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The foreshore: an ecological valuable ecosystem in danger

The sandy beaches and foreshore harbor a relative diverse marine ecosystem and are very important as nursery ground. Key components in the foreshore food web are phytoplankton, macrobenthos, hyperbenthos, epibenthos and demersal fish species. In relation to beach and foreshore nourishments at Mariakerke (Belgium) in 2013, an ecosystem based BACI monitoring program of 3 years was put in place. Although beach and foreshore nourishment are generally considered as less harmful, it does put pressure on the local biota. The goal of this study was to evaluate its effect on the community structure and the ecological value of the nourished area.

As the results show, the natural factors (temporal and spatial) drive the variance observed over the different ecosystem components, with some short term local effects. The less mobile macrobenthos was heavily influenced by the beach nourishment, but quickly recovered. This was due to the fact that the nourishment was conducted in late winter, before the recruitment period. The foreshore nourishment didn't have a big influence on the benthic fauna, probably due to the small volume of the nourishment. The more mobile species (epibenthos, fish) were slightly influenced due to changes in the bottom typology in the area (e.g. absence of the beach gullies). Beside this, the species composition in the hyperbenthos fraction shows the value of those areas as nursery and feeding ground. Therefore, an appropriate management of the coastal defense work is necessary to maintain a healthy beach system.

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