

Offshore Wind Farms in the North Sea: Is there an effect on the zooplankton community?

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Offshore Wind Farms (OWFs) may induce cascading bio-physical effects within the pelagic North Sea ecosystem: wind- and water-wake effects of power plant turbines and foundations can lead to locally increased vertical mixing, transporting limiting nutrients into the surface mixed layer. As one possible consequence increased primary production may be channelled up the food web. Furthermore, epibenthic organisms may benefit from artificial hard substrates resulting in a dominating meroplanktonic component. We assessed the bio-physical effects of OWFs on the ambient zooplankton community using a remotely operated towed vehicle (TRIAXUS) additionally equipped with a Video Plankton Recorder. Furthermore, ship-borne hydroacoustic measurements of planktivorous fish complemented our surveys. The analysis of the observed spatial patterns was supported by the result of the PELETS particle drift model. Our surveys provided insights into the potential bio-physical effects of OWFs on the North Sea pelagic ecosystem. Specifically, we observed areas of increased mixing and found indications for an increased release of meroplanktonic larvae.

Keywords: Offshore Wind Farms, Zooplankton, TRIAXUS, Video Plankton Recorder, Meroplankton

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