Enabling industry and nature to coexist

Birds and offshore wind:
Bridging data gaps with AI-powered solutions

Havvind og miljøseminar 2024 - Ask Helseth CEO

spoor

Agenda

Addressing critical bird data gaps

- Barrier effects
- Displacement and habitat loss
- Collision risks

The ripple effects on project timelines and costs: risks

- Delays
- Project limitations
- Costly and inefficient mitigation measures

Tech to enable proactive bird data collection

- Continues monitoring in operations
- Pre construction monitoring using LIDAR buoy

METCentre case study

- Data collected at METCentre
- Results from two years on monitoring

spoor

Offshore Wind in Europe: Addressing critical bird data gaps

Kittiwake: 60% population loss since 1986 (UK)

Band Model: Example of avoidance rates

Species	Recommended avoidance rate	Rationale/supporting evidence
Red-throated diver	99.5%	Furness (2015)
Black-throated diver	99.5%	Breeding birds show similar behaviour to red-throated diver; Furness (2015)
Swans (all species)	99.5%	Increased from previous rate of 98% based on evidence presented in Whitfield & Urquhart (2015), but slightly more precautionary than report recommendation given this was based on a short run of data from one study
Geese (all species)	99.8%	SNH (2013)
Red kite	99%	Urquhart & Whitfield (2016)
Hen harrier	99%	Whitfield & Madders (2006a)
Golden eagle	99%	Whitfield (2009)
White-tailed eagle	95%	Sufficient evidence from flight behaviour and collision monitoring studies in Norway for vulnerability to collisions; see May *et al.* (2011)
Kestrel	95%	Sufficient evidence from flight behaviour (including hovering) and collision monitoring studies for vulnerability to collisions; see Whitfield & Madders (2006b)
Great skua	99.5%	Furness (2015)
Arctic skua	99.5%	Similar behaviour of breeding birds to great skua; Furness (2015)

spoor

Traditional monitoring methods

Data uncertainty: The ripple effects on project timelines and costs

RECHARGE

Subscribe Login

Wind

RWE lawyer 'shocked' at UK planning delay to $9bn Dogger Bank South wind farm over seabirds

Solicitor claims 'you're making a mistake' as opening of examination is delayed on 3GW North Sea project

Birds such as kittiwakes have been an issue for UK offshore wind developers. (Photo: Tom Lee via Flickr/https://creativecommons.org/licenses/by-nd/2.0/)

Andrew Lee
Editor, Recharge

Published 25 October 2024, 12:08

A lawyer for RWE said he was "shocked" and accused planning officials of "making a mistake" after the consenting process for one of the world's largest planned offshore wind farms was delayed over an issue all too familiar to the UK sector – seabirds.

