

Bird collisions at OWEZ offshore wind farm measured with WT-bird

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Abstract

To date, the number of birds that collide with offshore wind turbines has only been estimated, based on collision risk modeling (CRM) and experience with wind turbines on land. No actual measurements of collision rates have been carried out, due to the practical difficulties related to monitoring collisions offshore. As a result, actual offshore collision risks are unknown and estimates largely depend on data on avoidance behaviour of birds around wind turbines, which are scarce and highly variable.

To improve our insight into collision risks offshore, and to validate an automated detection method, we are measuring collision rates at one offshore wind turbine for two years. For this purpose, a WT-Bird detection device (developed and owned by ECN) has been installed at the Dutch Offshore Wind farm Egmond aan Zee (OWEZ). This WT-Bird device consists of two acoustic detectors per turbine blade, combined optionally with three cameras covering the entire rotor-swept area. Acoustic impacts are recorded, along with visual footage of the minutes prior to and during the impact, thus providing information on collisions and species involved. We will combine the recorded collisions with measurements of bird flight intensities and avoidance behaviour, in order to be able to assess the results on collisions in the context of local fluxes and avoidance rates.

Here we present the first results of these measurements. We present preliminary data on the number of collisions, seasonal and diurnal distribution of collision events, and bird species involved. Bird fluxes at the time of events are presented as well as flight patterns at the site. Results are compared with estimates of bird collision rates as calculated for OWEZ based on CRM and avoidance rates.

With this study, the use of acoustic/visual detection devices to measure bird collisions with offshore wind turbines can be propelled forward. The results are among the first of its kind and can be used to calibrate collision rate models.

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