

# Estimating cumulative numbers of collision victims, and impact assessment on population level

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## Abstract

The vast growth in offshore wind farms worldwide increases the need for better assessments of cumulative environmental impacts at a much larger scale than several individual wind farms. Here we present the cumulative impacts on a selection of bird species at the scale of the southern and central North Sea. Different scenarios of wind farm development have been considered, such as projecting the impact of all wind farms planned until 2030 in these waters.

The cumulative number of collision victims within all these wind farms have been calculated using among others distribution density maps and sophisticated bird collision models. In addition to numbers of collision victims, we assessed the expected impact of this additional mortality on the population levels for twelve selected bird species using matrix population models. This includes migratory bird species, such as curlew and black tern, as well as resident seabirds, such as several gull species. The population models project the population trend based on demographic rates, in our case for 30 years. We will present different ways to quantify the impact on the population level. The comparison of the scenarios with and without additional cumulative mortality provides input for environmental impact assessments and government decisions on where to establish future offshore wind farms and their lay-out.

Finally, we will discuss a novel approach of collision modelling, so called individual-based models. We are currently developing an individual-based model for lesser black-backed gull, which can be used to differentiate in flight behavior between individuals, for example based on age class. This provides promising new insight in variation in collision risk and improves impact assessment.

## References

Potiek, A., M.P. Collier, H. Schekkerman & R.C. Fijn, 2019. [Effects of turbine collision mortality on population dynamics of 13 bird species](#). Bureau Waardenburg Report 18-342. Bureau Waardenburg, Culemborg

Potiek, A., N. Vanermen, R.P. Middelveld, J. de Jong, E.W.M. Stienen & R.C. Fijn. 2019 [Spatial and temporal distribution of different age classes of seabirds in the North Sea. Analysis of ESAS database](#). Bureau Waardenburg report 19-129. Bureau Waardenburg, Culemborg.