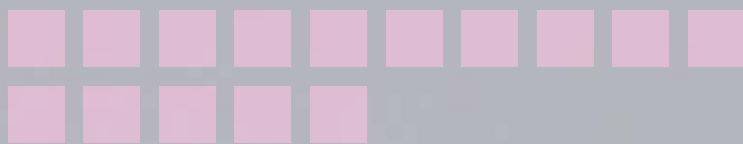


CHAPTER

15



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Attraction of seabirds

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Several gull species were shown to be attracted to the offshore wind farms at the Belgian part of the North Sea, which is hypothesised to result from increased roosting possibilities or enhanced feeding conditions. Birds inside the wind farms were mainly observed resting on the water or the turbine foundations, but there is also few but increasing evidence that seabirds indeed started profiting from an improved food availability. In order to unravel the hypothesised link between the increased underwater biodiversity and seabird presence, future monitoring should further focus on the (foraging) behaviour of seabirds occurring inside the wind farms, and start up a research program on pelagic fish communities.

SEABIRD ATTRACTION TO OFFSHORE WIND FARMS AT THE BELGIAN PART OF THE NORTH SEA

Monitoring seabird displacement effects (Chapter 5) showed that seabirds are not necessarily scared away by rotating turbines. On the contrary, several species occur in higher numbers than before. Figure 1 illustrates the strong increase in numbers of lesser black-backed and herring gull (*Larus fuscus*, *Larus argentatus*) inside the Bligh Bank wind farm, opposed to the moderate upward trend in the control area. Other seabird species were found to occur in lower numbers than before, but were nevertheless regularly observed entering the wind farms (for example auks). These birds' avoidance behaviour is thus far from total, and it is not unthinkable that in time they will habituate to the presence of wind turbines. With the introduction of new artificial habitat one can indeed expect the unexpected,

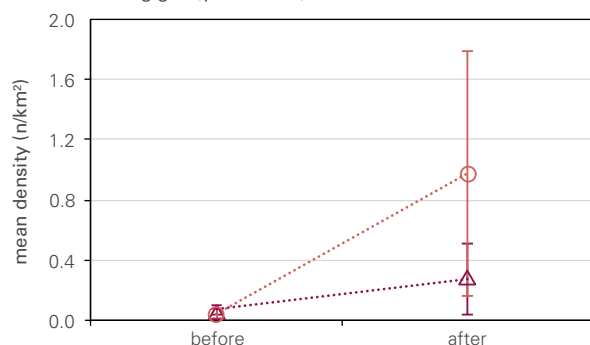
which is nicely illustrated by the recent observations of shag *Phalacrocorax aristotelis*, a seabird species favouring cliffs and rocky shores. While shags were only very rarely observed staging at the BPNS before the construction of the first turbines (4 observations of 5 staging individuals in the course of 20 years of seabird monitoring), there were already 5 observations of 6 staging individuals since the beginning of 2012, all within the wind farm boundaries.

RV Belgica approaching the Bligh Bank wind farm during a seabird monitoring survey.

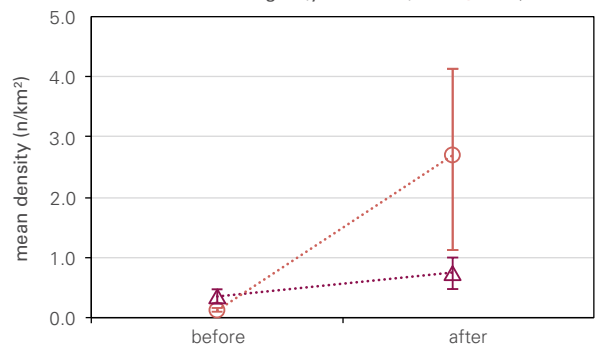


Figure 1. Densities of herring and lesser black-backed gull at the Bligh Bank study area before and after wind farm construction.

herring gull (year-round)



lesser black-backed gull (year-round)



Shag on a turbine base at the Thorntonbank.

