Large gull behavior inside an offshore wind farm

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Material & Methods

- **Study area**: the Thorntonbank offshore wind farm (OWF) located 25 km off the Belgian coast. This OWF comprises 54 turbines, 6 of which are installed on gravity-based foundations and 48 on jacket foundations, the latter offering particularly numerous roosting possibilities for gulls.

- **Counts of birds associated with turbine foundations during ship-based transect monitoring**:

- **Counts of large gulls through a fixed camera**:

- **Analysis of GPS tracks of lesser black-backed gulls**:

Results (2)

- Transect count data showed that **great black-backed gulls** associated with jacket foundations preferred outer turbines over inner turbines, illustrated by a significant effect of distance to the OWF edge on the numbers counted \((P<0.001)\).

- GPS tracking data showed that **lesser black-backed gulls** entering the Thorntonbank OWF spent 51% of their time roosting on jacket foundations, and that distance to the OWF edge had a significant effect on the number of different individuals visiting the turbines \((P=0.004)\).

Conclusions

- The observed preference of both lesser and great black-backed gull to outer turbines suggests a **partial barrier effect**, despite earlier reported attraction effects towards Belgian offshore wind farms. Turbine foundations were mainly used for roosting, but occasionally, great black-backed and herring gulls were observed foraging on mussels growing on the lower reaches of the jacket foundations during low tide.

- The gulls’ preference to outer turbines combined with the inconsistent and occasional foraging on a yet daily available and easily accessible food source is in strong support of the stepping stone hypothesis: gulls seem to use the OWF as an ‘offshore outpost’ rather than a favoured foraging area.

- The results of this study may shed new light on the currently expected collision risk of large gulls at OWFs, and highlight the need for post-construction monitoring. Impact assessments tend to extrapolate pre-construction numbers and behavior to feed collision risk models. But next to a possible post-construction change in numbers, any behavioral shift – a change in time flying or a non-homogenous distribution due to attraction to the turbines and/or wind farm edges – may have a strong effect on the anticipated collision mortality.

Results (1)

- An estimated mean of 0.98 (fixed camera) and 1.21 (transect counts) large gulls were observed to be associated with the jacket foundations in the Thorntonbank OWF.

- 83% of the gulls associated with turbine foundations observed during transect counts were great black-backed gulls, with only 13% and 4% lesser black-backed and herring gulls respectively. In contrast, but accounting for one turbine (I5) only, the proportion of herring gull amounted to 34% as observed with the fixed camera. Meanwhile, lesser black-backed gull was by far the most common of the three large gull species in surrounding waters.

- 11% of the large gulls observed with the fixed camera were foraging on mussels growing the lower intertidal reaches of the jacket foundations, most of these being herring gulls.