

Key stone species, MPAs and the ecosystem approach

Important benthic ecosystem engineers as a tool to implement the ecosystem approach to management

Marijn Rabaut, Ulrike Braeckman and Magda Vincx



22nd of March 2011, Leuven, Belgium



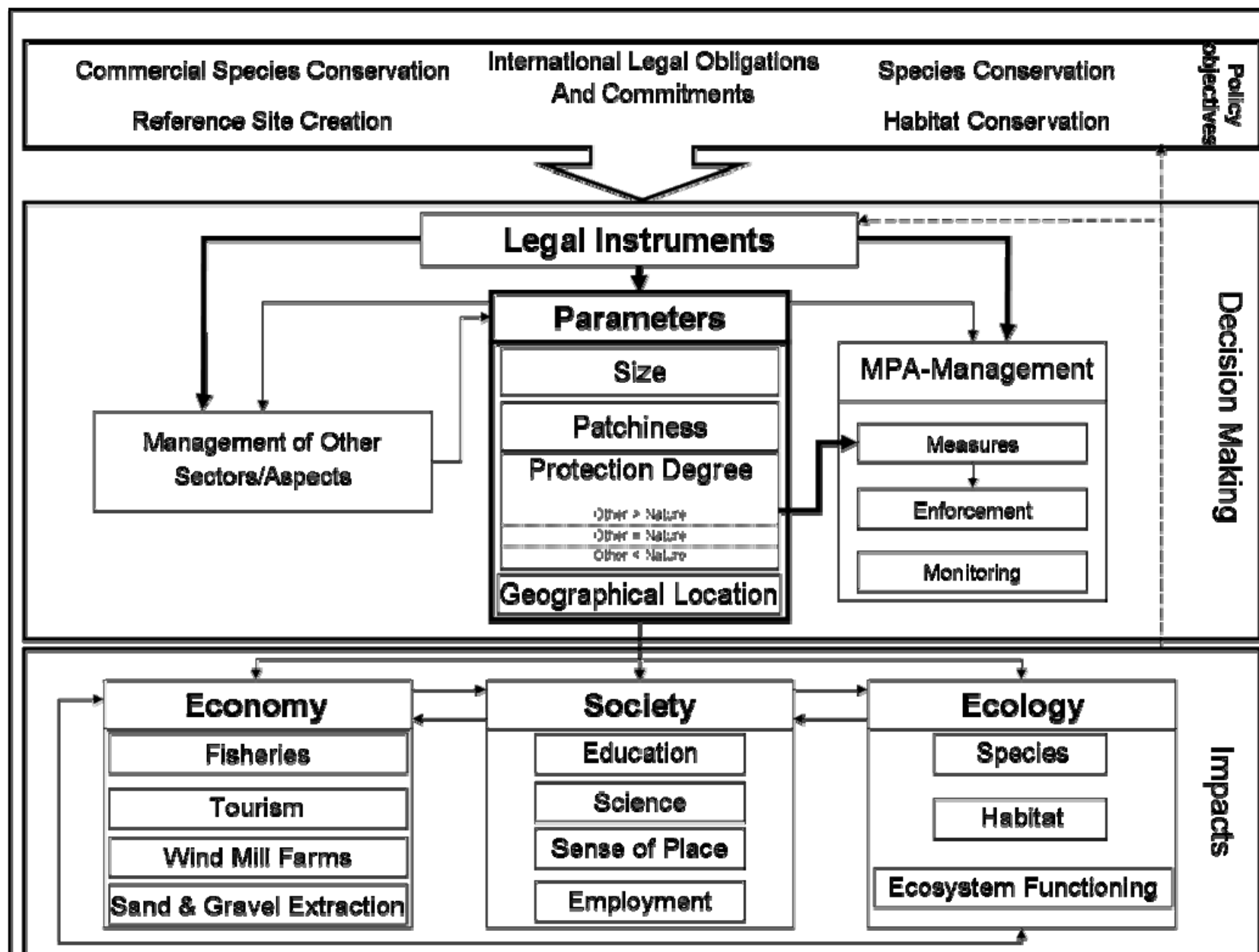
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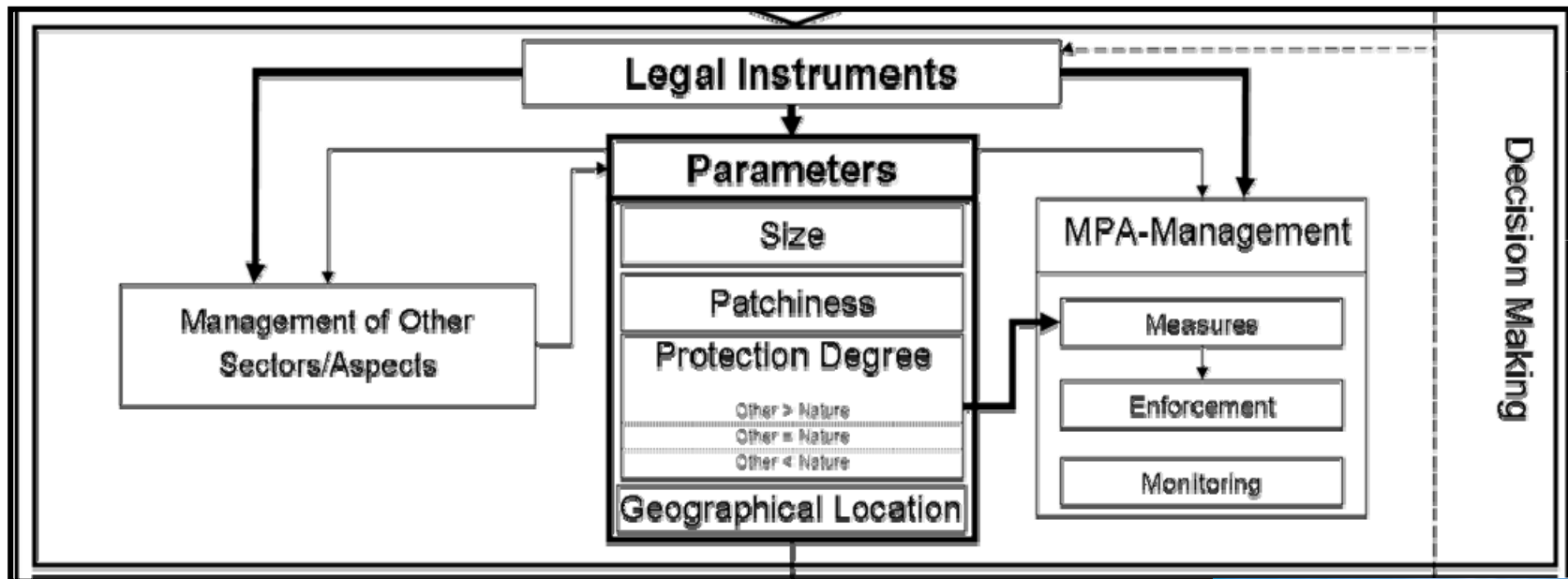


