Ecological study of foreshore nourishment at the Flemish coast

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Introduction

The beach and foreshore harbour a diverse marine ecosystem. Additionally, the foreshore is very important as nursery grounds for early life history stages of fish and other marine organisms (e.g. Harris & Cyrus 1996; Beyst 2001). The maintenance of this ecosystem and its well functioning is of vital importance when subjected to anthropogenic impacts.

Impact

In the framework of ‘Masterplan Kustveiligheid’ of the Flemish government, weak spots at the Flemish coast will be managed to increase our coastal safety. One of the solutions is beach nourishment, whereby sand is dropped on the beaches to compensate beach erosion for a period of 5 years. To optimize the maintenance of these nourishments (techniques, longevity, costs and management) in the future, alternatives will be investigated. One option is foreshore nourishment on which a pilot study was set up at Raversijde-Mariakerke (Belgium).

4SHORE: ECOLOGICAL MONITORING CAMPAIGN FOR EVALUATING THE IMPACT ON THE BEACH AND FORESHORE MARINE ECOSYSTEM DUE TO SUPPLETION ACTIVITIES

Aim

• Evaluate the ecological value of the marine ecosystem (macrobenthos, hyperbenthos, epibenthos and demersal fish) in the nourished area before nourishment in spring and autumn $T_0$.

• Follow-up the ecological effects of this anthropogenic disruption on these fauna, applying a BACI (Before After Control Impact) strategy during a period of 2 years. The effects are evaluated as possible changes in the ecological value and the recovery capacity of the present fauna and their ecosystem functioning.

Results To autumn 2013

$\text{(size picture = rel. density)}$

• We observe differences between impact and control area for epibenthos, demersal fish and macrobenthos communities, due to natural evolution or beach nourishment in Mariakerke (impact zone).

• Epibenthos and demersal fish show dominance of Pomatoschistus sp. and Crangon crangon. Hyperbenthos is dominated by Mysidaceae.

Conclusion

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Funded by:

References:


Photographs © Jonas Mortelmans (Pomatoschistus sp.), Hans Hillewaert (Solea solea, Macoma baltica, Ophiura ophiura, Crangon crangon, Synagrops sp.); Misjel Decleer (Beroe gracilis, Mesopodopsis slabberi); Fishbase (Syngnathus rostellatus), Henk Heessen (Osmerus eperlanus) en Pisces Conservation Limited (Schistomysis sp.).