

Talk

Fundamental biological traits

Feeding preferences of seven dominant fouling species: trophic specialists or generalists?

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Offshore wind farms in the Southern North Sea are proliferating rapidly and add large quantities of artificial hard substrate into soft-bottomed areas. These substrates are rapidly colonized by fouling species, with some found along the entire depth gradient and others restricted to limited parts of the pile. This patchy distribution of mainly sessile suspension feeders along the depth gradient might lead to spatial variation of their trophic behaviour. This study investigates the intra-specific spatial variation in the isotopic signatures of seven dominant fouling species: *Mytilus edulis*, *Diadumene cincta*, *Metridium dianthus*, *Jassa herdmani*, *Necora puber*, *Pisidia longicornis* and *Ophiothrix fragilis*. The species were sampled at six locations along the depth gradient and around a wind turbine in the Belgian part of the North Sea. From each of the species, the carbon and nitrogen stable isotopes were analysed, and characteristics of their trophic niche (eccentricity (E), angle (θ) and overlaps) investigated using the package SIBER. Potential food sources were also investigated using the package SIMMR. Most of the investigated species feed on different food items at different locations, suggesting that this trophic plasticity is a key to their success as fouling organisms on larger areas of wind turbines. On the other hand, species that specialize in one food source independently on their location have a limited vertical expansion. In addition, trophic niches from individuals sampled closer to the sea floor were elongated along the $\delta^{13}\text{C}$ axis, reflecting the use of multiple food sources available in environments with higher habitat complexity.

Key words: trophic plasticity, offshore wind farms, selectivity