

Policy Brief: Assessing seabird vulnerability to offshore wind farms in Ireland



This policy brief outlines the methodology that will be used to assess the vulnerability of seabirds to offshore wind farms in Irish waters.

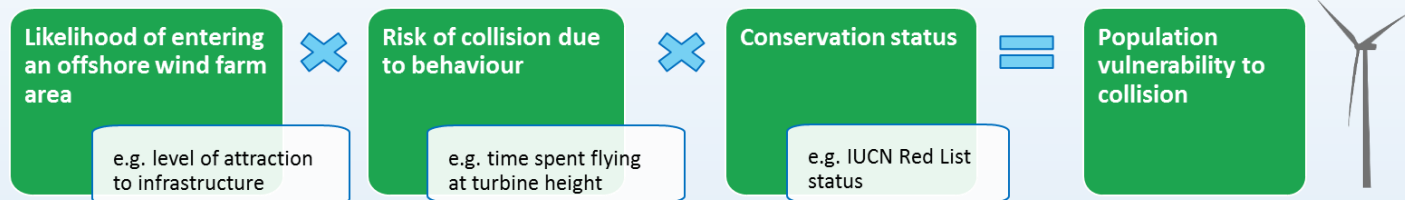
EirWind:

Co-designing opportunities towards the development of Irish offshore wind

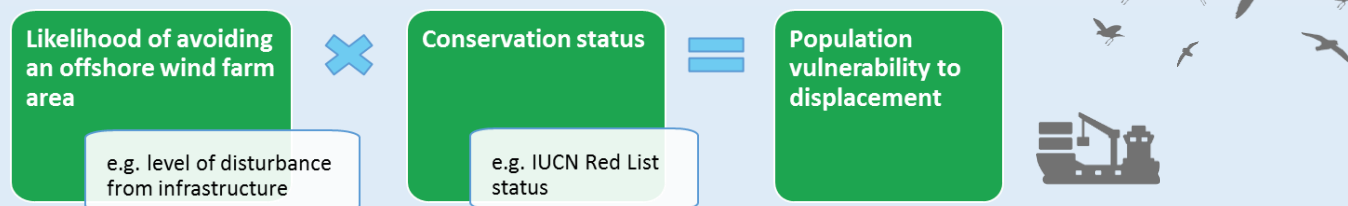


Graphic summary:

Collision Vulnerability Index



Displacement Vulnerability Index



Seabirds spend a significant portion of their time at sea where they are vulnerable to impacts from marine energy infrastructure, such as offshore wind farms. Understanding the potential risks to seabirds is an essential component of any offshore wind farm development, yet assessments can often be challenging when large areas are involved. Assessing seabird vulnerability to marine energy infrastructure relies on firstly understanding the drivers that influence where they go at sea, i.e. whether they will **overlap with offshore wind farms**, and their behaviour in that area, e.g. whether they are flying at heights where they **risk colliding with turbines**.

Vulnerability indices are a practical method for calculating both individual risk and population level vulnerability for multiple species at a time, without the need for specific site information. Offshore wind vulnerability indices for seabirds have been developed as a practical method for assessing impacts in countries with extensive offshore wind developments, such as Germany and the UK. The EirWind project will develop a set of wind farm vulnerability indices specifically for seabirds in Irish waters. This analysis will make use of the most recent information on seabird behaviour in relation to offshore wind infrastructure, species' conservation status, and the likely scenarios of the development of offshore wind in Irish waters. In particular, it will account for the larger 12 MW turbines which will be deployed in the future, providing a significant advance on previous indices.

A **Collision Vulnerability Index** will assess the population level vulnerability to potential collisions with offshore wind turbines for all seabird species in Ireland. A separate **Displacement Vulnerability index** will assess the population level vulnerability to displacement from important habitats due to the siting of offshore wind developments, as some seabird species are known to be particularly sensitive to disturbance by offshore activities. These indices will be applied to the most up to date distribution data for seabirds in Irish waters to generate vulnerability maps.

¹ Rogan, E., Breen, P., Mackey, M., Cañadas, A., Scheidat, M., Geelhoed, S. & Jessopp, M. (2018). Aerial surveys of cetaceans and seabirds in Irish waters: Occurrence, distribution and abundance in 2015-2017. Department of Communications, Climate Action & Environment and National Parks and Wildlife Service (NPWS), Department of Culture, Heritage and the Gaeltacht, Dublin, Ireland.

Ireland hosts internationally important numbers of breeding seabird populations, such as the Manx shearwater and European storm-petrel, and provides important wintering grounds for some species. Its position on the edge of the Atlantic Ocean provides a diverse array of foraging habitats from shallow estuaries and bays in the Irish Sea to the deep pelagic waters on the edge of the continental shelf, resulting in high seabird biodiversity. Extensive aerial surveys recording the distribution and abundance of seabirds in offshore Irish waters were recently conducted as part of the Irish government funded ObSERVE^{1,2} programme, and this distribution data will be utilised by the EirWind project. Collision Vulnerability and Displacement Vulnerability maps will be produced for the entire Irish EEZ as well as specific regions, such as the Irish Sea, at a finer resolution. Additional habitat modelling will be used to fill in the data gaps for areas not covered by the aerial surveys, mainly the coastal waters of the west and south-west of Ireland.