spoor

EU: Focus on biodiversity and development speed

spoor

Norway’s early advantage: Proactive bird data collection

METCentre

Hywind Tampen

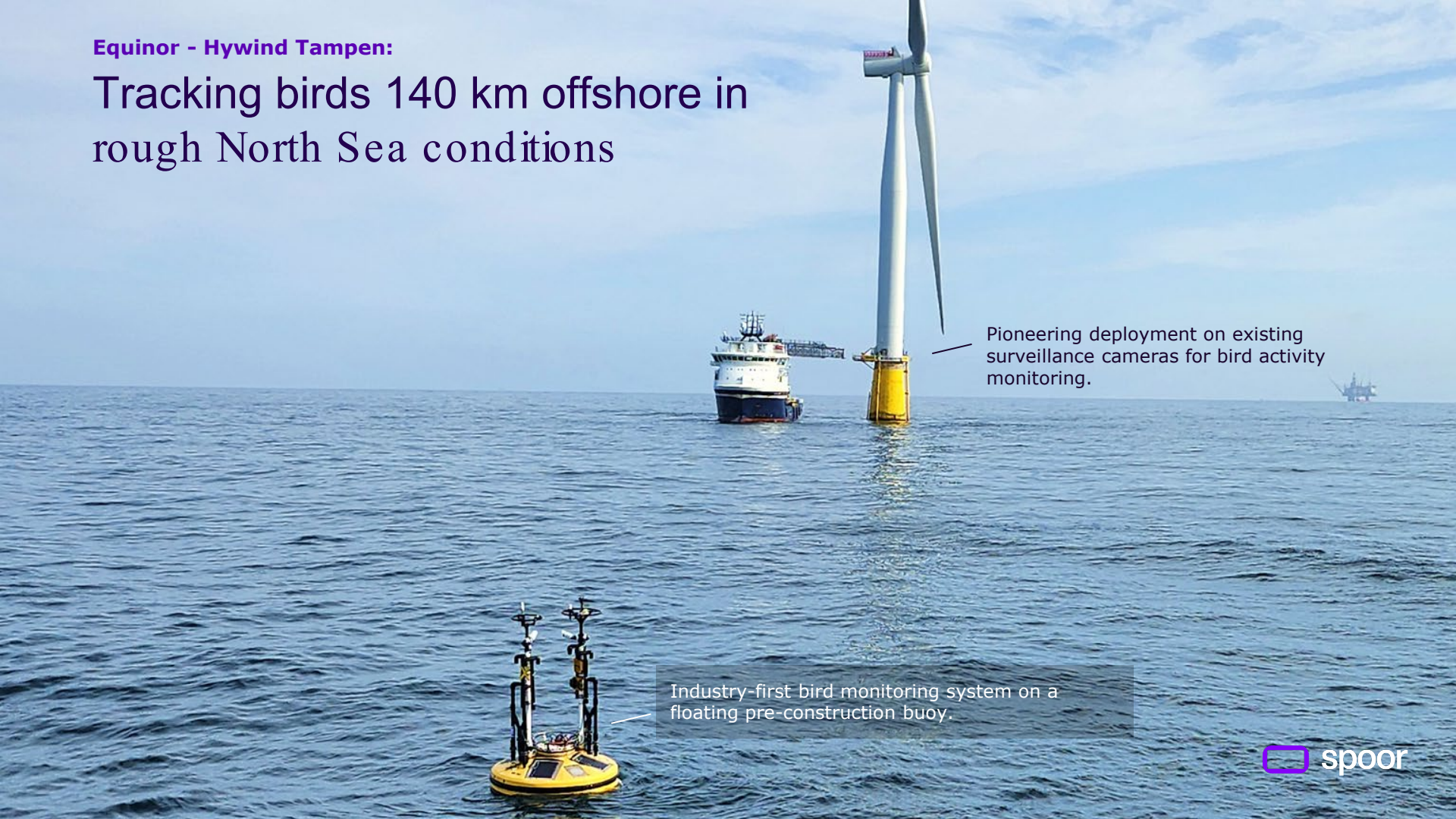
Photo © Solveig Føreland/SEAPOP

Other national research programs

spoor

Equinor - Hywind Tampen:

Tracking birds 140 km offshore in rough North Sea conditions



Pioneering deployment on existing surveillance cameras for bird activity monitoring.

