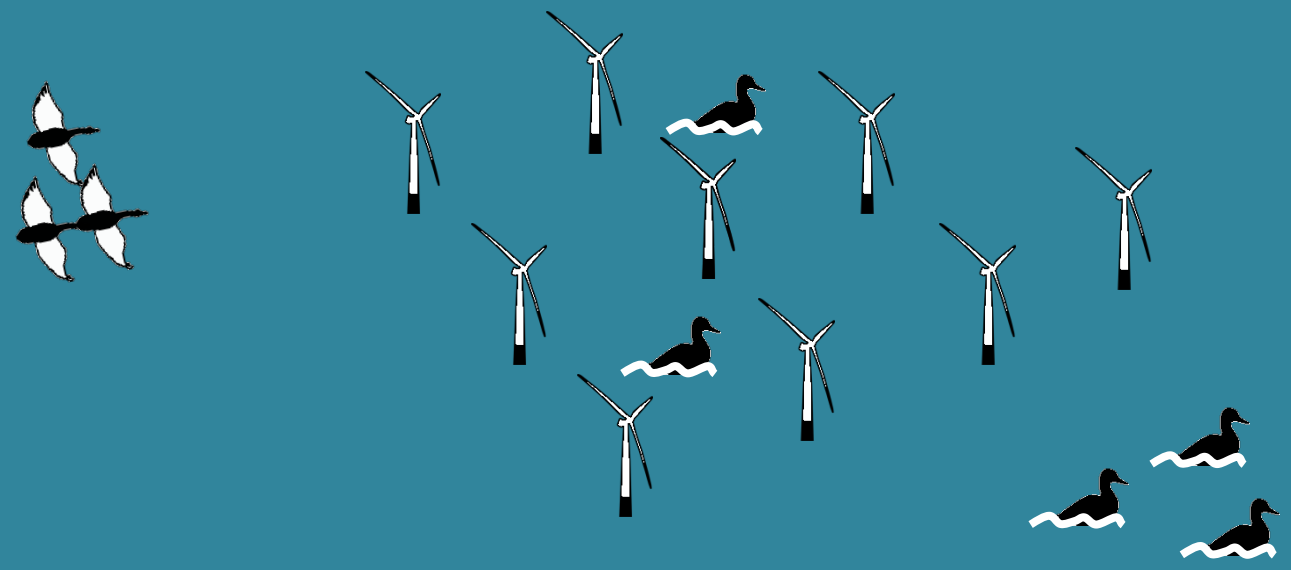
JNCC
Joint Nature Conservation Committee

Seabird Displacement Impacts from Offshore Wind Farms



MROG Workshop

6-7th May 2015

marine scotland science

NATURAL ENGLAND

rspb

Scottish Natural Heritage
Dualchas Nàdair na h-Alba
All of nature for all of Scotland
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NIEA Northern Ireland Environment Agency
www.ni-environment.gov.uk

Cyfoeth Naturiol Cymru
Natural Resources Wales

Concept Note 4
Evidence for Displacement: an Aide Memoir

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Evidence for Displacement

- Empirical evidence for displacement can differ both within and between species at different sites, however some patterns are emerging[a]:
  - Largely DISPLACED: divers, scoters, northern fulmar[b], northern gannet, little gull[b], common guillemot and razorbill.
  - Consistently ATTRACTED: great cormorant.
  - ATTRACTED or NEUTRAL: common, herring and greater black-backed gulls.
  - CONFLICTING EVIDENCE: black-legged kittiwake and lesser black-backed gull[c].

[a] Data is summarised where results are available from two or more sites from Table 1 in Concept note 4.
[b] Based on one significant and one non-significant result.
[c] Leopold et al. (2013) note that if fishing vessels are excluded from OWF's, then detection of a displacement effect may instead be more representative of changes in 'prey availability'.

Displacement Rates

- 94% of Red-throated diver displaced at Kentish Flats wind farm (Percival et al 2014)
- Northern gannet, common guillemot and razorbill displacement at Horns Rev not complete (<100%) (Peterson et al 2014)
- Is it possible to extract rates from studies not mentioned here?

Can macro avoidance rates inform displacement rates?

- Lack of clarity in some studies on what is meant by macro-avoidance vs. displacement.
- Observed macro-avoidance rates (Krijsveld et al. 2011):
  - Scoters 71%
  - Northern Gannet 64%
  - Divers 68% (from gannet & scoter av.)
  - Auks 68% (from gannet & scoter av.)
- Should the use of macro-avoidance rates be species specific? i.e.
  - Auks may still swim into a wind farm to forage
  - while some gannets still flew into wind farm footprint, active foraging was not observed (Leopold et al. 2013)

Impact Distances (buffers)

- Buffers not always reported/discussed

Species	Belgian OWF[1] (Vanermen et al. 2013)	Alpha Ventus (Mendel et al. 2014)	Bard[2] (Braasch et al. 2015)	Horns Rev (Petersen et al. 2014)	Kentish Flats (Percival et al. 2014)
Common scoter				2 km	
Red-throated diver				5-6 km	3km
Northern gannet	3 km[3]				
Little Gull					
Lesser black-backed gull		2 km[4]			
Common guillemot	3 km[3]	2 km[4]	6 km[5]		
Northern fulmar			6 km[5]		

[1] Only Blighbank considered as Thorntonbank consisted of only 6 turbines throughout most of study period. Fixed buffer assessment area of 3km.
[2] Note that these results only include one year post-construction data.
[3] Significant displacement to at least 3km.
[4] Only partial displacement observed. Buffer effects detected out to 10km; strongest effect within 2km buffer.
[5] Increasing numbers of individuals with increasing distance from project from 0-6km (no information beyond this distance).

Habituation

- Evidence for habituation emerging (Dirschke & Garthe 2006)
  - Cormorants, ducks, gulls and terns
  - potentially conflated with attraction?
- Multiple years of study can alter initial findings (Percival et al. 2014)
  - initial reports of red-throated diver habituation at Kentish Flats later proved unfounded.

Mortality/Productivity Rates

- Empirical studies of displacement effects on adult survival and productivity in seabirds and marine waterbirds are lacking.
- Focus to date been modelling:
  - Predicted increased energetic costs for auks/cormorants (Masden et al. 2010)
  - Low energetic costs for fulmar, gannet, terns, gulls (Masden et al. 2010)
  - Predicted little energetic costs on RTD during migration (Topping & Petersen 2011)
  - Loss of winter habitat led to increased mortality rates in Oystercatcher (Goss-Custard et al. 1995)

Recommendations for discussion/future studies

- Clear quantification of rate and scale of displacement
- Clear explanation of how impact distances defined
- Quantifying displacement:
  - on seasonal and annual basis
  - during and post-construction
  - In different age classes (if possible)
- Consideration of:
  - macro-avoidance rate to inform displacement rate
  - how habitat quality may influence species distribution
- Use of qualitative data to inform overall displacement rate