

Marine aggregate dredging impact on demersal fish and epibenthos

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Marine aggregate dredging is expected to have an impact on the marine ecosystem. While the direct and indirect effects of marine aggregate dredging on macrobenthos are well documented, less is known of the effects upon epibenthos and demersal fish.

Several trawl samples were taken both inside and outside the aggregate dredging areas on the Belgian part of the North Sea (Buiten Ratel, Oostdyck, Thorntonbank and Hinderbanken). Sampling was done with an 8m beam trawl with a fine-meshed shrimp net (stretched mesh width 22mm in the codend) in both spring and autumn between 2010–2014.

The general temporal and spatial patterns, known from the Belgian part of the North Sea, were dominant in structuring the epibenthos and fish assemblages from the marine aggregate dredging areas. As such, different assemblages were observed in spring and autumn, and in each season clear spatial patterns could be distinguished. Further offshore on the Hinderbanken and the Oostdyck fewer species were observed, and in spring lower densities as well. These offshore areas were dominated by lesser weever (*Echiichthys vipera*) together with horse mackerel (*Trachurus trachurus*) in autumn, and with brown shrimp (*Crangon crangon*) and sprat (*Sprattus sprattus*) in spring. In the midshore dredging areas (Buiten Ratel and Thorntonbank), a higher number of species occurred and especially in the gullies in higher densities. Species characterising these areas were brown shrimp (especially in spring), starfish (*Asterias rubens*), hermit crabs, lesser weever and swimming crab (*Liocarcinus holsatus*)

Although there is no clear overall impact of aggregate dredging measurable on the epibenthos and demersal fish assemblages, there are some indications of impact on species level. On the Buiten Ratel, the most intensely used dredging area, densities of hermit crabs and starfishes were much higher compared to the nearby reference location suggesting attraction of scavengers to the disturbed area. Furthermore, the green sea urchin, a species known to prefer coarse gravelly sediments, occurred in the impact area from 2013 onwards. This suggested a change in sediment composition towards coarser sediments caused by the intensive dredging in this area. On the Hinderbanken, there is an indication of decreasing densities of lesser sand eel (in spring) in the impacted area compared to the reference area on the same sandbank. Lesser sand eel is known to be sensitive to dredging, and it was observed floating damaged on the water surface in spring 2014 immediately after dredging of the area.