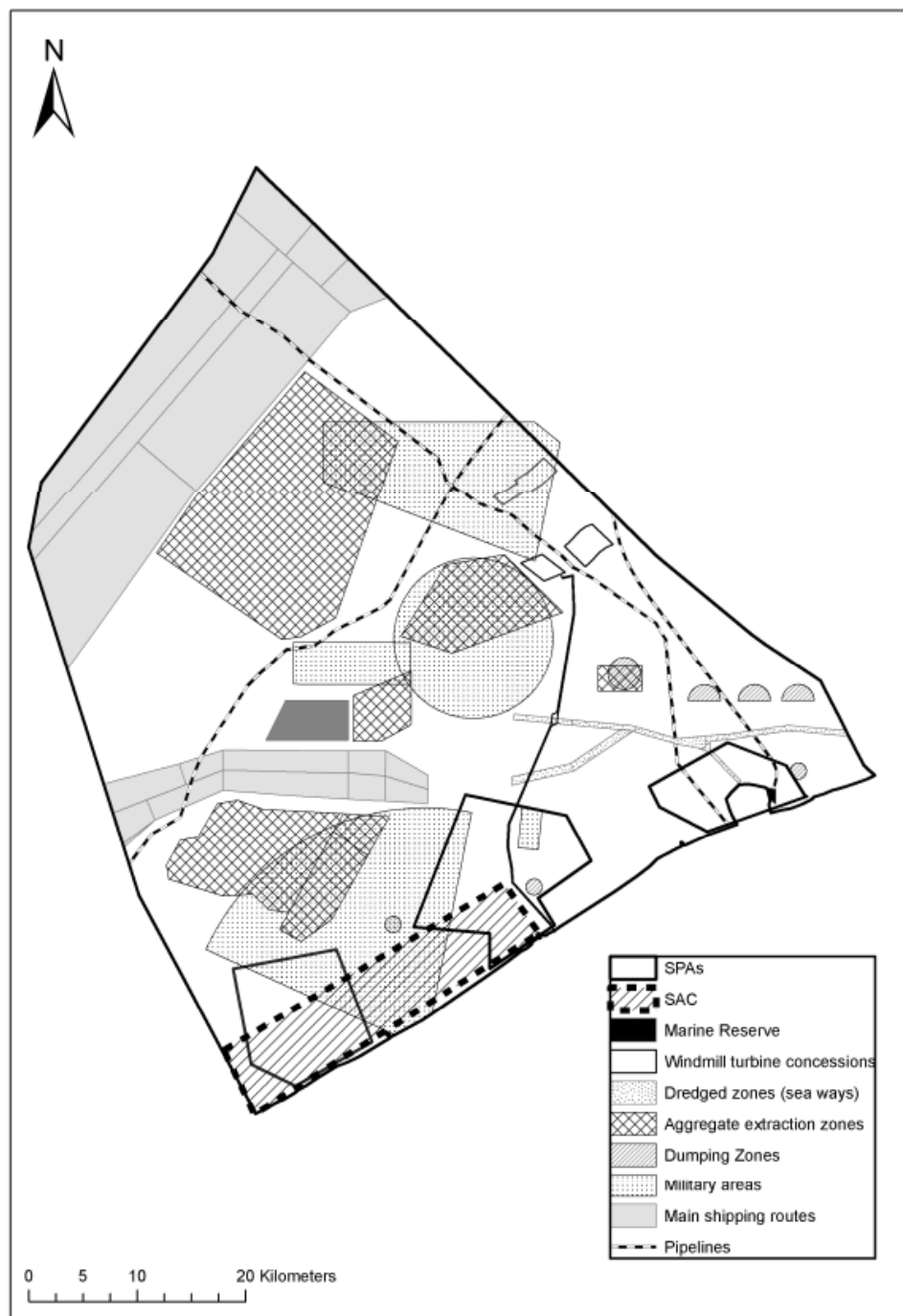


