

Rôle des parcs éoliens sur la dispersion larvaire d'espèces benthiques en baie de Seine étendue

Doctorant·e

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Abstract

Previous studies have shown the notable impact of Offshore Wind Farms (OWFs) on the local and potentially regional environment. Indeed, the foundations of wind turbines serve as artificial habitats for a variety of benthopelagic species, thus creating a reef ecosystem. Additionally, the hydro-sedimentary environment near the foundations is altered with the introduction of sheltering effects, turbulent wake, scouring, and ridges, for example. This study focuses on investigating the hydrodynamic effects of the parks on larval dispersion in the extended Seine Bay. The impacts of the parks on the dispersion of both natural species (e.g., mussels and European green crabs) and introduced species (e.g., Japanese oysters and Asian shore crabs) are studied through a coupled physical-biological approach based on numerical modeling. The local scale around a single foundation or a cluster of foundations and then the regional scale of the extended Seine Bay (from the Franco-British maritime border to Hauts-de-France), including OWF of Courseulles-sur-Mer and Fécamp, have been examined. At this scale, the hydrodynamic effects of the foundations vary depending on their type and spatial arrangement. Dispersion simulations highlight a notable sensitivity to foundation geometry and the angle of incident current relative to it. At the regional scale, simulations have underscored their potential role as relay points for species. Larval dispersal from the wind farms has also shown connectivity between the parks themselves and the shores of the extended Seine Bay. To enhance the consideration of physical and biological realities in simulations, the integration of realistic biological parameters is beneficial, as well as considering the cumulative effects of multiple structures within offshore wind farms.