PREdators and Prey Around Renewable Energy Developments (PrePARED)

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BACKGROUND

Uncertainties around environmental impacts from offshore wind farm development on protected seabird and marine mammal populations currently constrain impact assessments and delay the planning process. There is therefore an urgent need to better understand how seabirds and marine mammals respond to offshore wind farms (OWF) development and the mechanisms underpinning these responses, particularly changes to prey distribution.

Increased certainty on magnitude of cumulative impacts will facilitate deployment of OWF at the pace and scale needed.

The PrePARED project focuses on data collection along the east coast of Scotland and brings together experts who are leading research into environmental effects of OWF development across the UK and Denmark to harness the ever-increasing knowledge base that is developing throughout Europe.

PROJECT GOALS

Increased stakeholder confidence in magnitude of cumulative effects

Decrease uncertainty and increase biological realism in cumulative impact assessments

Evaluation of both negative and positive effects of OWF

Assessment of how changes to the prey base in OWF might benefit key receptors

Improved understanding of opportunities for net gain

De-risking consenting

Provide developers with clearer guidance on how to assess cumulative impacts and evidence to support this

Decrease risk of delays in the planning and licensing process

Improved post-consent monitoring

Identification of key variables driving receptor response to OWF

Recommendations for targeted cost-effective relevant post consent monitoring

Understanding of OWF and fisheries co-existence

Knowledge of how commercial fish species use OWF

Understanding of opportunities for fishing industry

FISH

Multiple data streams helping to identify predatory and demersal fish abundance, distribution and behaviour around OWF.

Baited remote underwater video data helping to identify changes in fine-scale fish communities in relation to stages of wind-farm development.

Acoustic surveys in the Moray Firth to identify large- and fine-scale fish distribution.

Trawl surveys in the Firth of Forth and the Firth of Tay are supporting fine-scale fish distribution modelling of predatory and demersal fish abundance.

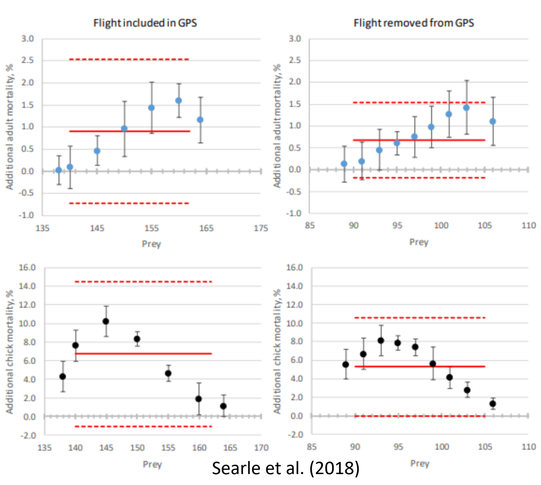
Acoustic telemetry to measure fish behaviour in and around OWF.

BIRDS

Developer funded GPS telemetry data being gathered concurrently with fish surveys in the Forth and Tay region.

These data combined with digital aerial survey data will provide insights into behaviour and distribution around OWF as well as in relation to identified distributions.

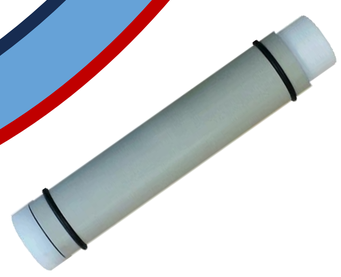
These insights will be integrated into the SeabORD impact assessment individual based model to refine understanding on barrier effects and displacement.

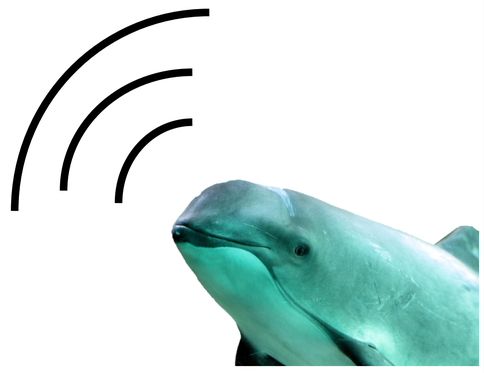


Searle et al. (2018)

MAMMALS

Passive acoustic monitoring in and outside of OWF is being used to characterise the extent of the "reef effect" with regards to marine mammal foraging. Click detectors (C-Pods) tracking harbour porpoise presence patterns.





Marine mammal responses to construction (pile driving), vessel disturbance, operational wind farm noise and activity, and changing prey fields will be characterised.

Prey sampling to establish nutritional value of identified species will be used to model the energetic landscape of OWF so distributions can be related to areas of relative energetic richness.