SEABIRD: System for Environmental Assessment of Bird/Bat Interactions with Real-Time Detection

Grace Chang, Daniel Doolittle, and Michael Macrander, Integral Consulting Inc.; Sharon Kramer, Stephanie Schneider, H. T. Harvey & Associates; Jesse Lewis, DeTect, Inc.; Lawrence Cheung, Sandia National Laboratories; Charles Seeley, GE Vernova; and Marcus Chevitarese, Sightir, Inc.

CHALLENGE

Knowledge of bird and bat interactions with offshore wind technologies over multiple scales is a critical knowledge gap.

SOLUTION

Technological innovations in bird and bat monitoring will reduce uncertainties regarding wildlife impacts and minimize non-technical project risks prior to offtake.



Marine S-band, pulsed Doppler 3D radars provide presence/ absence, relative abundance, passage rate, flight height, and flight direction to 2–3 km range at 360° and 6–8 km range at



Structural health monitoring system to detect and characterize blade strike events; informed by models, calibrated and validated on actual blades.

MICROSCALE

Real-time collision detection

FUTURE DIRECTIONS



Real-time radar

MACROSCALE



MESOSCALE

Real-time TT3D



MICROSCALE

Long-term radar data

Areal density and hourly passage rate of targets derived from long-term radar data



Long-term TT3D data

Daily distribution, flight height distribution, and hourly detections of targets derived from long-term TT3D data



Acknowledgements

This project is funded by the California Energy Commission Electric Program Investment Charge (EPC-23-001).

SAND2025-03067C. Sandia National Laboratories is a multi-mission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC (NTESS), a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration (DOE/NNSA) under contract DE-NA0003525. This written work is authored by an employee of NTESS. The employee, not NTESS, owns the right, title and interest in and to the written work and is responsible for its contents. Any subjective views or opinions that might be expressed in the written work do not necessarily represent the views of the U.S. Government. The publisher acknowledges that the U.S. Government retains a non-exclusive, paid-up, irrevocable, world-wide license to publish or reproduce the published form of this written work or allow others to do so, for U.S. Government purposes. The DOE will provide public access to results of federally sponsored research in accordance with the DOE Public Access Plan.



Grace Chang, Ph.D. Integral Consulting Inc. 831.576.2881 gchang@integral-corp.com





00 02 04 06 08 10 12 14 16 18 20 22

Hour (Pacific Daylight Time)

