Offshore wind and ornithology: collaboration is key to unlocking uncertainty

Graham Eaton/Corbis

Current picture

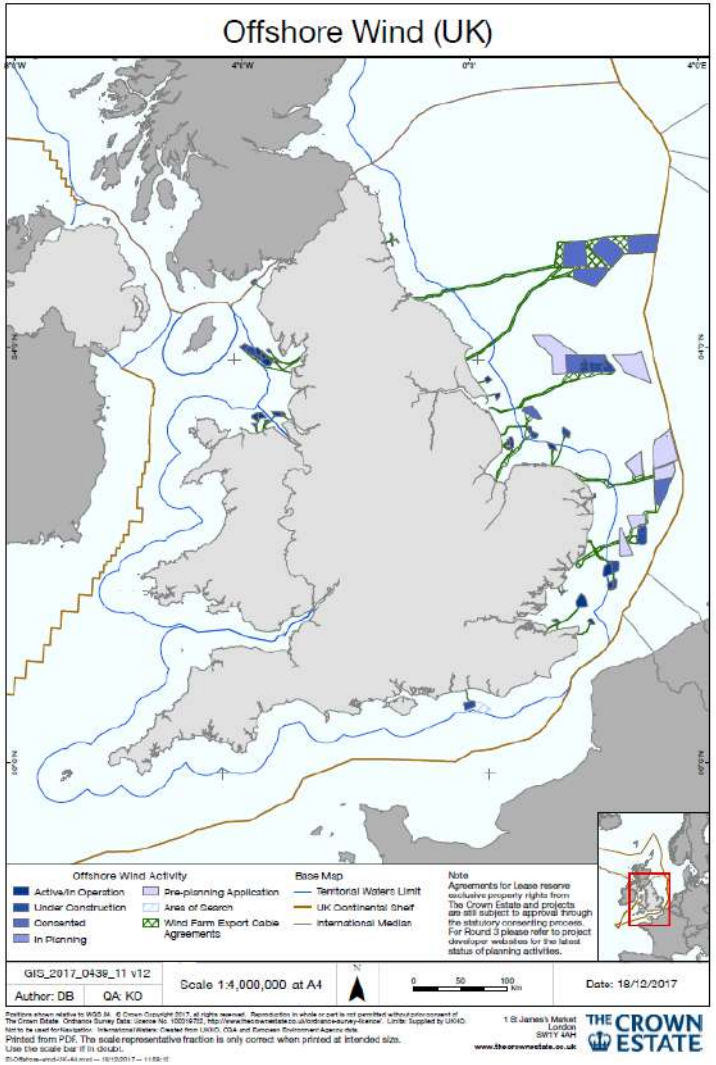
>15 years of offshore wind development in UK
Ornithology still a key consent risk:

uncertainty + potential for significant impact = consent refused or restricted

Progress over the years, e.g.:

- Collision risk
- Flight heights
- Population modelling
- Predicting displacement effects

However, consenting challenges remain…



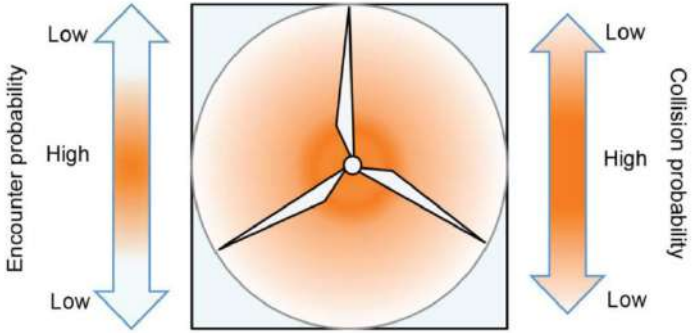
Potential impacts of concern

Key impacts:

- Collision mortality
- Barrier effects
- Displacement

‘Big’ questions still need to be answered - scale/cost/resource implications

Solution: more collaborative, strategic approach



ORJIP Bird Collision Avoidance Study

Key challenge: How do birds avoid collisions with wind turbines?

Collision risk modelling (CRM) used to predict impacts
- Modelling assumptions
- Lack of empirical data to validate model parameters

Offshore Renewables Joint Industry Programme (ORJIP) for Offshore Wind established 2012
- UK Government, Marine Scotland, The Crown Estate, 16 offshore wind developers
- Programme of research projects to reduce consent risk and uncertainty

Bird Collision Avoidance Study objective: gather empirical data on bird collision avoidance behaviour and interaction with wind turbines

Offshore Wind orjip working to accelerate offshore consenting

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Crown Estate Scotland

marinescotland The Scottish Government

Department for Business, Energy & Industrial Strategy

CARBON TRUST

Statkraft Eneco FLUOR MAINSTREAM RENEWABLE POWER Ørsted EDF ENERGY innogy SCOTTISHPOWER RENEWABLES SSE Renewables Statoil VATTENFALL SIEMENS

- Commenced March 2014
- Field work at Thanet Offshore Windfarm
- Multiple sensor monitoring system
- Five priority species

