

## ORJIP SEABIRD SENSITIVITY MAPPING TOOL



ATLANTIC PUFFIN



COMMON GUILLEMOT



RAZORBILL



BLACK-LEGGED KITTIAWAKE



EUROPEAN SHAG



EUROPEAN STORM PETREL



GREAT SKUA



HERRING GULL



LESSER BLACK-BACKED GULL



NORTHERN GANNET



NORTHERN FULMAR

### Introduction

The Scottish Government is committed to increasing the production of electricity from renewable sources, with a target of generating 100% of Scotland's electricity requirements from renewable sources by 2020. The marine environment offers considerable potential for harvesting renewable energy, through wind, wave and tidal stream energy generators.

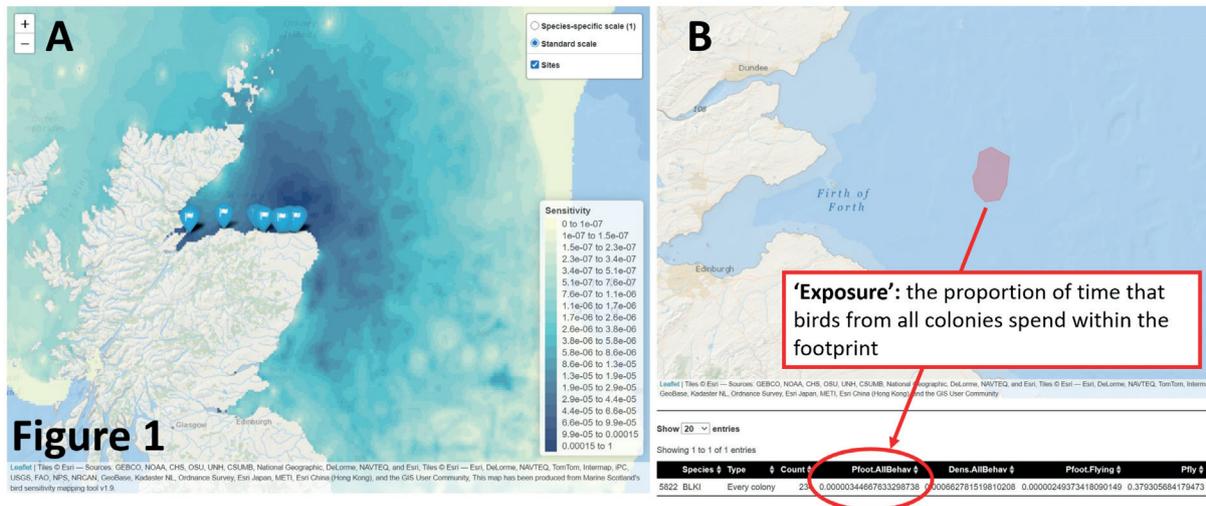
However, the Scottish Government is also committed to protecting the natural environment from adverse impacts, which requires identifying important areas used by wildlife, particularly protected species such as many seabirds breeding and residing in the UK.

Offshore renewable developments (ORDs) have the potential to affect seabird populations through direct collisions with infrastructure, displacement from foraging habitat, barrier effects whereby birds must fly around infrastructure to reach foraging grounds, and by noise and contamination.

These potential effects are thought to be particularly important for breeding seabirds that are constrained to obtaining food within a certain distance from their breeding colony in order to successfully rear their offspring. A critical part of assessing and potentially alleviating these concerns is developing a better understanding of how the sensitivity of our seabirds to ORD activities varies spatially and at different times of the year.

### Key findings

This project builds upon the existing evidence base for seabird habitat use at sea to develop a fast, user-friendly tool to estimate the sensitivities of key seabird species to ORDs in all Scottish waters. The tool produces estimates for the sensitivity and exposure of all at-sea locations in Scottish waters for 11 seabird species (Atlantic puffin, common guillemot, razorbill, black-legged kittiwake, European shag, European storm petrel, great skua,



herring gull, lesser black-backed gull, northern gannet, northern fulmar) in both the breeding and non-breeding seasons, based on GPS tracking and at-sea survey data. The tool also allows users to perform sensitivity assessments for specific ORD footprints.

When used in 'map mode', the tool produces a map showing the spatial distribution of the seabird sensitivity scores covering all Scottish waters (Figure 1a). This map can be produced for all breeding colonies of a species, or for a few selected breeding colonies of interest. These spatial maps will be useful for spatial planning, allowing rapid sensitivity assessments to be made across all areas of Scottish waters for particular species and protected breeding colonies. In 'footprint' mode, the tool calculates the spatial risk score summed across an ORD footprint uploaded by the user (Figure 1b). This output can be used to inform assessments for specific ORD project proposals, for instance by ORD developers when preparing their assessments.

In summary, the tool brings together cutting edge estimates for the habitat use of seabird species at sea, based upon both GPS tracking data studies and at-sea survey studies. It allows users to estimate the source breeding colony for birds

observed across all at sea locations in Scottish waters. By combining this baseline data with the most recent scoring assessments for sensitivity of seabirds to both collision and displacement effects of ORD developments, it then allows users to produce maps for seabird sensitivity to ORD developments in all Scottish waters, and for specific ORD footprints specified by the user.

We anticipate this tool will greatly facilitate fast, user-friendly assessments of seabird sensitivity to new and ongoing ORD developments. It will improve the knowledge base upon which policy decisions are based, potentially leading to better conservation outcomes for Scottish seabirds.

This work is the result of a collaboration between six research institutes, and was funded by Marine Scotland, and managed by the Carbon Trust under ORJIP Offshore Wind.

The full [ORJIP seabird sensitivity mapping tool report](#) is available to view.

