RESEARCH STRATEGY AND EQUIPMENT TO CONTINUOUSLY STUDY FLYING BIRDS IN WIND FARMS IN THE BELGIAN PART OF THE NORTH SEA

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The effects of offshore wind farms on birds are still uncertain at this time. Therefore it remains a necessity to study the impact of newly built wind farms on the flight movements of local and migrating birds. The biggest concern is the mortality risk due to collisions with the offshore constructions because this elevates the normal mortality rate of species (Johnson *et al.*, 2002). At this time, three wind farms are granted a permit in the Belgian part of the North Sea. Two of them are currently under construction. To assess the possible impacts on birds an intensive monitoring is being conducted by the Institute of Nature and Forest Research (INBO) based on visual counts and collision models.

The research goals of the long term monitoring are (1) to study the avoidance behaviour of birds in the vicinity of the wind farms; (2) to quantify the flux of flight movements on site and (3) to assess the number of collision victims and the impact of this mortality on the NW-European population of the concerned species.

In a preliminary study MUMM assessed the possibilities and usefulness of an Automated Radar System (ARS) as an addition to the monitoring that is conducted by INBO and to set up a continuous monitoring. The different ARS that are commercially available are similar and work in a dual radar configuration. This means they have both a horizontal and a vertical antenna. The horizontal surveillance radar scans in the horizontal plane providing x-y data 360 degrees around the research site and shows the spatial distribution of the birds. The vertical antenna scans in the vertical plane providing y-z data from the ground level to a minimum altitude of 1.5 km. This gives insight in the bird fluxes and altitudes in the wind farm area. In the future vertical radar flux data will be used as input for existing collision models as part of a collaboration between MUMM and INBO. This will give a more reliable estimation of the number of collision victims than the results that are currently being calculated based on visual flux counts.

When using radar out at sea, better quality data is to be obtained using a platform based set up, rather than a ship based set up (Walls *et al.*, 2009). So, the offshore high voltage stations seem to be the most appropriate locations for mounting the ARS. Before a platform is installed at sea the ARS will be installed and tested at an onshore location. This will give the ability to spend time with the system, which is not always possible offshore, and to get acquainted with the data.

An ARS seems fit for the research purpose. In compliance with European legislation a public call for tender was published and the received quotations were evaluated on several criteria. The best suited ARS within the limits of the allocated budget will be purchased so the research can start in 2010. To be continued!

References

Johnson G.D., W.P. Erickson, M.D. Strickland, M.F. Shepherd, D.A. Shepherd and S.A. Sarappo. 2002. Collision mortality of local and migrant birds at a large-scale wind-power development on Buffalo Ridge, Minnesota. Wildlife Soc. Bull. 30:879-887.

Walls R., C. Pendlebury, R. Budgey, K. Brookes and P. Thompson. 2009. Revised best practice guidance for the use of remote techniques for ornithological monitoring at offshore windfarms. Published by COWRIE Ltd. 47pp.

Also see abstracts of related projects further in this publication:

Coates *et al.*; Degraer *et al.*; Di Marcantonio M.; Haelters J.; Kerckhof *et al.*; Reubens *et al.*; Vandendriessche *et al.*