

IMPACT OF WIND TURBINES ON TERNS IN ZEEBRUGGE, BELGIUM

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We studied the impact of a wind farm (line of 25 small to medium sized turbines) on birds at the eastern port breakwater in Zeebrugge, with special attention to the nearby breeding colony of Common Tern *Sterna hirundo*, Sandwich Tern *Sterna sandvicensis* and Little Tern *Sternula albifrons*. With the data of found collision fatalities, and correction factors for available search area, search efficiency and scavenging, we calculated that during the breeding seasons in 2004-2007, respectively 168, 161, 177 and 133 terns collided with the wind turbines. The mean number of terns killed in 2004-2007 was 6.7 ± 0.7 per turbine per year for the whole wind farm, and 11.2 ± 1.0 per turbine per year for the line of 14 turbines on the sea-directed breakwater close to the breeding colony. The mean number of collision fatalities when including other species (mainly gulls) in 2004-2007 was 20.5 ± 1.6 per turbine per year for the whole wind farm and 33.1 ± 4.2 per turbine per year for 14 turbines on the sea-directed breakwater. The collision probability for Common Terns crossing the line of wind turbines in 2004 and 2005 amounted 0.110-0.118% for flights at rotor height and 0.007-0.030% for all flights. For Sandwich Tern this probability was 0.046-0.088% for flights at rotor height and 0.005-0.006% for all flights (Everaert and Stienen, 2007). Between 2005 and 2007, in total 64 Common Tern fatalities were collected and sexed, of which 64% were males. Uneven sex ratio among these birds was most pronounced during the period of incubation and early chick feeding (15 May–15 June), when 78% of the 28 mortalities were male (Stienen *et al.*, 2008). The breeding terns were almost not disturbed by the wind turbines, but the relative large number of tern fatalities in 2004-2007 was determined as a significant negative impact on the breeding colony in Zeebrugge [maximum additional mortality of 0.7% (Sandwich Tern), 2.0% (Little Tern) and 3.7% (Common Tern)]. We recommend that there should be precautionary avoidance of constructing wind turbines close to important breeding colonies, nor should artificial breeding sites be constructed near wind turbines, especially not within the frequent foraging flight paths.

References

- Everaert J. and E. Stienen. 2007. Impact of wind turbines on birds in Zeebrugge (Belgium). Significant effect on breeding tern colony due to collisions. *Biodivers. Conserv.* 16:3345-3359.
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