Ecological impacts of offshore renewables: the role of statistical research in supporting decision making

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Offshore renewable energy production is expanding rapidly in the UK and elsewhere, and is regarded as a key mechanism for delivering energy security and meeting ambitious greenhouse gas emissions targets. The expansion of offshore renewables may impact seabird and marine mammals populations, either through direct mortality from collisions or indirect harm such as disturbance, and developers are required to evaluate these impacts. These assessments are taken into account when deciding whether to provide consent for developments to go ahead, and in deciding on mitigation and compensation measures that may be required.

Such assessments use mechanistic and statistical models, exploit a range of different types of data (including colony counts, GPS tracking data, aerial survey data and nest monitoring data), and involve substantial sources of uncertainty. There is therefore substantial potential for statistical research to enhance this process, and thereby improve decision making. There are also challenges, including the need to deliver work on tight timelines and to align with the legal processes that underpin assessments. I will outline statistical research work that has been undertaken so far in this area, particularly around improving the quantification and propagation of uncertainty, and highlight the potential for further methodological research to enhance decision making.