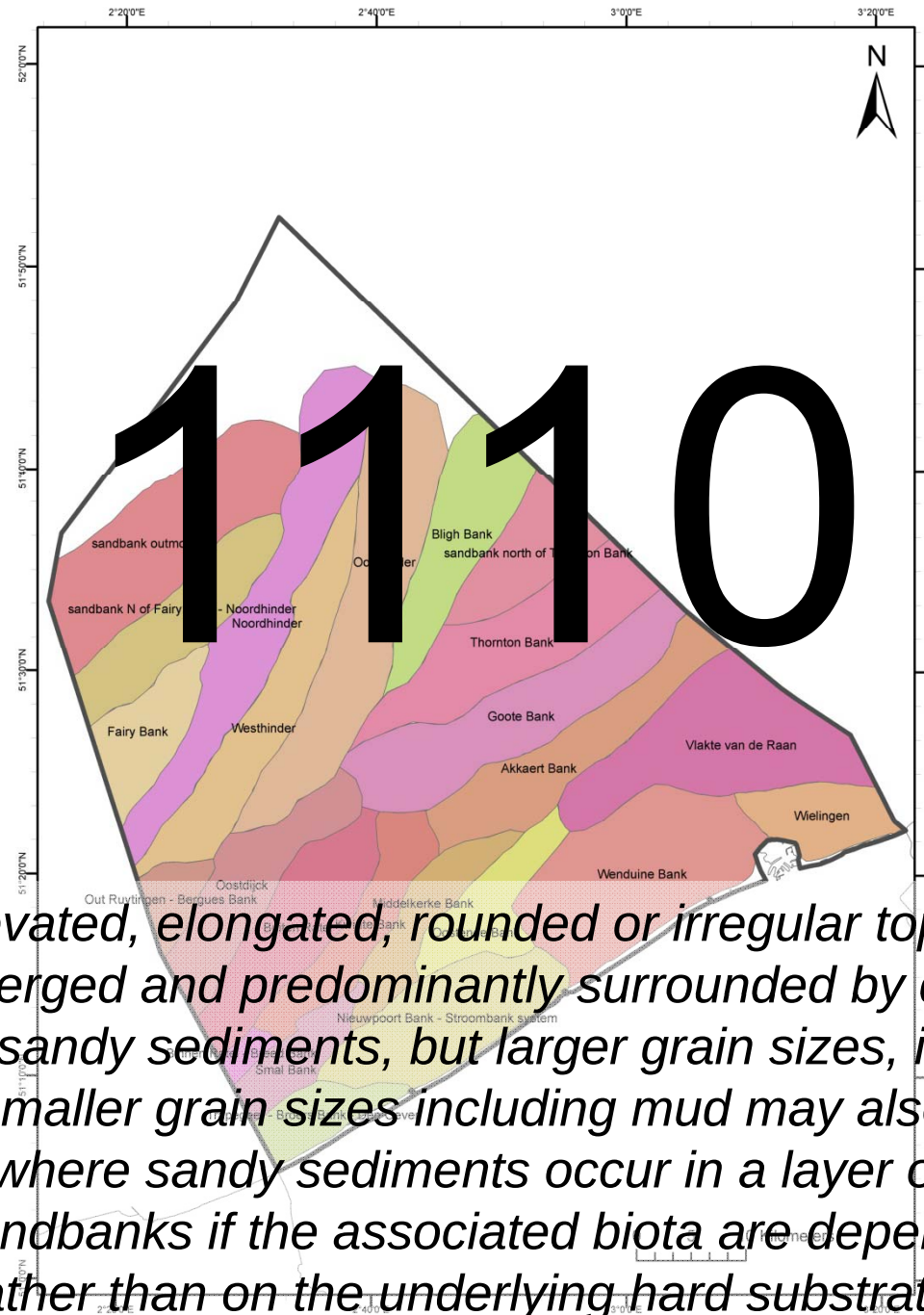
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