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## ***Impact of man-made structures on hard substrate species connectivity patterns in the North Sea***

Pelagic life stages are critical in determining invertebrate and fish dispersal and connectivity in the marine environment. Man-made structures such as wind farms start proliferating in the North Sea. They could act as stepping stones and allow species to expand their distribution range over large distances. Effective marine management requires the understanding of how (artificial) hard structures are ecologically connected and what processes influence larval retention and dispersal. The transport of marine organisms from the spawning grounds to settlement areas is driven by hydrodynamic processes. However, the final dispersal pattern, larval survival and successful settlement of the larvae are affected by environmental factors, physiology, behaviour and reproductive strategies (spawning period/areas). Biophysical models help assessing the dispersal potential of marine species during their pelagic phase. Here, we use a particle-tracking transport model coupled to a 3D hydrodynamic model (Larvae&Co), to assess the larval dispersal of *Patella vulgata* in the North Sea and to quantify the increase of connectivity of disconnected populations as a consequence of man-made structures. Our results will contribute to a better understanding of the impact of man-made structures on larval dispersal and connectivity in the North Sea.

*Keywords: Particle tracking model, hard structures, connectivity, Patella, North Sea*