

The Soundscape and Harbour Porpoise Presence in and Around an Offshore Windfarm

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The swift expansion of offshore wind energy development in European waters has sparked concerns regarding their potential environmental impacts. We studied harbour porpoise (*Phocoena phocoena*) presence during the operational phase of Borssele wind farms located in the southern part of the Dutch EEZ. The passive acoustic monitoring network consists of cetacean click detectors at 14 locations in and outside the windfarms, co-located with broadband hydrophones at 4 locations. Preliminary results indicate that ambient sound levels inside the windfarms are dominated by low-frequency sound emitted by the turbines, while ambient sound levels outside the windfarm are higher and deemed typical for an environment close to a shipping lane. Seasonality in harbour porpoise acoustic activity was observed, with higher detections with decaying sea surface temperature. This corresponds with previous studies at Dutch offshore wind farms and patterns in coastal sightings, aerial surveys, and strandings (i.e., higher porpoise density in winter and early spring). Porpoise acoustic activity increased during the night and around slack tide, possibly related with enhanced foraging opportunities. The monitoring network enables studying the soundscape in and around an offshore windfarm within a part of the North Sea with the highest shipping density, and the impact of an offshore windfarm on the presence and activity of harbour porpoises. This research is part of the WOZEP ecological programme of Rijkswaterstaat.

Proposed Underwater Noise Limits for Offshore Wind Construction in the U.S.

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The Bureau of Ocean Energy Management's (BOEM) Center for Marine Acoustics (CMA) developed proposed noise mitigation measures to meet the Outer Continental Shelf Lands Act's (OCSLA's) "undue harm" requirement, reduce and monitor impacts, and bolster compliance with the Endangered Species Act and Marine Mammal Protection Act. While these measures are aimed at reducing impacts to key species, such as the critically endangered North Atlantic right whale, their implementation will also benefit a host of other marine life. The CMA considers these proposed measures to be mature and ready for integration with project NEPA reviews and plan approvals. Currently, the proposed measures are focused on three areas: (1) Received Sound Level Limits for pile driving, (2) Sound Field Verification for pile driving, and (3) Long-Term Passive Acoustic Monitoring (pre, during, and post-construction). Additional measures are still being considered and may be added to address, among other concerns, vessel quieting and the application of relativistic risk frameworks during plan development.