

# Ecological study of foreshore nourishment at the Flemish coast



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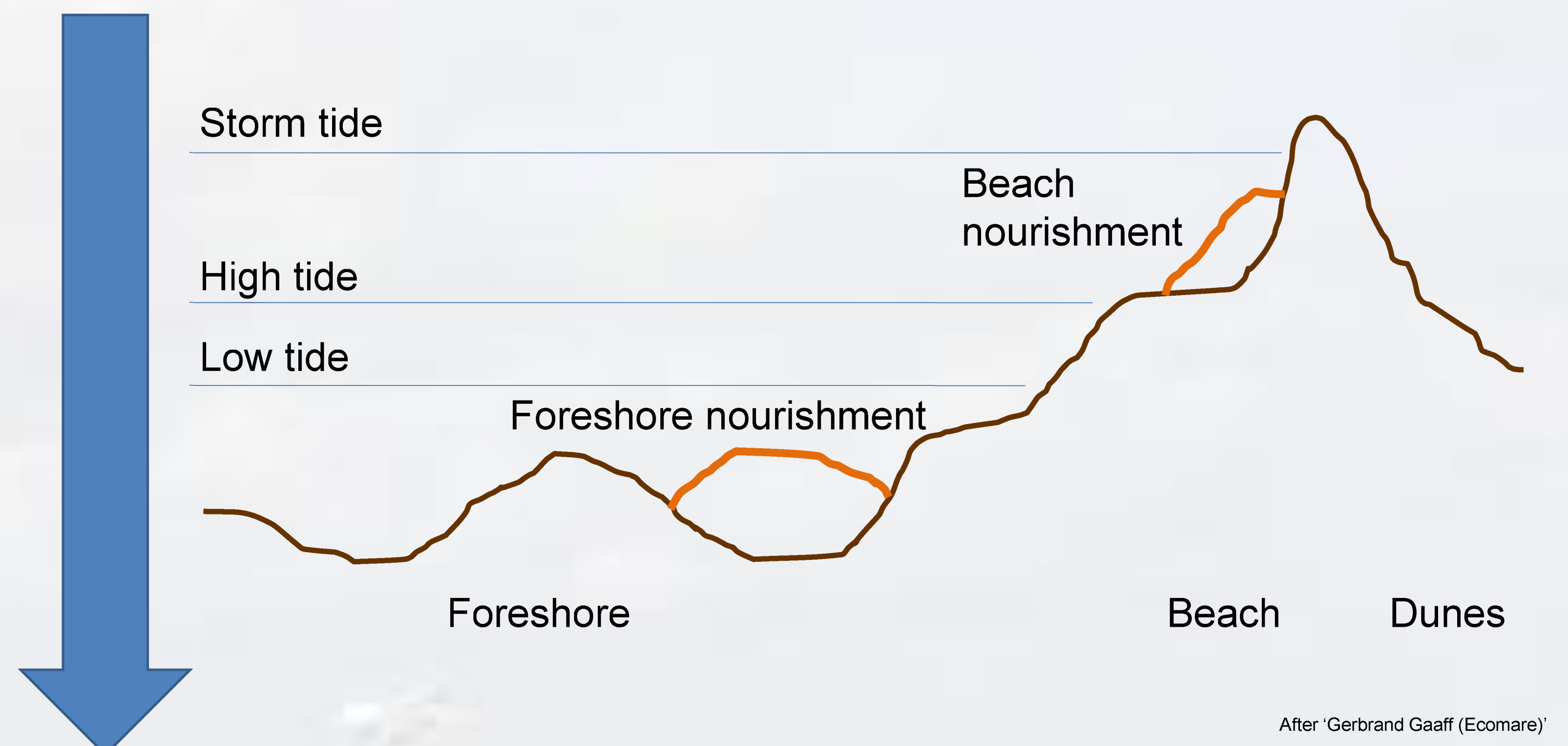
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## Introduction

The beach and foreshore harbour a relative diverse marine ecosystem. Additionally, the **foreshore** is very important as nursery ground 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).