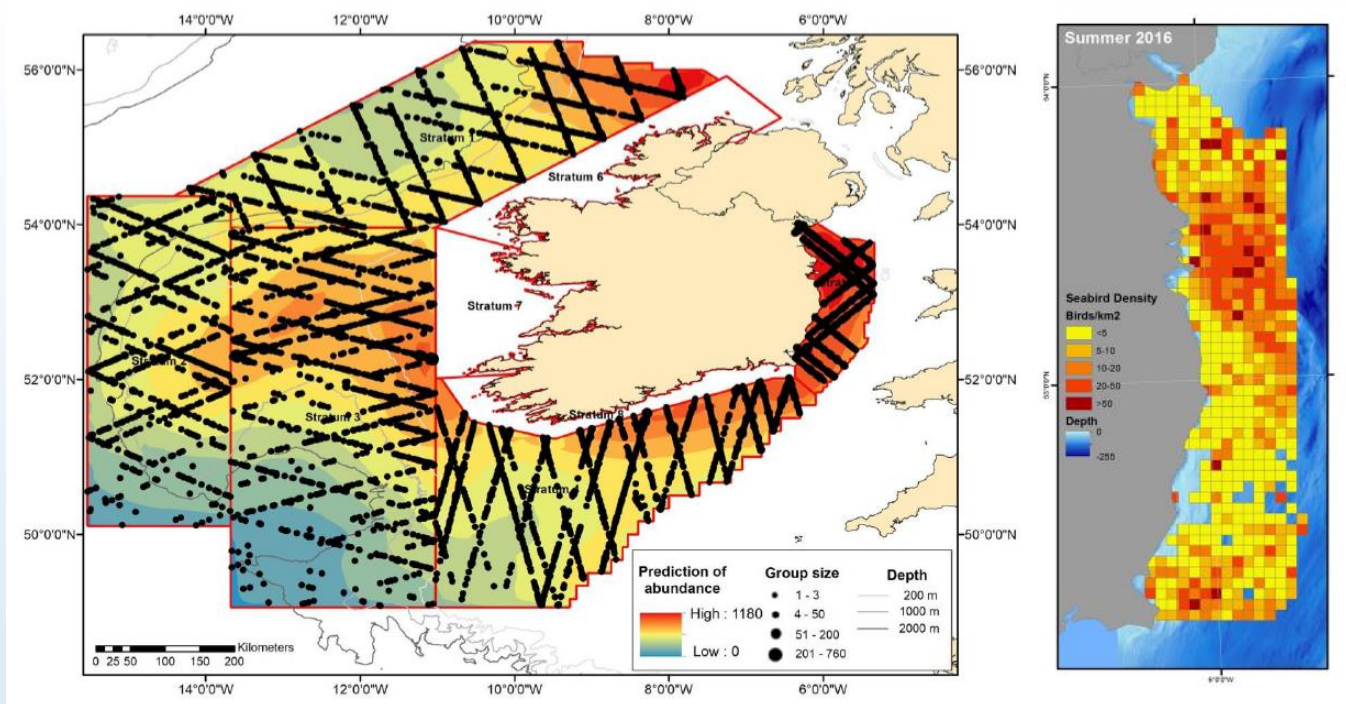


Figure 2: Total predicted summer seabird density from the ObSERVE aerial surveys in a) all Irish waters reproduced from Rogan et al. 2018¹ and b) the Irish Sea reproduced from Jessopp et al. 2018². This will provide the base distribution data for the development of seabird vulnerability maps for EirWind.



The outputs from this work will provide a detailed analysis of individual risk and population vulnerability for seabirds to offshore wind development in Irish waters. The key benefit to industry will be a series of collision and displacement vulnerability maps for all seabirds found in Irish waters. The data and information produced by this work will help to inform developers and policy makers about risks to seabirds in relation to proposed siting of developments and identifying areas where more detailed surveys may need to be conducted in consideration of planning.

² Jessopp, M., Mackey, M., Luck, C., Critchley, E., Bennison, A, and Rogan, E. (2018) The seasonal distribution and abundance of seabirds in the western Irish Sea. Department of Communications, Climate Action and Environment, and National Parks & Wildlife Service, Department of Culture, Heritage & the Gaeltacht, Ireland.



Co-designing opportunities towards the development of Irish offshore wind

EirWind is an industry-led collaborative research project, co-designing opportunities for the sustainable development of Ireland's marine resources by using offshore wind as a catalyst for innovation. It utilises the concepts of Marine Spatial Planning (MSP) where relevant, including advanced data-analysis, strategic planning, Irish marine and renewable energy policy initiatives and stakeholder management. Research is conducted by five interactive technical work packages (WP) that will:

- Develop a data management and spatial analysis framework (WP2).
- Improve cost optimization solutions for future development (WP3).
- Improve methods for stakeholder management (WP4).
- Provide development strategies for the distribution and storage of energy (WP5).
- Assess and synthesize other WP outputs to examine potential environmental and economic impacts (WP6).



Project start date: 01st August 2018; Duration: 2 years. Webpage and contact details: www.marei.ie/eirwind/

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