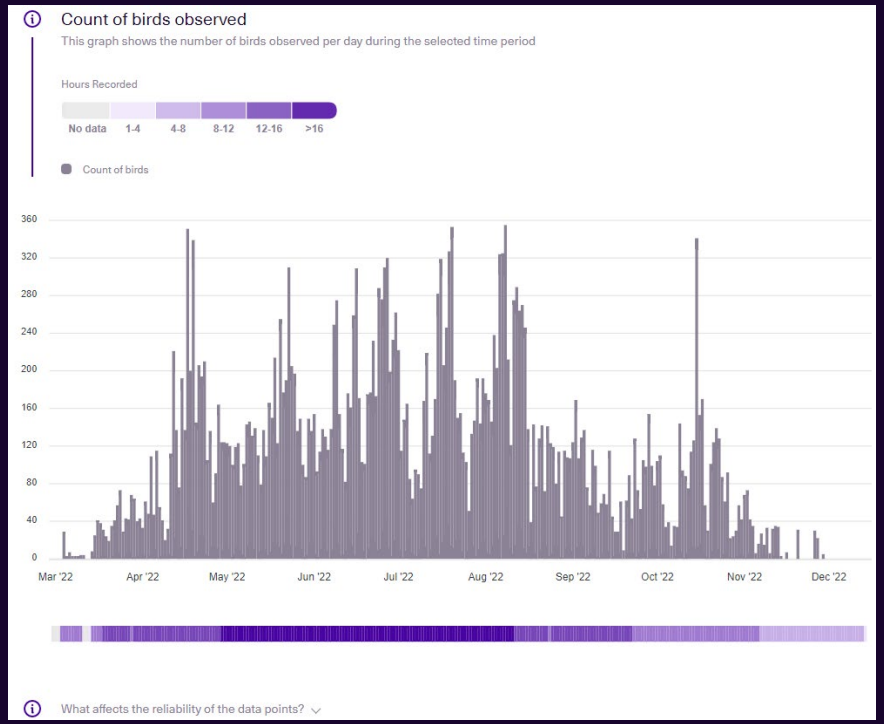
Industry-first bird monitoring system on a floating pre-construction buoy.

