



Environmental Impact Assessment in German Offshore Windfarming



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Great plans ahead

Offshore windfarming is a hot topic in Germany. Although no turbines have been erected yet, the perspective of an intended installation of up to 25.000 MW in the next decades has raised concerns about environmental impacts and lead to extensive impact assessments before the approval of the first projects. An EIA on offshore windfarms in the German EEZ of the North Sea or the Baltic Sea has to follow standards defined by the Federal Maritime and Hydrographic Agency (BSH) including a two-year study on all faunal species in the area. A special focus is laid on resting and migrating birds as well as on marine mammals, as German offshore waters include important areas for these species groups and harmful effects from disturbance and collisions are often expected.

Standard and new methods

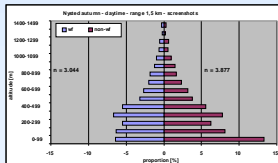
To evaluate the importance of a certain area for resting and migrating birds as well as for marine mammals and to assess the possible impact of an offshore windfarm is a demanding task and requires extensive field surveys in harsh offshore environments. Although a wealth of methods for marine research is available, new techniques have to be applied to survey seabirds and marine mammals.

Bird migration

The use of common ship radars allows to study intensity, direction of nocturnal bird migration. If the radar is turned into a vertical position also flight altitude can be measured accurately. Even though the radar has some limitations, e.g. weather conditions limit its use and species cannot be identified, it is still the best method to describe nocturnal bird migration at sea. The examples below show bird migration through an existing windfarm (Nysted, DK), where radars are used to detect the responses of migrating birds to the turbines.



Radars screen with the echo of a bird passing Nysted offshore windfarm.



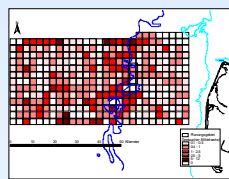
Altitude distribution of birds inside an outside Nysted offshore windfarm.

Resting birds

Newly introduced aerial surveys allow to cover large areas in short times and provided new insights into the spatial and temporal variability in seabird abundance and the significance of staging areas. Data from aerial surveys have been extensively used in EIAs on offshore windfarms and the declaration of marine reserves according to the EU bird directive.



A Partenavia Observer used for aerial surveys in the German Bight



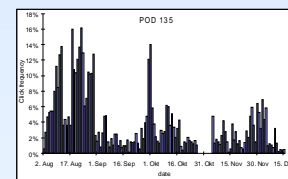
Distribution of divers at a proposed offshore windfarm obtained from aerial surveys.

Marine mammals

Porpoise Detectors (PODs) are electronic devices which record the echolocation sounds emitted by porpoises and dolphins. PODs allow to monitor the presence of porpoises and dolphins continuously irrespective of the weather conditions which strongly limit visual surveys. PODs are also the most suitable method for later monitoring the effects of installed windfarms.



Downloading data from a POD



Seasonal change in the presence of Harbour Porpoises near Sylt, North Sea.

Decisionmaking:

EIA studies deliver data and advice needed to decide whether or not a proposed windfarm can be approved. Based on the investigations outlined above, 11 projects have been approved in the German EEZ of the North Sea and the Baltic Sea. Two proposals have been rejected as the data showed that they were placed in areas of high importance for staging waterfowl and seabirds. In assessing the possible impacts of offshore windfarms especially two problems have to be solved in the future: 1. The actual impact on birds and marine mammals can only be studied in existing windfarms. As no offshore windfarms have been erected in German waters up to now, decisionmaking relies on results from other areas and more studies are clearly needed. 2. Criteria for the approval of offshore windfarms have to be evaluated and probably adjusted as windfarm planning continues and more knowledge emerges from monitoring. It seems especially important to evaluate offshore windfarms in transboundary contexts, as both the effects of the windfarms and the distribution of relevant species are large-scaled and extend across national territories.