After 'Gerbrand Gaaff (Ecomare)

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



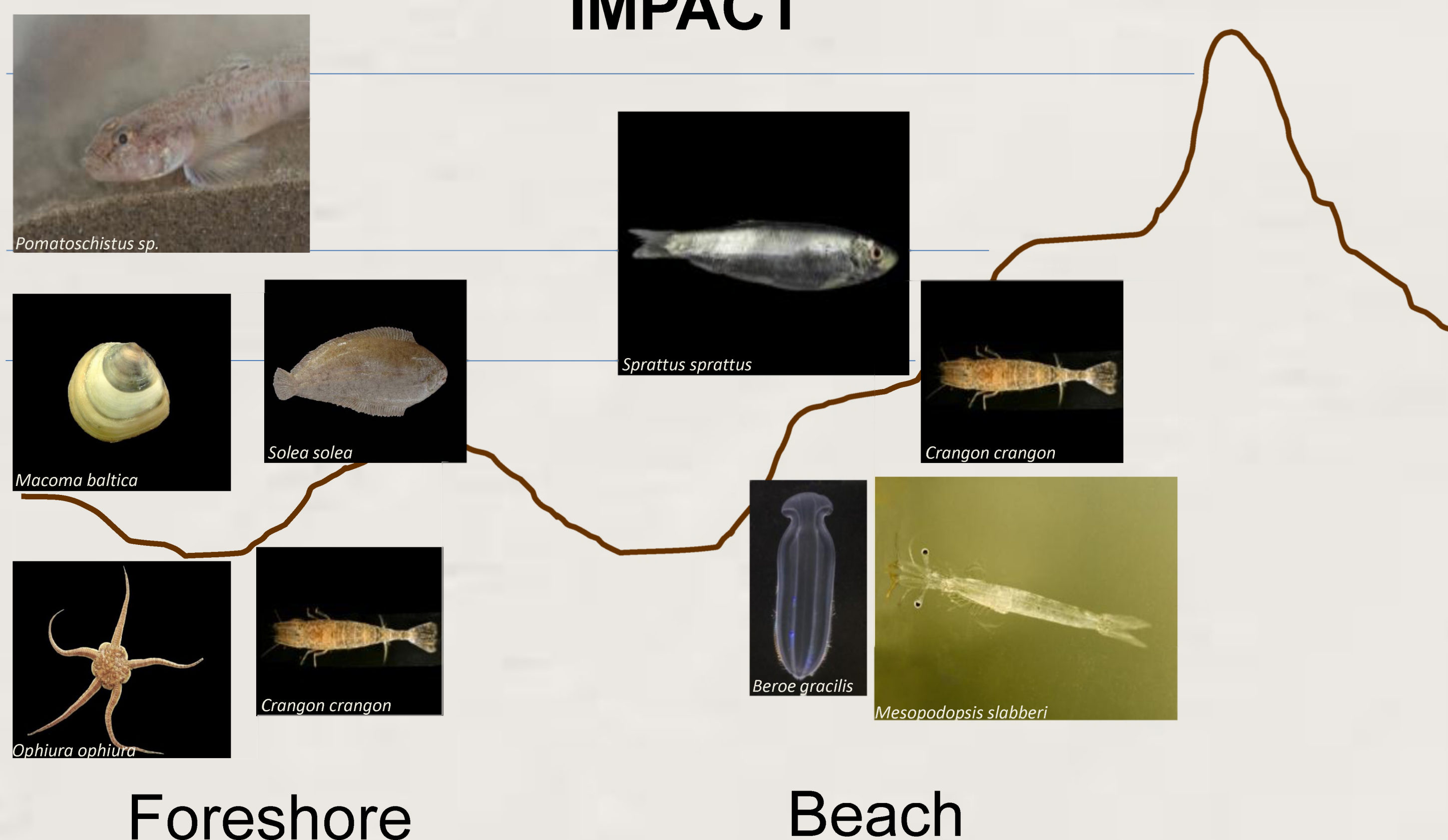
## Aim

- 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<sub>0</sub>)
- 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.