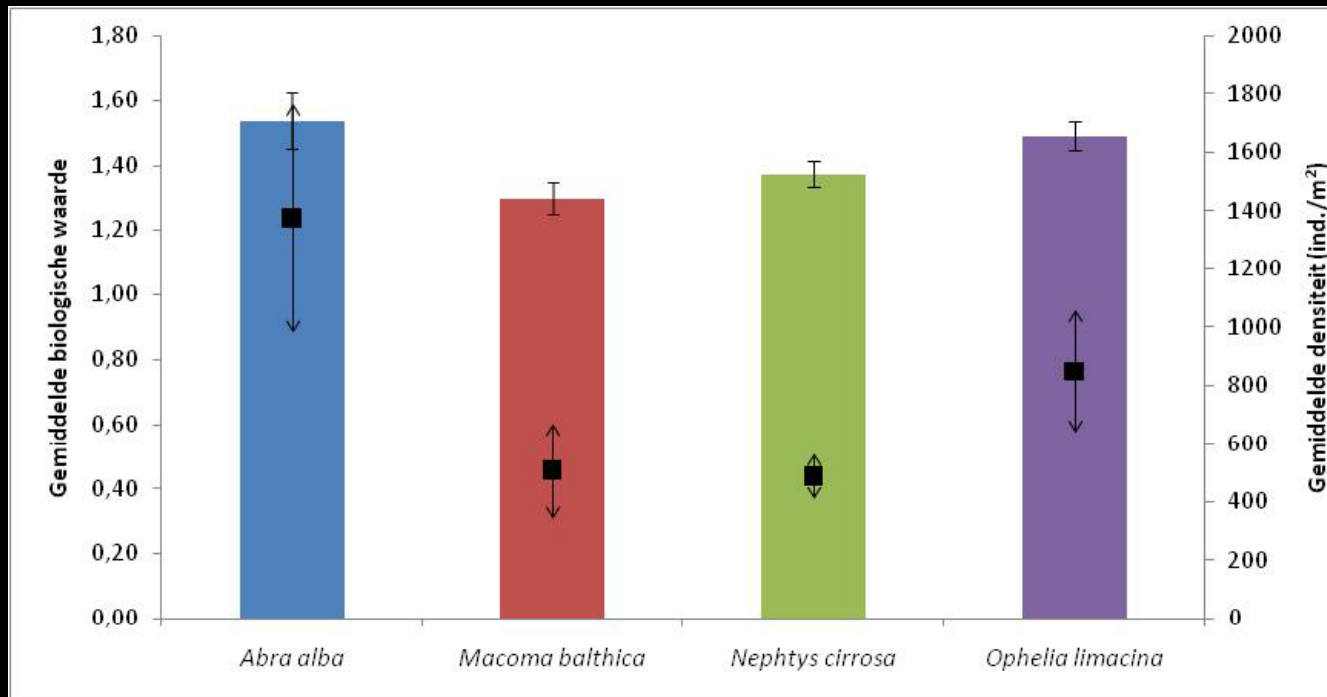


