RESULTS SUMMARY

November 24, 2020

Summary of Bird Fatality Monitoring Data Contained in AWWIC (2nd Edition)

AWWI's 2nd edition bird report from the American Wind Wildlife Information Center (AWWIC) database summarizes bird fatality rate (birds per megawatt per year) and fatality incident (individual fatalities) data from wind energy facilities in the U.S. AWWIC is the most comprehensive database of post-construction fatality monitoring data from U.S. wind projects, incorporating both publicly available and contributed data. The 2nd edition report adds 81 new studies to the data summaries to ensure that the most up-to-date data are available for generating hypotheses about bird collision risk at wind energy facilities.

The full report is available online at www.awwi.org/awwic-bird-technical-report/.

DATA SUMMARY APPROACH

Many post-construction fatality monitoring (PCM) data are publicly available, but some results are confidential and unavailable for analysis. AWWIC contains both public and confidential data, and by maintaining data confidentiality, encourages voluntary data contributions from wind energy projects across the U.S. making more data available for analysis. The data for each PCM study contained in AWWIC, include information on project characteristics, raw carcass counts and individual fatality incidents, bias corrections, and adjusted fatality estimates. The detailed picture of how each study was conducted allows studies that do not meet a basic level of standardization to be removed, or further adjusted if comparative analyses are conducted.

The 2nd edition report contains the latest data summaries for:

- Regional representation of the AWWIC database
- Regional bird fatality estimates
- Species composition of bird fatalities
- Seasonal timing of bird fatalities
- Search effort and plot size
- Distance of carcass discoveries from turbines

How to Use This Report

The purpose of this report is to provide a clear picture of the range of PCM data available in AWWIC and identify possible patterns in the data. The report is valuable as a reference for tracking the available information and as a guide for generating testable hypotheses. This report only summarizes fatality data resulting from scheduled fatality searches conducted during PCM, and we do not include incidental fatality finds or fatalities noted outside of scheduled searches, e.g., by operations personnel. As more PCM studies are added to AWWIC, the data summaries may change. If you have questions about how to use the report findings in your work, please contact AWWI at info@awwi.org.

KEY TAKEAWAYS

- **AWWIC has sufficient data, with enough geographic coverage, for investigators to pose reasonable hypotheses about the impacts of wind energy on bird species in the U.S.** These hypotheses can be re-evaluated as data from additional PCM studies are added to AWWIC.
- **A total of 307 of more than 600 North American bird species were recorded as collision fatalities** in scheduled searches reported in studies contained in AWWIC. **Small passerines accounted for 58% of all bird fatality incidents** in AWWIC; raptors account for 6.9% - these numbers have not been adjusted for possible detection biases.
- **Fifteen bird species accounted for nearly half of the fatality incidents in AWWIC.** Studies accounting for differences in detection and regional representation are needed to understand why those species occur more frequently.
- Because of their life history attributes, **diurnal raptors have been identified as species of concern.** Reported fatalities vary considerably among raptor species, and this variation will be evaluated with additional data and further analysis.

Facilitating timely and responsible development of wind energy while protecting wildlife and wildlife habitat

NEXT STEPS

We are continuing to add data to AWWIC and anticipate regular evaluation, analysis, and updates to the information contained in this report. We will be evaluating efforts to standardize fatality estimates for differences in methodology to enable more reliable evaluation of temporal and regional trends in bird fatalities and the number of studies needed to accurately and reliably estimate bird collision fatalities within a region.

We are evaluating species-specific and regional variation in fatality risk by adjusting fatality incidents for differences in protocols.

STUDY DESIGN

AWWI compiled and evaluated 340 PCM studies from wind energy facilities in the U.S. from both publicly available and contributed sources for inclusion in this report. Data in this report represented ~28% of installed U.S. wind capacity. Studies were included that met criteria for a basic level of standardization. Fatality rates used in this report are adjusted for detection biases and are "as reported," with no additional adjustments to correct for among-study variation in sampling period, plot size, or estimator used in the adjustments made to raw counts. Species data summaries are based on scheduled searches only; incidental finds are not included.

We summarized and plotted protocols, species composition, and fatality rates by avifaunal biome (bird habitat areas) and bird group. By observing the variation of results in each biome we gained insights on patterns that we hope will stimulate future data collection and research.

STUDY RESULTS

A total of 307 of more than 600 North American bird species were reported by PCM studies contained in AWWIC. Fifteen bird species (4.9% of all species reported) constituted 48% of all fatality incidents. For 108 species (35.2% of all species reported), ≤ 3 fatalities were reported. Cumulatively, these 108 species account for < 3% of all fatalities. Small passerines constituted the largest percentage of reported fatality incidents (58%) among 19 aggregated bird groups, followed by diurnal raptors, doves/pigeons, and upland game birds. These numbers have not been adjusted for differences in detection among the bird groups. Studies conducted over longer periods of time revealed seasonal patterns in reported fatalities for small passerines with peaks in spring, fall, or both. The median adjusted fatality estimate for all birds was 1.3 birds per megawatt (MW) per year, although 75% of studies reported < 2.3 fatalities per MW per year and 43% estimated ≤ 1 fatality per MW per year. Among bird groups, median fatality estimates were 1.3, 0.24, and 0.06 fatalities per MW per year for small birds, large birds, and raptors, respectively. All bird fatality rates by avifaunal biome listed in table below.

Avifaunal Biome	Fatality Rate *Birds per MW per year*		
	Median	Range	# of Studies
Eastern	1.4	0.1-6.9	42
N. Forest	1.4	0.8-19.0	22
N. Rockies	1.0	0.2-6.2	45
Pacific	1.3	0.5-4.9	14
Prairie	1.0	0.07-12.5	129
Southwest	1.4	0.56-5.8	15

CITATION

American Wind Wildlife Institute (AWWI). 2020. Summary of Bird Fatality Monitoring Data Contained in AWWIC (2nd Edition). Washington, DC. Available at www.awwi.org.

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