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Bats and Birds Face Serious Threats From Growth of Wind Energy - NY...

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Bats and Birds Face Serious Threats From Growth of Wind Energy

By UMAIR IRFAN of

Spinning blades and fluttering wings are clashing more frequently as greater numbers of wind turbines are installed throughout the United States and the world. The generators can top 400 feet tall, have blades turning at 160 miles per hour and can number in the dozens over hundreds of acres. They are part of America's expanding renewable energy portfolio.

But the same breezes that push the blades are the playground of hundreds of species of birds and bats, and to them, the turbines are giant horizontal blenders.

With wind being one of the fastest-growing energy sources in the world, turbines are generating electricity along with friction between different environmental interests as advocates seek a compromise between the demand for clean renewable energy and the safety of animals.

Wind provides 198 gigawatts of electricity worldwide, with 39 GW of new capacity added just last year, according to the Renewables 2011 Global Status Report (GSR) by REN21, an international renewable energy proponent. "Commercial wind power now operates in at least 83 countries, up from just a handful of countries in the 1990s," said Janet Sawin, research director and lead author of the GSR, in an email.

The report notes that for the first time, wind power is growing more in developing countries than industrialized nations, led by emerging markets like China, which accounted for half of the global capacity increase last year. In addition, the European Wind Energy Association projects that wind energy employment will double by 2020 in the European Union.

However, the rapid growth and expansion of wind farms has had an increasingly significant effect on birds and bats, especially since, according to the GSR, the average wind turbine size has increased. The American Bird Conservancy (ABC), an avian conservation group, observes that upward of 14 birds per megawatt of wind energy are killed each year, numbering more than 440,000. The organization projects the number will rise substantially as wind energy production increases.

Killing mechanisms are different

Yet it's hard to determine how bird populations will respond to turbines. "It's very difficult to say

what the impact on birds is ... particularly migratory birds," said David Cottingham, senior adviser to the director of the U.S. Fish and Wildlife Service (FWS). Thus, the economic and environmental fallout may not be seen right away, said Cottingham.

According to FWS, birds are killed when they collide directly with turbine blades. Statistics show more birds are killed by cats and windows, to the tune of hundreds of millions. But turbines pose a unique threat to all birds, including endangered species, like whooping cranes, and raptors, like eagles, hawks and falcons.

Electrical infrastructure around turbines, like power lines, also poses hazards to birds, said FWS in a report on bird mortality.

Bats, on the other hand, face different problems around wind farms. "Many more bats than birds are killed by wind turbines, and they are killed in two ways: simply by being hit by the blades, and some are killed by pressure changes due to the sweep of the blades without even being hit," said John Whitaker Jr., a professor of biology and director of the Center for North American Bat Research and Conservation at Indiana State University, in an email.

Because bats use sound to navigate and can detect moving objects, like insects, exceptionally well, many are better able than birds to avoid striking the blades. However, they can't detect the invisible swath of low pressure left behind turning blades. Bats then fly into this area, and their internal airways rapidly expand, causing internal bleeding.

This phenomenon, known as barotrauma, accounts for more than half of all turbine-related fatalities in bats, according to a 2008 paper in the journal *Current Biology*.

The die-off is troubling because bat populations are already under stress from white nose syndrome, a spreading epidemic fungal infection that kills more than a million bats annually. This is exacerbated by bats' slow reproductive rate and decades-long life expectancy, meaning populations are slow to recover.

"The hibernating bats are being killed by white nose syndrome, whereas it is the migratory bats -- red, hoary and silver-haired bats -- that are being killed by wind farms," said Whitaker. "The kill of these bats is going to be huge."

Bat die-off costly to farmers

Bat deaths also carry substantial economic consequences. Because of their voracious appetite for insects, bats are excellent for natural pest control. A paper published in the journal *Science* in March said bats typically save farmers \$74 per acre, and the study projects that bat deaths can cost \$3.7 billion annually in crop losses.

The solutions, according to FWS, are planning, mitigation and offsets. "We're trying to figure out

how to work with industry so you can have both renewable energy and do it in a way to protect birds, particularly those birds that are endangered species," said Jerome Ford, director for the migratory birds program at FWS.

Ford said substantial conflicts can be avoided if wind farms are placed away from flying animals by studying wind and migration patterns.

Active deterrence, using tools like radar, is also being studied, but it can create other potential issues. "You want the birds to avoid the area to avoid injury, but you don't want them to avoid the areas if it leads to habitat fragmentation," said Cottingham. The FWS is also investigating vertical axis turbines, which take up less airspace and are potentially less harmful to birds and bats.

Cottingham and Ford did acknowledge that despite their best efforts, wildlife will still be at risk, including endangered species. The FWS has allowed wind energy companies to "take" a certain number of endangered animals without fines or penalties, provided they offset the harm with habitat restoration. "Take" is defined as maiming or killing under the Endangered Species Act.

Feathers fly over new guidelines

Last month, FWS released another draft of its wind energy guidelines. The American Wind Energy Association (AWEA), a wind industry advocacy group, expressed approval for the new document. Tom Vinson, AWEA's senior director of federal regulatory affairs, described it as an "extraordinary achievement."

The ABC, on the other hand, was aghast. The revised guidelines removed much of the previous language about protecting birds as well as other suggested measures to protect wildlife, and what little remained is voluntary, said Bob Johns, director of public relations for the ABC.

"What's difficult to overlook is the number of times the word 'should' is used," said Johns. "There is no reference to 'must' and 'shall.'"

However, the ABC is still in favor of wind power. "We are a supporter of wind," said Johns. "We think it has the potential to be very green. All we're saying is do it right. It's not hard to do. There are a limited number of sites where [harm to wildlife] would be an issue."

Through working with the government and industry groups, the ABC hopes it is not just tilting at windmills, but that eventually there will be binding regulations to protect bald eagles and little brown bats while reducing American dependence on fossil fuels.

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