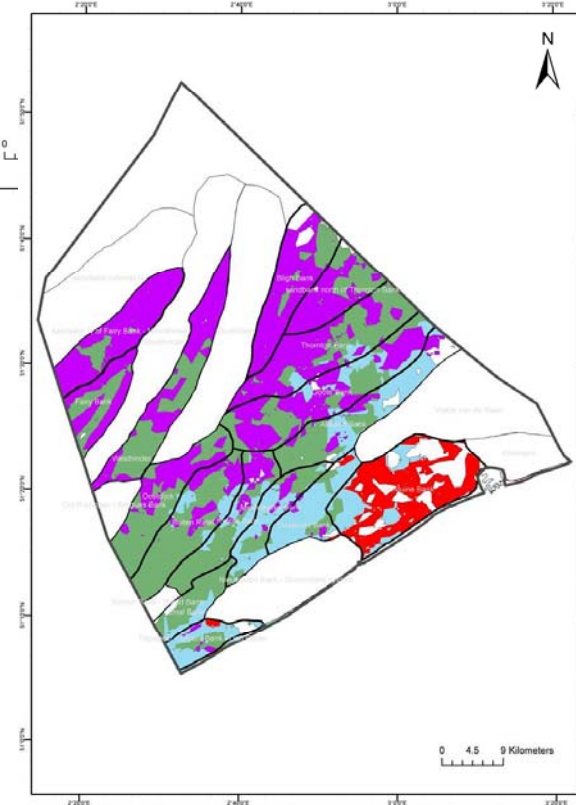
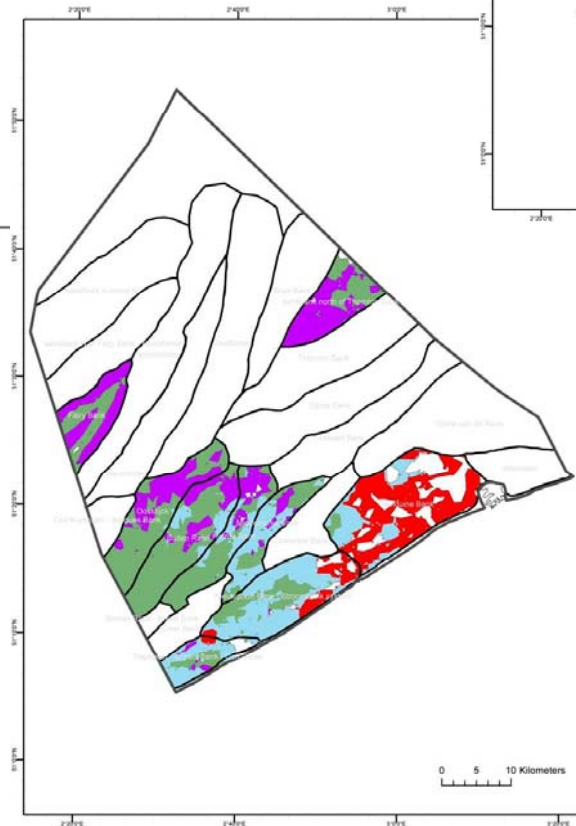
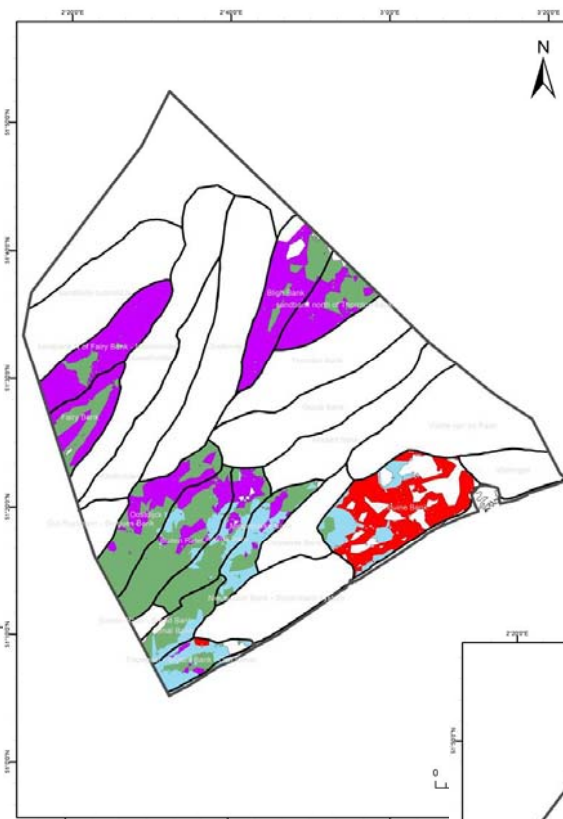
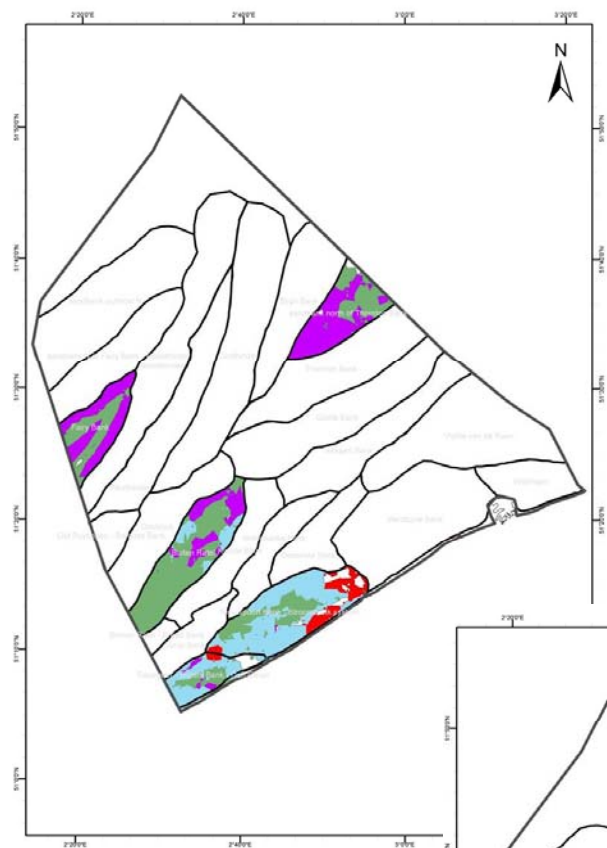






