# Bat fatalities at wind farms prove unpredictable

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Photo of a wind farm, which are a threat to bats. Credit: Fiona Mathews

Costly ecological impact assessments (EcIAs) completed prior to the

building of wind farms have failed to protect bats from fatal collisions with the spinning blades. Researchers reporting in the Cell Press journal *Current Biology* on November 7 say that, for reasons that aren't yet entirely clear, that's because surveys of bat activity conducted only before building begins are poor predictors of future bat fatalities.

"The findings highlight the difficulty of establishing with certainty the effect of major developments before they occur," says Fiona Mathews of the University of Exeter, UK. "This is a real problem for the planning system. In most countries, the system of Environmental Impact Assessment is based on the assumption that accurate assessment of risks can be made in advance and so appropriate steps [can be] taken to avoid any adverse effects—or if the bad effects cannot be mitigated, then the development should not be permitted to go ahead. Our work highlights that this can be difficult to achieve in practice, as animals do not always behave the way we might anticipate."

Mathews and her colleagues surveyed 46 wind farms across the UK for bat fatalities over the course of a month as part of a study to determine the impact of wind turbines on bats. Because it's extremely difficult to find dead bats, her team relied heavily on search dogs to locate casualties, she explains. They also used audio analysis to characterize bat activity.

Search dogs (including Ozzy, pictured here) helped researchers find tiny dead bats at wind farms. Credit: Victoria Stent

"Without [the dogs], locating bat casualties is like looking for a needle in a haystack," she says, noting that most of the bat species weigh less than five grams. "Failure to survey adequately is a huge problem and explains why many wind farms apparently have 'no problem.'"

The researchers then compared the bat activity and casualties that they recorded at each site to the expected impact at 29 of the sites for which an EcIA was available. That comparison showed that the "perception of risk to bats during EcIAs was not significant in predicting either bat casualty rates or activity levels post-construction."

The researchers also found that the mitigation measures put in place at sites determined in advance to present a greater risk to bats have not provided adequate protection. Bats continue to be killed.

Photo of a wind farm, which are a threat to bats. Credit: Fiona Mathews

Mathews says there are two main reasons that EcIAs may be insufficient to protect bats. First, assessment efforts might not be conducted in a sufficiently rigorous manner. It's also possible that bats change their behavior once wind turbines are erected.

She calls for more thorough assessments prior to building along with careful study of casualties post-construction and their impact on local bat populations.

"We need to remember that bats have been around for at least 30 million years and during that time have been able to fly happily without the risk of colliding with a spinning object," Mathews says. "If bats are actively attracted to turbines, then it might not prove possible to predict this accurately in advance."

Mathews says that it's important now to determine whether bats might actually be attracted to wind turbines. In the meantime, the most straightforward approach to keep bats safe is to minimize the rotation of turbines at night in the summer and early fall when bats are most active. Some operators are embracing this approach, and she and her colleagues are working with them to test the method.

**More information:** *Current Biology*, Lintott et al.: "Ecological impact assessments fail to reduce risk of bat casualties at wind farms" www.cell.com/current-biology/f … 0960-9822(16)31188-5 , DOI: 10.1016/j.cub.2016.10.003