

Ecological study of foreshore nourishment at the Flemish coast

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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).

Foreshore nourishment will influence the state of the marine ecosystem in one or another way. Therefore, a monitoring programme was initiated (4SHORE) in autumn 2013 to follow up the ecological effects of this anthropogenic disruption on the fauna, applying a BACI (Before After Control Impact) strategy.

The goal of the ecological monitoring campaign is to evaluate first the ecological value of the nourished area before nourishment, both in spring as in autumn. Possible changes in the ecological value due to this nourishment will be measured in the following two years (spring and autumn). An impact (nourished zone) and a control area (same habitat type, not influenced by the impact) are included in the study.

To determine the ecological value or changes in it, we will evaluate the present fauna (macrobenthos, hyperbenthos, epibenthos and demersal fish) and their ecosystem functioning (e.g. the relationship between the food source and their prey). For delivering an objective judgment on the nourishment effects (is it bad or good), we will apply standard indicators defined under the Marine Strategy Framework Directive. Changes in the ecosystem will be studied via biotic (biomass, density, diversity) and abiotic (grain size, organic matter) variables.