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Wind farms kill almost one million bats per year in Spain

- A third of species present in Spain are threatened. More than half of them are victims of wind turbines.



In 2011, 33,000 and 37,000 bats died in wind farms in Cadiz. / Istock

A study led by the Doñana Biological Station (EBD), a centre belonging to the Spanish National Research Council (CSIC) warns of the “devastating” impact of turbines in wind farms in Cádiz and, possibly, in other areas in Spain. This is the main conclusion of a research group of the Doñana Biological Station, Lund University (Sweden), and the University of Seville (Spain) after analyzing mortality data of bats collected between 2005 and 2016 in wind farms in this Andalusian province. The results of this study have been published in the scientific journal *Acta Chiropterologica*.

Ambiental monitoring plans in Cádiz include the daily presence of guards in wind farms during daylight hours throughout the year. The main task of the staff is to locate animals

killed or injured by the wind turbines and to order the turbines to stop when there is a risk of collision with a bird or flock, especially, in the case of endangered species.

This monitoring plan is the most intensive one carried out in Spain and is considered a role model. According to the data from this plan, 2.371 bat bodies were found during the study period, which belonged to at least 15 different species out of the 20 that are present in the province of Cádiz. The study focused on analyzing in detail 582 incidents found in 2011, the year that had the most complete information available.

High mortality rates

To estimate the actual mortality rate, the scientific team carried out an experiment consisting of placing more than a hundred bat carcasses in nine wind farms to use them as “bait” and evaluate the efficiency of the search process of the surveillance staff and the time that the carcasses remain on the field.

The surveillance staff only located 17% of carcasses laid on the wind farms, despite the daily revision of the turbines and the four straight days the carcasses were on the field. In addition, the search of bat bodies was limited to “clean” areas comprising, on average, less than 15% of the total search area. Correcting this detection bias, researchers estimated an average annual mortality rate of 41 bats per turbine in the study area.

These results make them estimate that between 33,000 and 37,000 died in the wind farms in Cádiz in 2011. Likewise, according to the study, some of the areas that were prospected registered the highest mortality rates in wind farms in the world recorded to date.

“It is important to remember that bats have a very low fertility rate —one (sometimes two) births per female per year”, points out Sonia Sánchez, the main author of the study. “Our data shows a devastating impact on bat populations. In this case, it is affecting sedentary species, contrary to what is happening in other parts of the world. In Northern Europe or North America, migrating bats are the most affected”, continues she.

The first conclusion of this study is that these environmental surveillance programs are not efficient for the search of bats and probably not for small birds either, since they are focused on big soaring birds, and they are concealing very high mortality rates. The authors recommend new monitoring methods, more suitable for small-size animals, be implemented, as well as new studies to evaluate the efficiency of real search of the environmental surveillance programs. The second conclusion that can be drawn is that it is necessary to urgently adopt preventive and mitigation measures to protect this group of mammals, which includes many threatened species, against the development of renewable energies.

In this sense, Sonia Sánchez recognizes the importance of wind energy as a renewable energy resource to fight against climate change, but she calls for the need to balance energy generation with the protection of biodiversity. “The mitigation measures, such as stopping the wind turbines during the periods of bat high activity, are essential to reduce the impact on these species and reach this so-called green energy”, concludes the researcher.

Sánchez-Navarro, S., Gálvez-Ruiz, D., Rydell, J., & Ibáñez, C. (2023). **High Bat Fatality Rates Estimated at Wind Farms in Southern Spain.** *Acta Chiropterologica*. DOI: [10.3161/15081109ACC2023.25.1.001](https://doi.org/10.3161/15081109ACC2023.25.1.001)

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