernacula of the endangered Indiana bat, have made caves off-limits to visitors in an attempt to stem the spread of the illness. The syndrome has also been detected at two other National Park Service sites: Delaware Gap National Recreation Area and Ozark National Scenic Riverways.

Other parks, including Carlsbad Caverns in New Mexico and Mammoth Cave in Kentucky, have taken proactive steps to stem the spread of the disease, although no caves at either site have been closed because of the disease. At Mammoth Cave, home to 400 caves including nine hibernacula caves, the Park Service has changed three of its "crawling" tours at the park's namesake cave -- the world's longest at 392 miles long -- by providing visitors with all clothing and equipment except for boots, which are decontaminated before and after the tours.

"It's pretty imminent that it will be here, but it just hasn't shown up yet," said park spokeswoman Vickie Carson, noting that the syndrome has been found in neighboring states including West Virginia, Virginia and Tennessee.

So far, the Park Service is not planning to issue a blanket policy across the National Park System closing caves, according to NPS spokesman Dave Barna. "We're not closing any caves, and we have no plans to close any caves," he said.

A growing threat

White-nose syndrome was first discovered in a cave in upstate New York in early 2006, when a caver photographed hibernating bats with an unusual white substance on their snouts.

The disease spread from New York to Vermont, Massachusetts and other Northeast states, sickening and killing unprecedented numbers of bats in and around mines and caves from New Hampshire to Tennessee. So far, the disease has claimed the lives of more than 1 million bats in what Fish and Wildlife Service officials have dubbed the worst wildlife health crisis in recent memory.

The fungus associated with the disease has been found on bats in 14 states and two Canadian provinces, and bats throughout much of the affected area are now dying at extremely high rates -- up to 100 percent in some infected caves.

Affected bats found in the hibernacula often have white fungus on their muzzles and other body parts. Other symptoms include low body fat and exhibiting uncharacteristic behavior such as moving to cold parts of the hibernacula and flying during the day and during cold weather when the insects they prey on are unavailable.

Scientists fear that several species could be completely wiped out within a few years' time. A total of nine bat species are now affected, and surveys in the Northeast, where white-nose syndrome has been ravaging bats the longest, reveal that several species are close to being regionally extinct.

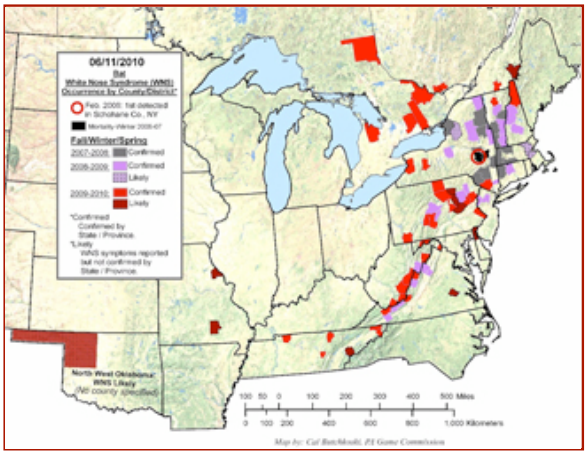
Researchers believe the white-nose fungus spreads primarily via bat-to-bat transmission and that bats can also pick it up from infected caves. Humans do not appear to be susceptible to the disease, but scientists believe people can spread it.

'A bitter pill'

The growing number of cave closures has sent shockwaves through the caving community. In a notice, Colorado Cave Survey chairman David Lambert called the decision to close caves in that state "difficult and controversial" and "a bitter pill," but he wrote that the survey supported the closures.

"Cavers rightfully consider themselves to be stewards of the underground world," he wrote. "Across the west, our claim to that identity will be measured to some extent by our support for these closures."

But Richard Rhinehart, the editor of *Rocky Mountain Caving*, said the closures would be difficult to enforce, especially given limited government resources. "The Forest Service doesn't have the manpower to effectively enforce a blanket closure of all these hundreds, if not thousands, of caves throughout this region," he said.



White-nose syndrome has been found on bats in 14 states and two Canadian provinces, and bats throughout much of the affected area are now dying at extremely high rates -- up to 100 percent in some infected caves. Map courtesy of Pennsylvania Game Commission. Click the map for a larger version.

Rhinehart also questioned whether the closures would be effective. As long as other caves remain open, he noted that the closures may not be able to stop the spread of the disease.

Peter Youngbaer of the National Speleological Society added that if the Forest Service does close caves, it would be best to use targeted closures focused on the major hibernacula rather than a blanket closure.

"Blanket closures don't work. They don't stop white-nose and they have unintended consequences in terms of protecting bats," he said, noting that vandalism tends to increase at closed caves.

Additionally, he noted that stopping human traffic into a cave does not offer full protection against the disease as long as bats are free to migrate between caves. For example, the syndrome has been found in Hellhole Cave, West Virginia's largest bat cave with an estimated 200,000 hibernating bats in the winter -- including more than 40 percent of the entire population of the endangered Virginia big-eared bat -- even though the cave is privately owned and closed to the public.

Nevertheless, Youngbaer said directing cavers and biologists not to bring any gear from a white-nose syndrome-affected area into other areas is "the single most important thing that could block any potential human vector."

'A good thing to do'

Despite the controversy over the closures, environmentalists have been pushing for broad cave closures as one proactive measure that could be taken to prevent the spread of the disease. In January, the Center for Biological Diversity filed a petition to close bat caves on all federal lands in the lower 48 states due to the threat of white-nose syndrome.

"Anything we can reasonably do to slow the spread of this disease is a good thing to do," said Mollie Matteson, conservation advocate for the center.

Matteson noted that cooperation from cavers would be critical to the success of the closures. "Those are the folks that have the greatest ability to make this work, but they also have the greatest ability to disregard this and behave in unhelpful ways in terms of potentially spreading the fungus," she said.

The center has also filed a petition to designate two white-nose-affected bat species -- the eastern small-footed bat and the northern long-eared bat -- as federally endangered. In June, the group notified the government that it intended to sue FWS for its failure to respond in time to protect the two bats.

Matteson noted that several species already protected under ESA could also be at risk from the disease, including the gray bat, Indiana bat and Virginia big-eared bat.

And, she said, more funding for research is critical because there is still much that is unknown about the mechanisms of how the fungus affects the bats, how they pick it up and, most importantly, how to stop or prevent the disease.

Numerous laboratories and state and federal biologists have been searching for the cause of the syndrome since its discovery, but it sill remains unknown. Scientists are still researching the properties of the newly discovered cold-loving fungus *Geomyces destructans*, which invades the skin of the bats and is believed to be responsible for the syndrome.

Jeremy Coleman, the national white-nose coordinator for the Fish and Wildlife Service, said the government has completed the final draft of its response plan for white-nose syndrome. The plan is expected to be released for public comment within the next month.

Meantime, he said, officials are forging ahead with their response to the syndrome. For example, Coleman said scientists are investigating possible biocontrol agents, including other fungi that could compete with the deadly fungus and bacterium that could destroy it, as well as fungicides. But nothing has panned out thus far, he said.

Coleman stressed the far-reaching impacts of the disease, noting that even bats that survive the infection may be compromised to the point that they cannot reproduce. Additionally, he noted that the impacts of the disease stretch far beyond the 160 sites where the fungus or disease have been found so far, since bats can travel for hundreds of miles.

"It's important to realize that the impacts of the disease are not just the caves and counties and states that show up on a map," Coleman said. "You have to draw a 300-mile to 400-mile buffer around all those locations ... to get a sense of the total impact of the disease."

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