

Assessing the potential vulnerability of offshore aerofauna to the emerging offshore wind energy industry in Atlantic Canada

P. Knaga¹, C. Gilroy², K. Kingdon³, S. Christin², S. Avery-Gomm⁴, A. Millard¹, J. Wisely¹, K.A. Williams⁵, M. Wing Goodale⁵, E.M. Adams⁵, M.C. Ferguson⁵, and I. Stenhouse⁵

¹ Canadian Wildlife Service, Environment and Climate Change Canada, Dartmouth, NS, Canada
Paul.Knaga@ec.gc.ca, Abby.Millard@ec.gc.ca, Jacob.Wiseby@ec.gc.ca

² Canadian Wildlife Service, Environment and Climate Change Canada, Sackville, NB, Canada
Christine.Gilroy@ec.gc.ca, Sylvain.Christin@ec.gc.ca

³ Canadian Wildlife Service, Environment and Climate Change Canada, Mount Pearl, NF, Canada
Katrien.Kingdon@ec.gc.ca

⁴ Wildlife and Landscape Science Directorate, Environment and Climate Change Canada, Ottawa, ON, Canada
Stephanie.Avery-Gomm@ec.gc.ca

⁵ Biodiversity Research Institute, Portland, ME, USA
megan.ferguson@briwildlife.org, kate.williams@briwildlife.org, wing.goodale@briloon.org,
evan.adams@briwildlife.org, ian.stenhouse@briwildlife.org

KEYWORDS

Distribution, Vulnerability, Movement, Marine Birds, Bats

ABSTRACT

The emerging offshore wind energy industry in Atlantic Canada necessitates a thorough assessment of its potential impacts on aerofauna. We present work conducted on migratory birds and species at risk in support of the Regional Assessments for Offshore Wind in Nova Scotia and Newfoundland and Labrador. This aerofauna assessment includes exploring the potential exposure of migratory birds and species at risk to this new industry. An extensive data review and inventory effort was initiated by the Canadian Wildlife Service to identify and obtain existing aerofauna products, including monitoring programs, research programs, and tracking programs in Canada, the United States (US), the United Kingdom (UK), and European Union (EU). We showcase analyses developed to understand movement behaviour (e.g., migration) and colonial bird foraging ranges. An Atlantic Canada collision and displacement vulnerability model is being developed for marine birds (expected release in summer 2024) and coastal and offshore migrants (winter 2024-2025). These models will include information on population vulnerability (including federal Species at Risk Act listing, COSEWIC status assessments, IUCN red list categories, adult survival rates, and conservation scores), flight behaviour (including diurnal and nocturnal activity budgets, flight heights), measured avoidance rates collected from post-construction monitoring of existing wind farms, and habitat flexibility. Collaboration with US organizations and agencies reveals a need for consistent or comparative approaches to assist with regional understanding of impacts on

aerofauna. Finally, we present how the spatial and temporal distribution data are combined with vulnerability models to produce spatial risk layers covering Atlantic Canada, highlighting seasonal collision and displacement vulnerable areas. We will also discuss our work to identify and prioritize species likely affected by offshore wind developments and the associated knowledge gaps that limit our complete understanding of potential impacts on these species. To facilitate decision-making, we will highlight products that link the impact producing factors and stressors (using pathways of effects models) to mitigations, which includes the development of mitigation databases and monitoring/management guidance.