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## Researchers Alarmed by Bat Deaths From Wind Turbines

By Justin Blum

Washington Post Staff Writer

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Jessica Kerns thought her survey of new power-generating wind turbines on a mountaintop in West Virginia would yield the standard result: a smattering of dead birds that were whacked by the whirring blades.

But the University of Maryland doctoral student turned up something unexpected amid the trees and rolling ridges of Backbone Mountain: hundreds of bat carcasses, some with battered wings and bloodied faces. "It was really a shock," Kerns said.

Thousands of bats have died at Backbone and on another nearby wind farm in Meyersdale, Pa. -- more per turbine than at any other wind facility in the world, according to researchers' estimates. The deaths are raising concerns about the impact of hundreds more turbines planned in the East, including some in western Maryland, as the wind industry steps up expansion beyond its traditional areas in the West and Great Plains.

The bat deaths, which have baffled researchers, pose a problem for an industry that sells itself as an environmentally friendly alternative to conventional power plants. Wind proponents already have had to battle complaints about bird deaths from the blades and about unsightly turbines marring pristine views.

The white turbines in Appalachia rise more than 340 feet above the ground -- well above the tree canopy -- and are lined up close to one another to catch the wind as it blows over the mountains and ridges.

The bat problem could worsen, conservationists fear, as wind developers rush to erect new turbines following the recent renewal of a federal tax break for a year. The wind industry, which had been virtually dormant since the last tax break expired a year ago, projects more wind turbines to be built around the country this year than in any previous year. In the areas near where bats have been killed in Pennsylvania and West Virginia, activists said, roughly 700 new turbines have been proposed or approved.

"Take the most conservative estimates of mortality and multiply them out by the number of turbines planned and you get very large, probably unsustainable kill rates," said Merlin D. Tuttle, president and founder of Bat Conservation International, whose Austin-based group is leading the research effort in Appalachia. "One year from now we could have a gigantic problem."

Bats serve an important role in nature, and their populations are believed to be in decline, scientists said. The bats getting killed in Appalachia devour insects that pose grave threats to crops such as corn and

cotton. They also feast on pests that can spread disease, such as mosquitoes.

On Backbone Mountain, at a facility called Mountaineer Wind Energy Center, the first dead bats were found in 2003, soon after the project's 44 turbines came online. Conservationists and the wind industry hoped the deaths were a fluke.

But Kerns and other researchers returned last year and now estimate the 2004 death toll at between 1,500 and 4,000 bats. Nearby, another group of researchers, working at the 20-turbine wind farm in Pennsylvania, which came online a year ago, found a raft of bat carcasses as well.

Researchers do not know why bats are flying into the turbines. Armed with radar and thermal imaging cameras, they are trying to come up with recommendations for wind power developers to avoid the problem. Researchers are uncertain whether bats are attracted to the spinning blades or if their sonar, which allows them to find food and avoid trees and other objects, fails to detect the turbines.

None of the species of bats found on the two mountains is endangered, said Albert M. Manville II, a biologist with the U.S. Fish and Wildlife Service. The carcasses found include those of hoary, red and eastern pipistrelle bats. The deaths appear to violate no federal laws, Manville said, but the threat is serious. Unless a solution is found, he said, the turbines could get a reputation as being "bat Veg-o-matics."

The large number of dead bats caught the wind power industry by surprise, and now its leaders are scrambling to find a solution.

"It was something that when we found out about it we felt we needed to respond to immediately," said Laurie Jodziewicz of the American Wind Energy Association in Washington, which also is participating in the research. "What we wanted to do this year was to get a handle on what's going on."

The wind industry confronted its biggest environmental challenge when early model turbines in Northern California killed large numbers of birds. The industry says newer turbines and more attention to site selection have dramatically cut the number of bird deaths in subsequent projects around the country, though some environmentalists say too many birds are still dying.

The turbines tend to attract a lot of attention as they pop up around the country, but they are responsible for generating a tiny amount of electricity in the United States.

Last year, the industry said, it provided nearly 17 billion kilowatt hours, enough to serve some 1.6 million households -- less than 1 percent of the country's electricity production. Analysts said future expansion of the industry will be tied largely to whether the tax break remains on the books.

Wind power is generally more costly than generating electricity by more conventional methods -- though analysts said federal and state subsidies make the alternative more attractive. In addition, they

said that as natural gas prices rise, wind becomes more competitive.

An increasing number of states require that a certain amount of power come from renewable sources, such as wind. During debate over federal energy legislation in previous years, some interest groups called for a requirement that renewable sources account for a certain percentage of the nation's electricity production.

In the East, wind has only recently caught on, and the most preferable areas are on mountains where wind tends to be most powerful.

In West Virginia and Pennsylvania, the turbines are positioned on wide paths cleared amid maple, oak and other hardwood trees.

And that may have something to do with the bat deaths. Bats appear to be attracted to the open areas cleared by the wind developers because they can more easily find insects there, researchers said. But they are unsure why the bats hit the blades of the turbines -- whether they're attracted or accidentally fly into them.

Some of the bats are migrating south and others live near the wind farms, researchers said. Most of the deaths occurred between July and September, which includes the months of peak migration.

The two sites where researchers have found a large number of bat deaths are operated by FPL Energy of Juno Beach, Fla., the largest U.S. generator of wind power.

"There is something going on . . . that we don't fully have our arms around," said Steve Stengel, a spokesman for FPL, which has helped fund the bat research. "Our hope is that there are some suggestions based on the research of things that can be done to potentially reduce the number of collisions."

Some in the industry argue that there's no evidence that the bat deaths in Appalachia will be repeated on other wooded mountaintops or ridges in the East. Bat conservationists disagree, saying the evidence gathered so far suggests the problem will recur.

Several wind developers working on projects in Appalachia said they were concerned but planned to move ahead. Among them is Clipper Windpower Inc. of Carpinteria, Calif., which is planning a project on a portion of Backbone Mountain in Western Maryland, about 20 miles from the Mountaineer project.

"We're hopeful that they're going to identify some of the major issues there and we'll be able to respond to those," said Kevin Rackstraw, the company's development leader for eastern North America. "I don't think it's an acceptable response . . . to stop everything until we have answers. You can't just bring everything to a screeching halt. You move forward diligently trying to respond to the concerns as best you can."

The bats' deaths have caused a painful split among environmentalists. Some continue to support new wind power projects, saying any harm they cause bats would be far less severe than the environmental problems associated with mining for coal and burning it to produce electricity. The industry concurs, saying the public needs to consider the overall harm other forms of energy production cause the environment compared to wind.

But other environmentalists are calling for a moratorium on development of wind projects on wooded mountaintops in the region until researchers figure out how to prevent bat deaths. Some, such as Dan Boone, spokesman of a group called Citizens for Responsible Wind Power and conservation chair for the Maryland chapter of the Sierra Club, said the amount of power generated by the windmills is not worth killing bats and birds.

"We have an industry targeting that area, and it's not doing it sensibly," Boone said. "We're blowing the promise of wind as a good, renewable energy source."

Some other environmentalists who disagree have launched an Internet petition calling on Boone to resign from his Sierra Club position.

Kerns, who studied the problem in 2003 for a contractor for FPL and is now working with the bat conservation group, said she has started to see patterns in the deaths. She has not reached any conclusive findings.

For example, before and after large storms, more bats tend to die. On warmer nights when wind speeds are lower, more have died. But researchers do not know why.

Kerns feels a sense of urgency to complete the research as developers ready their plans for nearby mountains.

"It's likely the same thing will occur," she said. "I look at the areas that are around here and I worry about the mortality that will occur there."

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