Sandbanks are elevated, elongated, rounded or irregular topographic features, permanently submerged and predominantly surrounded by deeper water. They consist mainly of sandy sediments, but larger grain sizes, including boulders and cobbles, or smaller grain sizes including mud may also be present on a sandbank. Banks where sandy sediments occur in a layer over hard substrata are classed as sandbanks if the associated biota are dependent on the sand rather than on the underlying hard substrata.





Degraer *et al*, 2009

1170

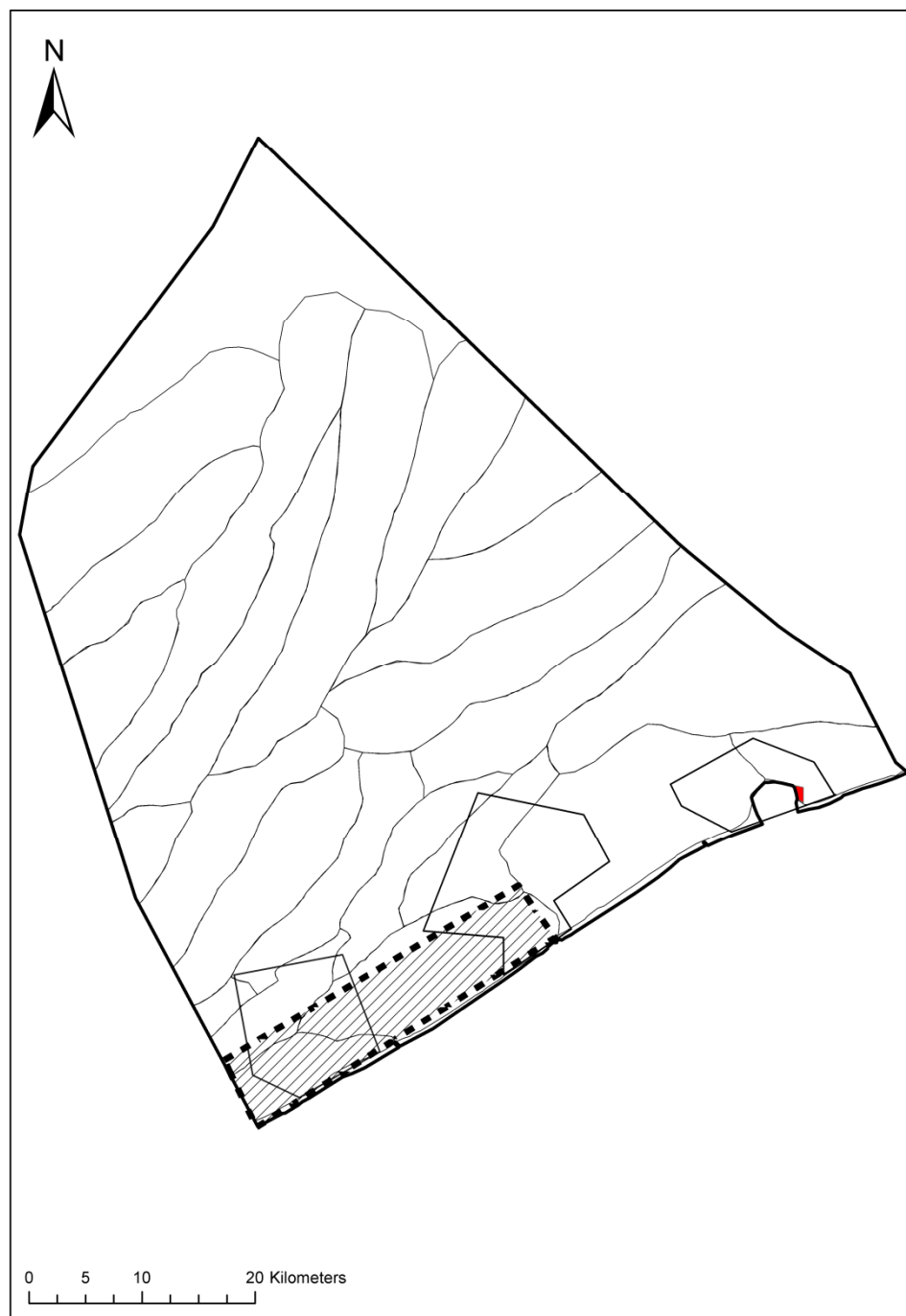


Gravel beds



Lanice conchilega aggregations

Reefs can be either biogenic concretions or of geogenic origin. They are hard compact substrata on solid and soft bottoms, which arise from the sea floor in the sublittoral and littoral zone. Reefs may support a zonation of benthic communities of algae and animal species as well as concretions and corallogenic concretions.





Degraer *et al*, 2009

Degraer *et al*, 2009



Multi-level government

Flemish Region on land:

- nature conservation
- tourism
- ports...

Province of West-Flanders

Coastal municipalities

Federal state at sea:

- nature conservation
- protection of the marine environment
- offshore windmill parks
- shipping
- military...

