

NOCTURNAL AND DIURNAL FLIGHT INTENSITY AND ALTITUDE OF SEABIRDS AND MIGRANTS IN AND AROUND AN OFFSHORE WINDFARM IN THE DUTCH NORTH SEA

Fijn Ruben, Karen Krijgsveld, Camiel Heunks, Martin Poot and Sjoerd Dirksen

Bureau Waardenburg bv, Consultants for Environment & Ecology, PO Box 365,
4100 AJ Culemborg, Netherlands
E-mail: r.c.fijn@buwa.nl

Offshore wind farms may have several effects on local seabirds and migrants. The nocturnal passage of migrating land birds over the North Sea is reported frequently but numbers and flight altitudes are generally unknown. In 2006 the Offshore Wind farm Egmond aan Zee (OWEZ) consisting of 36 turbines has been built off the Dutch coast. Within this framework a Monitoring and Evaluation Program was conducted to study, amongst others, flight paths as well as flight altitudes and flux of local and migrating seabirds as well as non-marine migrating birds. This study is the first to measure fluxes and flight altitudes at sea (20km offshore) for both day and night up to 1.5km altitude.

Bird movements in and around the wind farm were registered automatically using a vertical radar system (Merlin, developed and installed by DeTect. Inc. Florida). This set-up enabled measurements of Mean Traffic Rates (MTR's or Flux) and flight altitudes of passing birds continuously during both day and night. Data were collected from spring 2007 until December 2008. Prior to construction of the wind farm similar research was carried out and results are compared to flight patterns recorded in this baseline study.

At sea high numbers of flying birds were seen at all altitudes, from sea level up to 1.5km. Migration at high altitudes included waders and thrushes. Movements seen during day at lower altitudes primarily included gulls as well as Cormorants, Gannets, Guillemots, Razorbills and Common Scoter. Seasonal and diurnal variations were recorded in both flux and flight altitudes. The peak MTR was found early in the night during autumn migration with up to 3,410 bird groups per km per hour. These numbers are as high as numbers recorded on land. Compared to the baseline study fluxes were relatively low in general and especially during spring migration. In summer flight activity was low and mostly reflected gulls. High altitude passage was mainly found during autumn migration. Results will be discussed in the light of the collision risks for birds with wind turbines at sea.

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