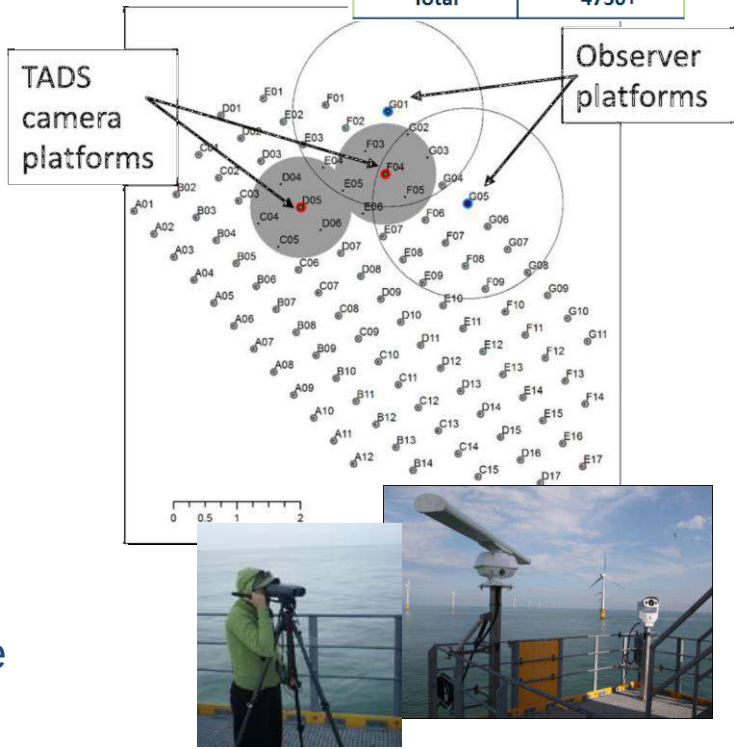
Species	No. of tracks recorded
N. Gannet	~ 2400+
Kittiwake	~ 500+
GBB Gull	~ 700+
Herring Gull	~ 700+
LBB Gull	~ 450+
Total	**~ 4750+**

Monitoring macro, meso and micro-avoidance
1 SCANTER radar / 3 LAWR radar / 2 Thermal Animal Detection System / 2 Laser rangefinders
Data collected over a 2 year period, 24/7

World's largest study and first of its kind at a fully operational offshore wind farm

Final report anticipated Q1 2018

Data to be made publicly available: Marine Data Exchange and Marine Scotland website



Tracking kittiwake at Flamborough & Filey Coast pSPA

Key challenge: How do kittiwake use a proposed offshore windfarm site?

Kittiwake: uncertainty over population trends, impacts of offshore wind development

Collaboration between Ørsted and the RSPB
- Ørsted required as a consent condition to monitor for effects on seabirds
- RSPB work to conduct seabird population monitoring

Collaboration to track adult kittiwakes from the colony

rspb giving nature a home

DONG energy Ørsted

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GPS tags deployed:

- Foraging routes
- Speed
- Flight height
- Different gliding & flapping behaviour

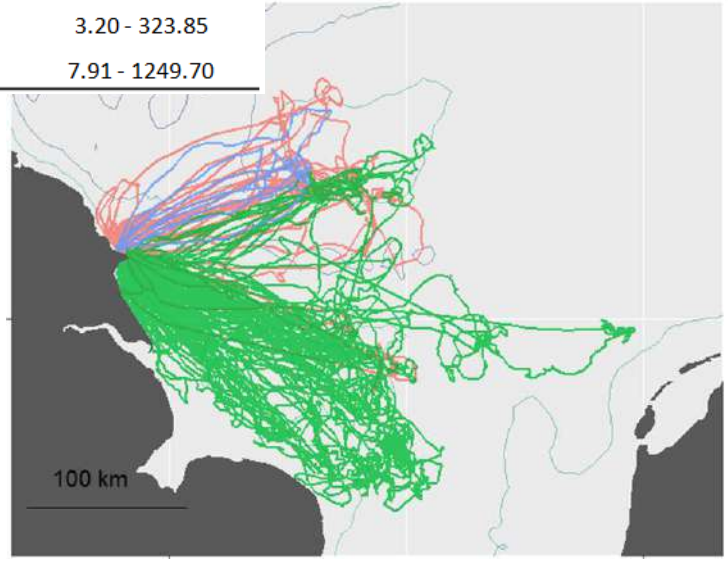
Trip metric	Mean (±SD)	Range
Trip duration (h)	22.12 (±28.69)	1.00 - 168.67
Foraging range (km)	88.65 (±74.22)	3.20 - 323.85
Travelled distance (km)	256.62 (±261.88)	7.91 - 1249.70

20 kittiwakes tagged

30,000 GPS locations collected

Longest period in breeding season tracked – more complete picture

Identification of areas used for foraging, commuting and resting



Images courtesy of Saskia Wischnewski, RSPB

Displacement: understanding at-sea ecology

Key challenge: can birds buffer themselves against the effects of displacement?

Red-throated diver: sensitive to disturbance and displacement

How resilient are they to displacement effects?

Tagging with geo-locators and time depth recorders
- Up to 60 breeding RTD to be tagged in 2018
- Tag retrieval 2019/2020

Key outcomes:
- Improved knowledge of RTD activity budgets and energetics
- Address key knowledge gap on capacity to accommodate displacement effects
- Provide parameters for more accurate modelling and prediction


Ben Dean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VATTENFALL

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Strategic monitoring

Key challenge: how can monitoring at individual OWF sites contribute to more strategic scale knowledge gaps?

Post-consent monitoring to date has failed to contribute to wider-scale, population level questions and uncertainties

Appetite amongst developers, regulators and statutory advisors to develop a more joined-up approach to monitoring

New forum established: Offshore Wind Strategic Monitoring and Research Forum (OSWMRF)

- Maximise information exchange
- Promote collaboration
- Promote better data sharing
- Identification of key strategic ornithology research needs

Summary

Ornithology still a key consent risk for offshore wind development…

BUT:

- Innovative approaches being taken to address outstanding issues
- Collaboration essential to help tackle strategic, industry-wide challenges
- Use of novel and innovative approaches to data collection
- An exciting year ahead in 2018…

Thank you – any questions?

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