

Flying Bats, Spinning Blades

Reducing bat fatalities from wind power expansion

by Annika S. Hipple

Scattered across hillsides and prairies, towering wind turbines have become an increasingly common sight as the world looks toward renewable energy solutions. Yet while those giant spinning blades represent progress in the fight against climate change, they are also a lethal danger to bats, which are being killed in large numbers by wind turbines.

Researchers believe that bats are somehow attracted to wind turbines. This means as wind energy development expands rapidly, the prob-

lem of bat fatalities is becoming more widespread.

New study sheds light on bat mortality

In a study published last year in the journal *Biological Conservation*, Bat Conservation International (BCI) Chief Scientist

Dr. Winifred Frick and biomathematician Dr. Nicholas Friedenberg estimated the impact of wind energy build-out on hoary bats (*Lasiurus cinereus*), the species most frequently killed by turbines. They found that hoary bat mortality at wind farms is occurring on a scale that risks sending populations into severe decline or even extinction. Although hoary bats are the species of primary concern due to their high mortality, wind turbines also kill other species, particularly other migratory tree bats.

However, Drs. Frick and Friedenberg found that curtailment, which means reducing turbine operations at lower wind speeds, is an effective strategy to reduce bat fatalities: "We show that risks of decline and extinction may still be mediated with rapid adoption of measures to reduce bat fatalities. We find that levels of fatality reduction shown to be achievable in empirical studies of fatality minimization, by turbine curtailment, may be sufficient to manage risks," they wrote.

Bat researchers have known for a long time that most fatalities from wind farms occur at

low wind speeds. "If we can change what we call the cut-in speed, the wind speed at which we allow the turbine blades to spin, we can dramatically reduce the number of bats that are killed," Dr. Frick explains. Adjusting cut-in speeds to above five meters (around 16 feet) per second can reduce bat fatalities by as much as 50%.

Working together to find solutions

Implementing this shift requires the cooperation of wind companies, for whom any reduction of turbine operation is a loss in energy produced. "Ultimately, we want solutions that allow the maximum amount of power to be generated, while also minimizing the number of bats being killed," Dr. Frick says.

"We are working to find scalable solutions to reduce bat fatalities at wind energy facilities," says Michael Whitby, Director of BCI's Bats and Wind Program. By partnering with industry and other stakeholders, BCI aims to develop solutions that will support wind power without endangering bat species.

The authors focus on land-based power generation in this study,

but the ongoing push to expand wind farms at sea may also pose a risk to bats. "These turbines are expected to be installed at 20 to 50 kilometers (12 to 31 miles) offshore," Whitby explains. "If bats can see them from onshore, there is a high potential that they could be attracted to these turbines, and the problem could also occur offshore. We have a lot of records of bats offshore, so we know they go there. That's a huge concern that's often overlooked."

Dr. Frick points to the importance of acting rapidly to reduce bat fatalities as scientists are also working to collect more data, such as hoary bat population size estimates and population trends. She also emphasizes the importance of climate solutions like wind energy.

"It's important to underscore that finding ways for wind power to help us meet our renewable energy goals, without causing species extinctions, is part of our contribution to climate change solutions," Dr. Frick says. "I think we can have wind power, and we can have bats. We shouldn't feel like we have to choose between wind power and wildlife." 🦇



Photo: Brian Anschel
Technician Brian Anschel locates the plot corners and outlines that will later be searched for bat fatalities.



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Photo: Brian Anschel

Reducing turbine operations at lower wind speeds is an effective strategy for reducing bat fatalities.