

Bat Initiative

AWWI works to improve understanding of the risks of wind energy to bats and provides tools to avoid and minimize impacts.

The Challenge:

At least 21 species of bats have been recorded as collision fatalities at wind facilities in Canada and the United States. The majority of fatalities reported are from three migratory tree-roosting species (hoary bat, Eastern red bat, and silver-haired bat) which collectively make up almost 80% of the reported fatalities at all wind facilities in Canada and the United States. In some areas with high presence of endangered species, the U.S. Fish & Wildlife Service has required wind facilities to shut down turbines during high risk periods. There is some concern that impacts to migratory tree bats and other bat species also affected by white nose syndrome may be unsustainable to populations as a whole.

Goals of AWWI's Bat Initiative:

AWWI's Bat Initiative is designed to:

- **Improve understanding of risk** to bats from the operation of wind energy facilities and support avoidance of this take using best practices.
- Assess the effectiveness of operational curtailment strategies and verify bat detection and deterrence technologies to **minimize the estimated take** to the maximum extent practicable.



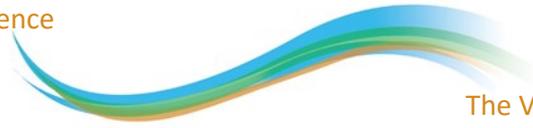
Eastern red bat. Credit: lycaenidae_nm, flickr



Hoary Bat. Credit: J. N. Stuart, Flickr



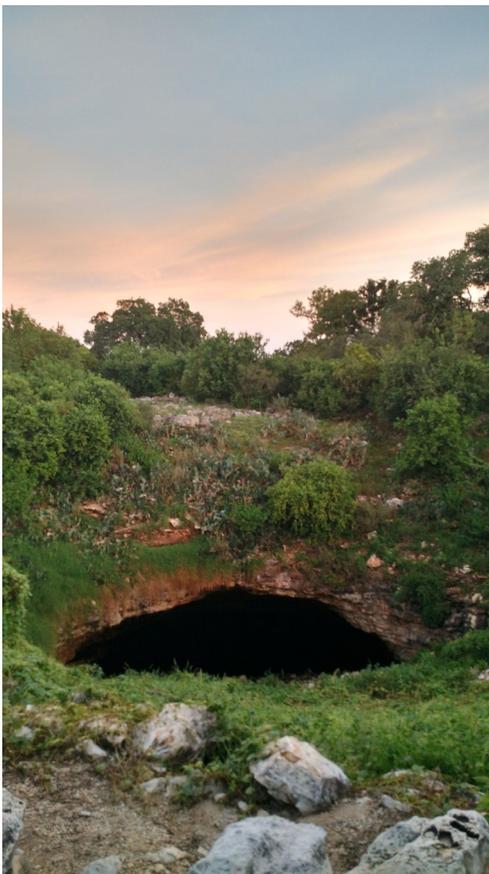
Silver-haired Bat. Credit: L. McGuire



Solutions

Improving Risk Prediction with Species Distribution Models

We will determine whether there are environmental variables that explain the large geographic variation in fatalities of migratory tree bats recorded among wind energy projects. Our initial focus will be on smaller geographic areas that have high variation in fatalities of tree bats. We will use the results of the correlation analysis to produce Species Distribution Models (SDMs) that predict collision fatality risk within the areas



Bracken cave in Texas, home to the largest colony of Mexican free-tailed bats in the world. Credit: AWWI

of analysis. Spatial data layers depicting variation in fatality risk across a geographic area will be produced from iteration of the models; the data layers will be intended for use in project risk assessment and development of mitigation strategies.

Forecasting Peak Fatality Events

In collaboration with the Bats and Wind Energy Cooperative (BWEC) and scientists at Bat Conservation International (BCI), we are exploring the use of weather and other environmental variables to forecast peak bat-fatality events (i.e., nights in which the numbers of bats killed are substantially greater than those killed in other nights). This information will be used to optimize mitigation strategies and minimize power production loss.

Minimizing Take: Verifying Detection and Deterrent Technologies

AWWI has established a program to facilitate rigorous, independent field tests to determine the effectiveness of promising technologies that detect and/or deter bats at their facilities. By pooling resources and expertise from technology vendors, wind operators, independent scientists, and others, AWWI will coordinate transparent, replicated evaluations of technologies, leading to greater certainty in the ability of the devices to minimize impacts to bats.

Collaboration and Leveraging Resources

AWWI and BCI collaborate to leverage resources, ensure there is no duplication in effort, and take advantage of the expertise each organization offers. AWWI's Director of Research serves as a Science Advisor for BWEC to review progress on key initiatives and help set research priorities. In the past, AWWI contributed funding to BWEC to support early development of a bat deterrent device.