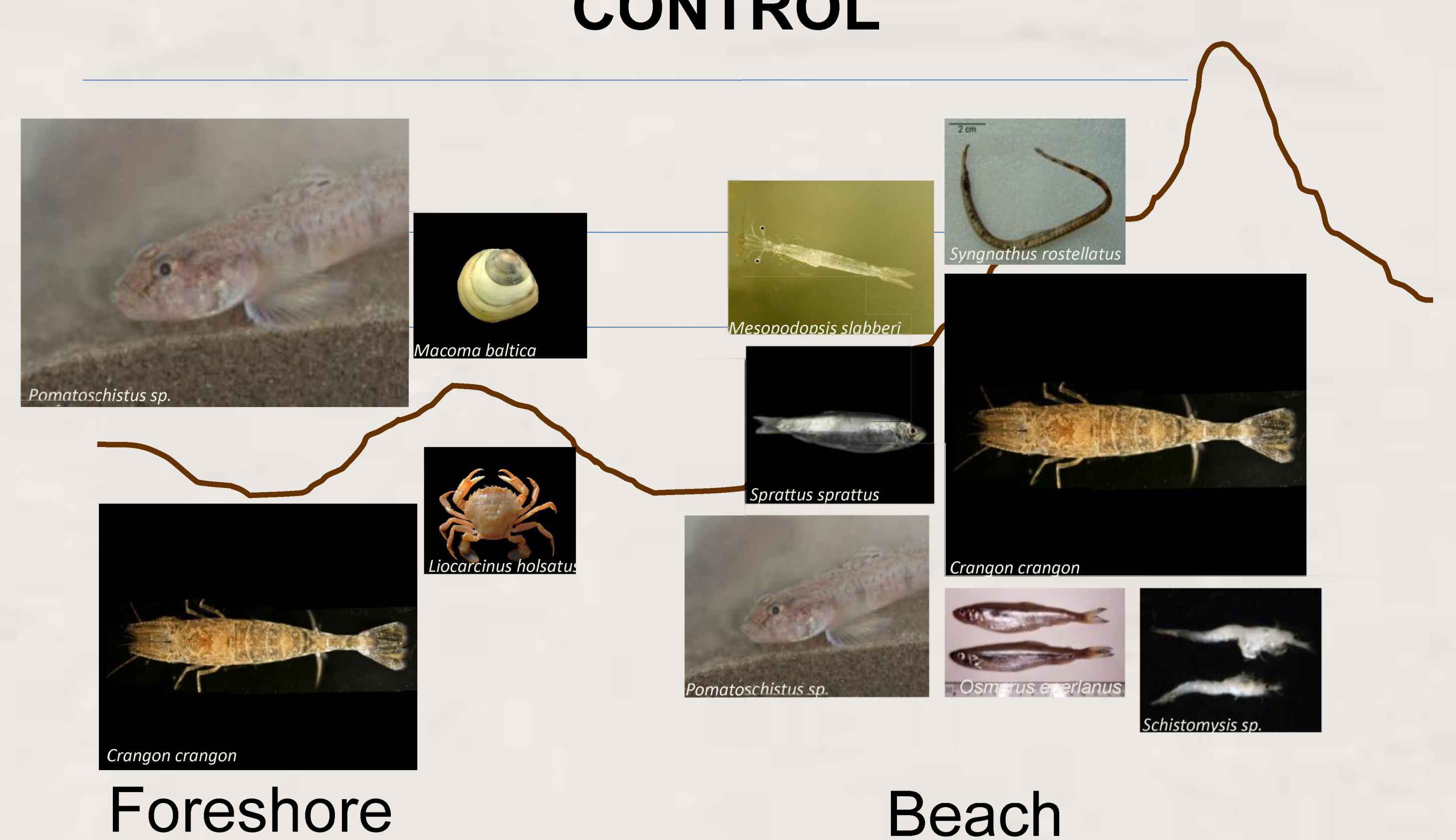
## Results To autumn 2013

(size picture = rel. density)

### IMPACT



### CONTROL



## Conclusion

- 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

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#### References:

Harris, S.A. & D.P. Cyrus, 1996. Larval and juvenile fishes in the surf zone adjacent to the St Lucia Estuary Mouth, KwaZulu-Natal, South Africa. Mar. Freshwater Res. 47, 465-482  
Beyst, B., 2001. Epi- and hyperbenthic communities of Belgian sandy beaches. PhD Thesis. Universiteit Gent. Instituut voor Dierkunde. Vakgroep morfologie, systematiek en ecologie: Gent. 351 pp  
Photographs © Jonas Mortelmans (*Pomatoschistus sp.*), Hans Hillewaert (*Solea solea*, *Macoma baltica*, *Ophiura ophiura*, *Crangon crangon*, *Sprattus sprattus*, *Liocarcinus holsatus*), Misjel Decler (*Beroe gracilis*, *Mesopodopsis slabberi*), Fishbase (*Syngnathus rostellatus*), Henk Heessen (*Osmorus eperlanus*) en Pisces Conservation Limited (*Schistomysis sp.*)

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