ATTRACTION / PRODUCTION HYPOTHESIS

The most extreme case in which seabirds would fit in the attraction-production hypothesis (see Chapter 14) would be the colonisation of the offshore turbines and/or transformer platforms for breeding purposes. The idea may sound odd, but there are numerous examples of birds colonising man-made structures. Peregrine falcons (*Falco peregrinus*) learned to breed on high buildings and cathedrals 'mistaken' for cliffs, allowing them to colonise towns and industrial areas. In 1998, black-legged kittiwakes (*Rissa tridactyla*) started to breed on an offshore gas platform in the Irish Sea, followed by the colonisation of several other gas platforms in the Dutch part of the North Sea a few years later. Camphuysen & De Vreeze (2005) argue that the exact location of the Dutch platforms played

a key role in their colonisation, with the nearby 'Frisian Front' offering high food availability during the crucial chick rearing period.

For now, the most plausible positive effect that offshore wind farms are likely to have on birds, is increased food availability. The introduction of hard substrate in a sandy soft-bottom ecosystem brings about a cascade of environmental changes (the so-called 'reef effect'), most notably organic enrichment and the attraction of hard-substrate fish (Degraer et al., 2011). Another important factor in this respect could be the exclusion of fishery, allowing the interlaying soft-bottom ecosystem to recover from decennia of heavy beam trawling impact.

The most important question yet to be answered is whether birds are attracted to wind farms from a sheer physical point of view, with the wind farm functioning as a stepping stone or a resting place, or whether they already learned to exploit the hypothesised increase in food availability. A good example of an offshore wind farm functioning as a stepping stone is given by Leopold et al. (2011). Large numbers of mainland breeding great cormorants *Phalacrocorax carbo* exploit the offshore OWEZ and PAWP wind farms for feeding, and use the met-mast and monopile foundations to rest. The presence of above-water structures is a critical side condition for the occurrence of great cormorants that need to dry their feathers after feeding. Without the presence of the turbines, these areas would simply be off-limit.

Initially, birds occurring inside the Belgian offshore wind farms (mainly gulls) were only observed resting on the water or on top of the transformer platforms, strongly supporting the idea that their presence was to be interpreted in the view of roosting possibilities. Since October 2012 however, flocks of black-legged kittiwakes are regularly observed foraging inside

the Bligh Bank wind farm. Strikingly, the percentage of kittiwakes displaying active foraging behaviour inside the wind farm appears to be much higher than in the control area (5.9 versus 0.3%). In subzone B of the Thorntonbank wind farm (operational since the beginning of 2013), good numbers of lesser black-backed gulls were observed foraging near the jacket foundations during the surveys of April and May 2013. The fact that this behaviour is observed only now (several months/years after turbine construction) may not be coincidental, but can be a reflection of the delayed increase in food availability to seabirds following initial reef effects. Assuming that (in time) offshore wind farms offer increased feeding possibilities, seabird attraction effects too are expected to increase. Seabirds are known to readily exploit any area with high and predictable food availability, and improved foraging conditions might also speed up the habituation process for birds that are now still reluctant to enter the wind farms.



Gulls resting on a jacket foundation during the construction of Phase 2 & 3 of the Thorntonbank wind farm.

FUTURE MONITORING

We will continue to monitor seabird presence inside the Belgian offshore wind farms, with increased attention to their behavioural and foraging-related actions. To further investigate the hypothesised link between seabird presence and food availability, it would be very interesting to conduct research on pelagic fish communities occurring in- and outside the wind farms. To what extent improved foraging conditions benefit seabirds on a population level is very hard to assess. The benefits gained however are unlikely to weigh up to the costs of additional mortality. An increased number of flight movements inside the wind farms inevitably results in an increase of collision fatalities, potentially turning the situation into an ecological pitfall (see Chapter 17).