

Radar research on the impact of offshore wind farms on birds: preparing to go offshore

Brabant Robin¹, Laurence Vigin¹, Eric W.M. Stienen², Nicolas Vanermen² and Steven Degraer¹

¹ Royal Belgian Institute of Natural Sciences, Management Unit of the North Sea Mathematical Models, Marine Ecosystem Management Section, Gulledele 100, 1200 Brussels, Belgium
E-mail: R.Brabant@mumm.ac.be

² Institute of Nature and Forest Research, Kliniekstraat 25, Brussels, Belgium

Wind farms have three possible effects on birds. One of them is the barrier effect. Krijgsveld *et al.* (2011) described that birds change their direction of flight in the vicinity of a wind farm. It is unknown if this will also be the case for the offshore wind farms in the Belgian part of the North Sea and what the extent of this effect will be. To study the barrier effect there is a need for a technique that provides continuous data on a large scale. Automated radar systems offer such a tool.

The objectives of this study are: (1) to develop an analytical procedure to assess the quality of the radar data and to process the data to effectively remove noise (i.e. data reduction); (2) to develop and test a methodology for radar data analysis, including the influence of co-variables, such as wind direction; and (3) to draft the analytical procedure for future radar research in offshore wind farms (i.e. lessons learnt).

The radar system was tested in the port of Zeebrugge, to get acquainted with the system and the data processing. Foraging flights of terns are typically in a well-defined direction, as is the case for migrating birds. Therefore the foraging flights can be used as a proxy for the migration flights of migrating birds offshore. Variation in the direction of those foraging flights might be in function of co-variables such as wind direction. Offshore wind farms also make migrating birds change their direction of flight when they approach (Petersen *et al.*, 2006; Krijgsveld *et al.*, 2011) and is thus a co-variable that influences the direction of flight of migrating birds. Both parallels allow us using the data that were recorded near the tern colony as a proxy for the future offshore radar research. Lessons learnt will be directly applicable to the offshore work.

The Zeebrugge case study offered a good opportunity to focus on a specific type of birds and flight behaviour with the radar system. A lot of experience was gained and the methodology was developed and fine-tuned for the future research offshore. It can be concluded that the radar system is an appropriate tool to monitor bird movements. It offers a possibility to show significant patterns in bird movements, even if that pattern is rather small.

The radar system is installed on an offshore platform in a wind farm on the Thorntonbank in August 2012. To be continued!

References

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