

Modelling predictive distribution of seabirds at sea

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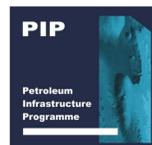
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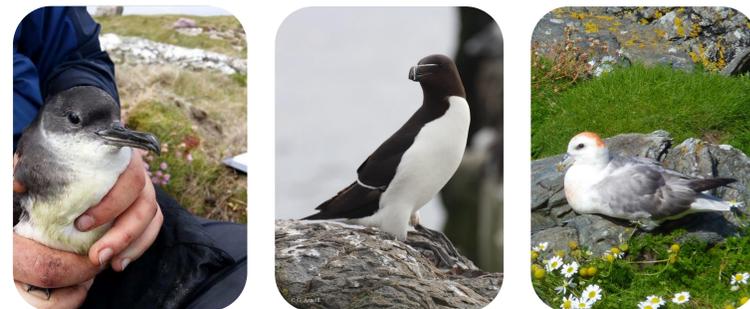
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Project outline

The west coast of Ireland has a large population of seabirds, many of which spend a significant amount of time at sea, potentially encountering hazards such as oil pollution. A better understanding of where they are found at sea will allow us to assess their vulnerability to such hazards and inform decisions on mitigation measures.

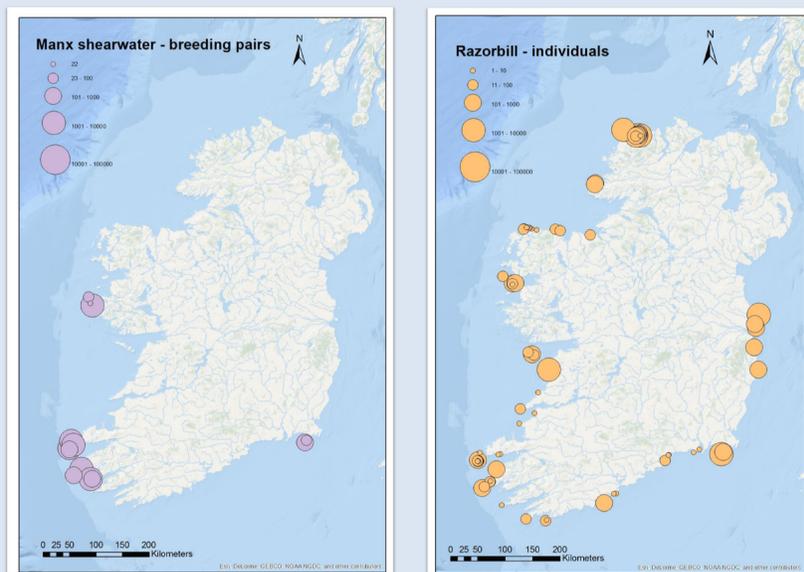
Predictive distribution models have the potential to be a quick and cost effective way of assessing at-sea distribution of seabirds. Using information on seabird colony locations, population size, and foraging behaviour detailed maps can be produced which show both the extent and density of seabirds at sea.



Three of the key study species. Manx shearwater (*Puffinus puffinus*), Razorbill (*Alca torda*) and Northern fulmar (*Fulmarus glacialis*).

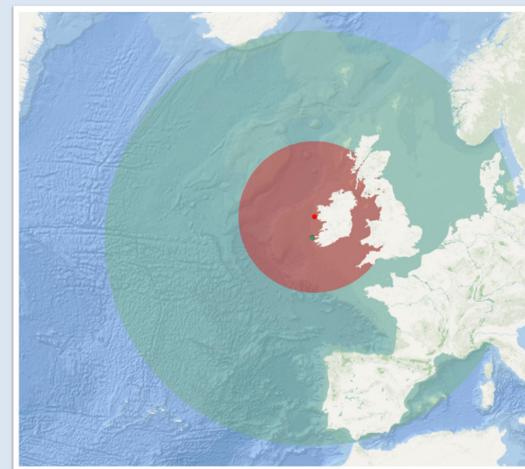
Model development

Plot colony locations and size



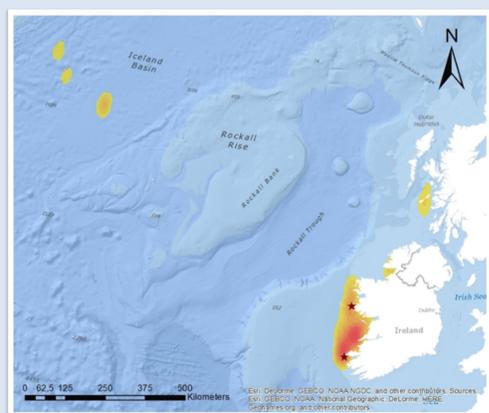
Abundance of Manx shearwater and Razorbill in Ireland plotted using data from the Joint Nature Conservancy Council (JNCC) colony register.

Establish maximum foraging distances



The maximum foraging distance recorded for Manx shearwaters from Great Blasket (in green) and High Island (in red) using GPS tags.

Validate against observations from tracking data



Distribution of Manx shearwaters offshore recorded from GPS tracking. Areas with highest density of birds are in red.

Include non-foraging behaviours e.g. resting on the sea surface



Seabirds resting on sea surface close to the shore (rafting).

Publish on online GIS platform

Maps will be produced for key seabird species found on the west coast of Ireland and incorporated into an online GIS platform, with functionality to overlay maps to identify areas with high densities of the most vulnerable species.

A range of maps will be available for each species showing predicted distributions at different times of the day or year. It will be possible to group species according to foraging behaviour (e.g. surface feeders vs divers) or conservation significance.