Biodiversity on Artificial Oyster Reefs

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Introduction:
Four artificial oyster reefs were constructed at the sand nourishment at the Oosterdam in the Eastern Scheldt. The artificial oyster reefs were placed to slow down erosion, reduce wave impact on the dike and potentially increase biodiversity. The artificial oyster reefs are intended to turn into living reefs, for this reason the development of the biodiversity was investigated.

Most common species:
- Mytilus edulis
- Amphipoda
- Littorinidae
- Actinaria
- Hemigrapsus takanoi

Oyster spat: Oyster spat should settle on the reefs to eventually turn the artificial reefs into living reefs. Living oysters can maintain themselves and the sediment stabilisation when the metal cage erodes. Settlement discs were placed on the reefs to monitor the settlement of oyster (Crassostrea gigas) spat.

Species abundance & richness:
The species abundance was measured using a 0.25 m² quadrant several times in different sections at every reef. Species present within the quadrant were recorded on a field form.

Exotic species:
The new hard substrate attracted many hard substrate species, including exotic species. Most exotic species are adapted to hard substrate environments as many of them originate from ports, ships and aquaculture transportation.

Battle for the reefs:
The crabs Hemigrapsus takanoi and Carcinus maenas are the perfect example to study competition between an exotic and native species at the artificial oyster reefs. Similar sized H. takanoi and C. maenas are both present on the artificial reefs, they are motile species, and share the same ecological niche.

Conclusion:
- The most common species colonizing the reefs are typical hard substrate species (molluscs, crustaceans, tunicates, anemones and macroalgae), these are rarely found in the original soft substrate.
- Species richness seems to have declined over time. Have the first colonisers since been outcompeted?
- Exotic species comprise almost half the species richness, but native species are always more abundant.
- The exotic crab, H. takanoi consistently outnumbers the native C. maenas. Is C. maenas being outcompeted by the invader in this habitat?

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