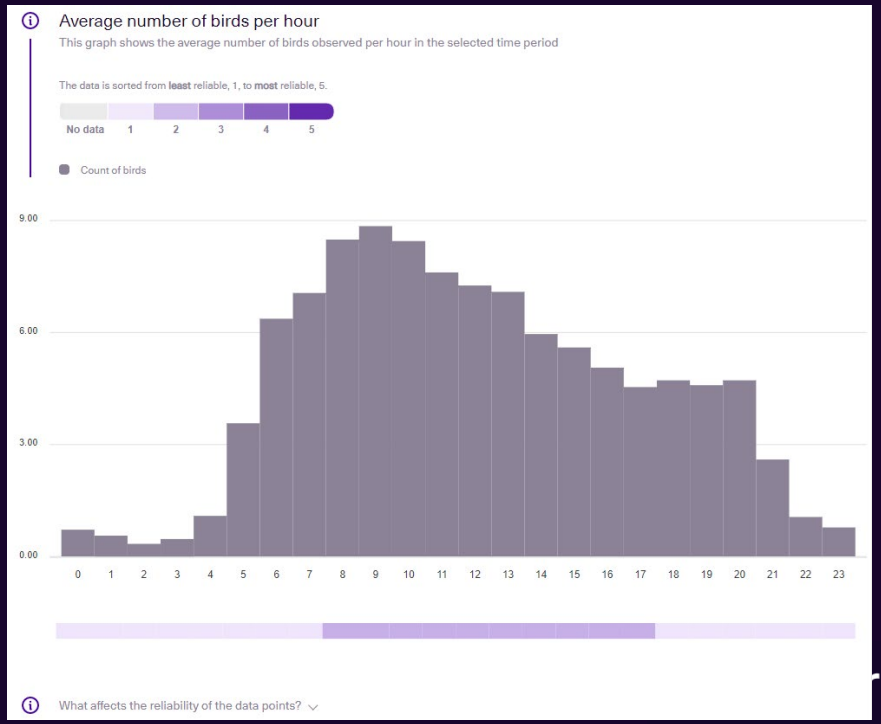
spoor

spoor

The power of continuous data collection

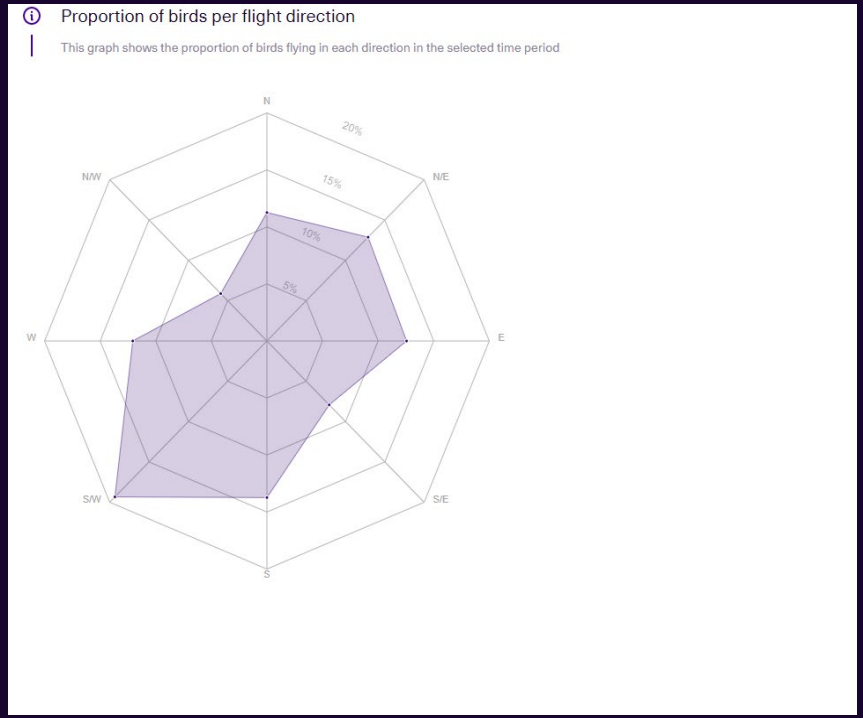
Abundances in different temporal scales

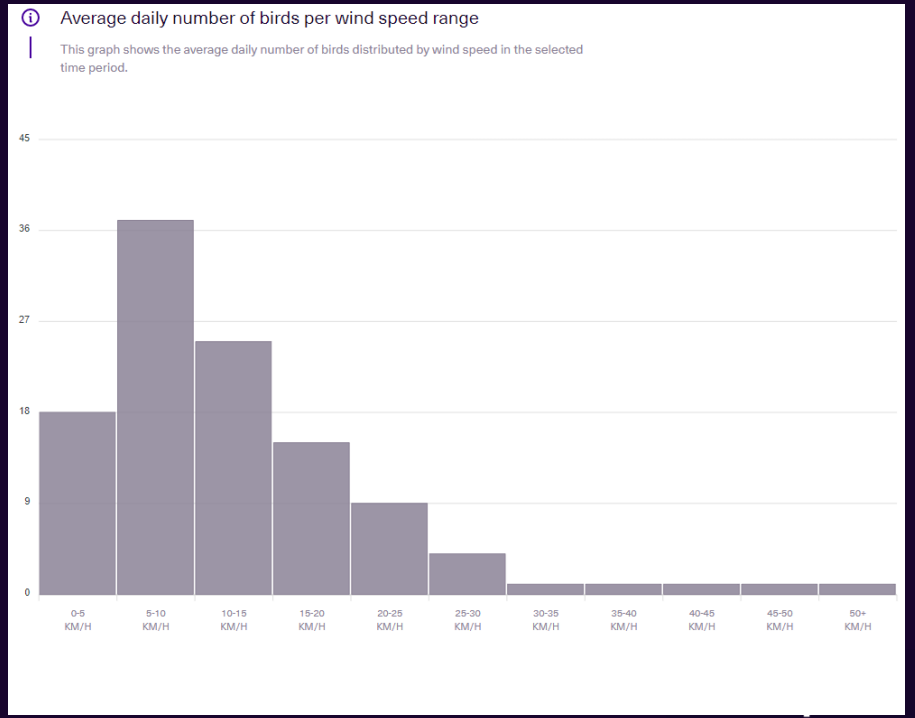




The power of continuous data collection

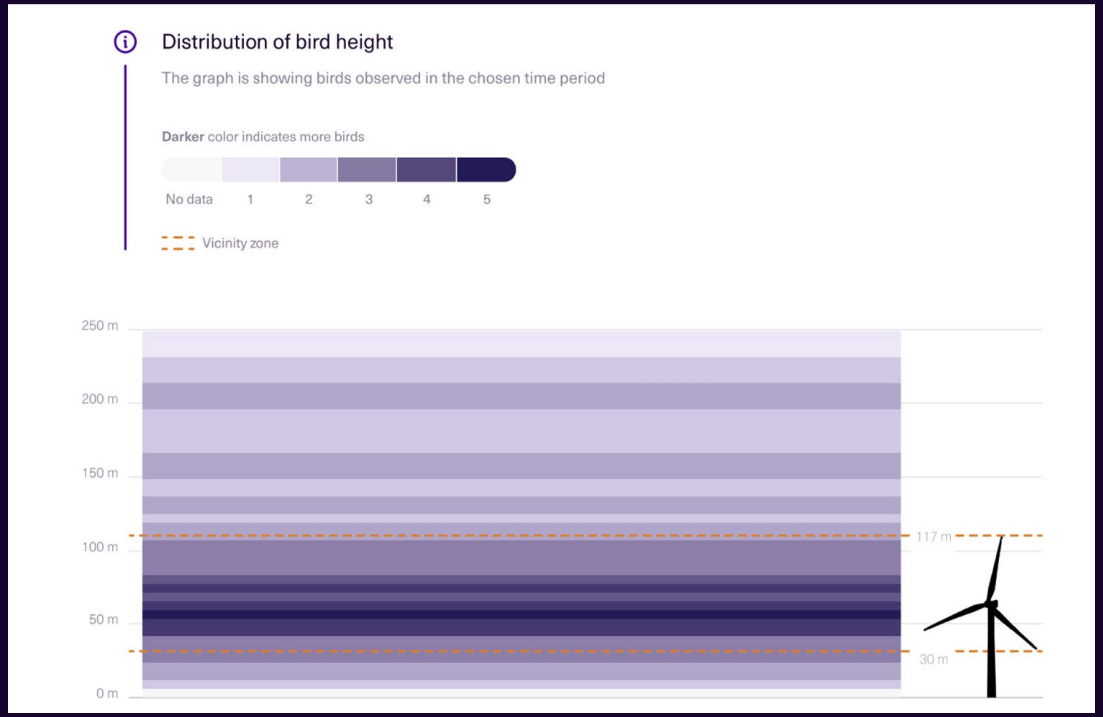
Bird flight trajectories and abundances correlated to wind regime





The power of continuous data collection

Flying height distributions



spoor

AI in action: METCentre case study

Continuous Bird Monitoring With Spoor's Camera- and AI-Based System at the TetraSpar Demonstrator Floating Wind Turbine

Post-installation monitoring report
January 2022 - June 2024

6 August 2024

spoor

AI in action: METCentre results

Permit compliance with extra insights from post-construction monitoring

Timeline

TetraSpar commissioned
27 June – 9 November 2021

6 months :
June – December 2021

20 months :
January 2022 – February 2023
October 2023 – June 2024
- 5,487 hours of recording
- Sunrise to sunset

Data outputs

Families and species; seasonal variation; diversity peaks during migration
- 91% gulls
- 40% Great black-backed gull

Abundance estimations; seasonal variation; peaks during migration

Flying heights; peak 35-55 m

Dominant flight directions

Wind correlation; 12+ m/s = few birds

Zero collision detections

Technical specs

One 8K camera

Data 20 TB collected; local storage buffer and fiber connection

All empirical evidence is retained, from video recordings to raw data

Marine grade systems

spoor

Sørlige Nordsjø II: First-of-its-kind bird data being collected

spoor

Ask@spoor.ai

spoor.ai

spoor

Thank you

Ask@spoor.ai

spoor.ai

spoor