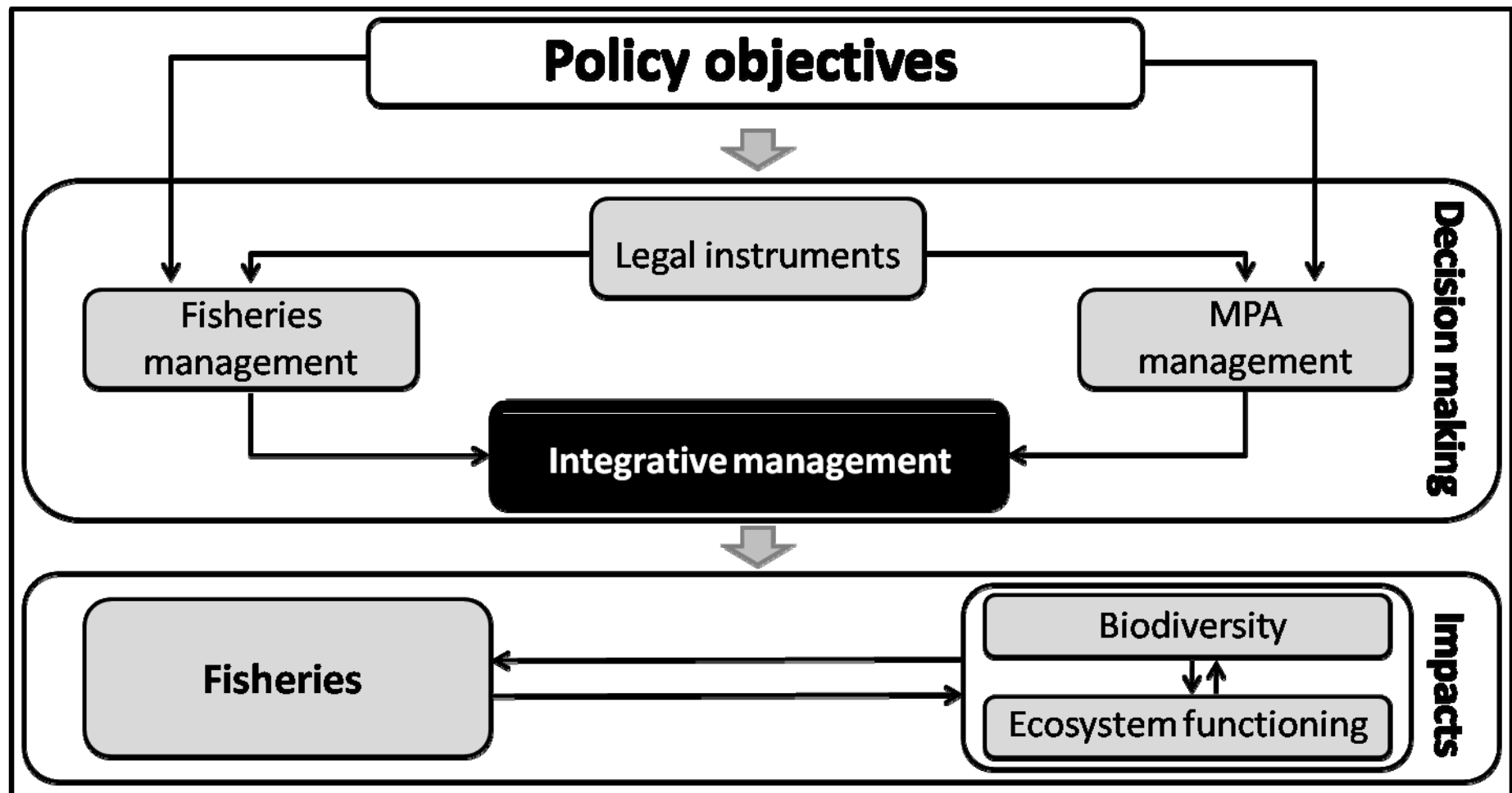
Flemish Region at sea:

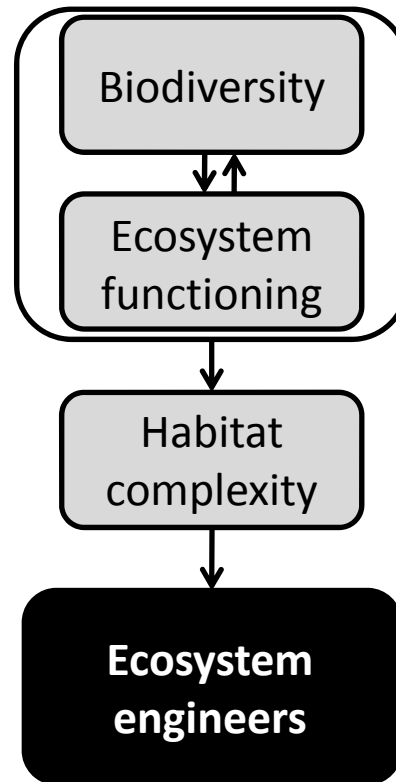
- fishing
- dredging...

Federal state on land:

- contingency planning...

Taken from Prof. Dr. A. Cliquet





Ecosystem engineers



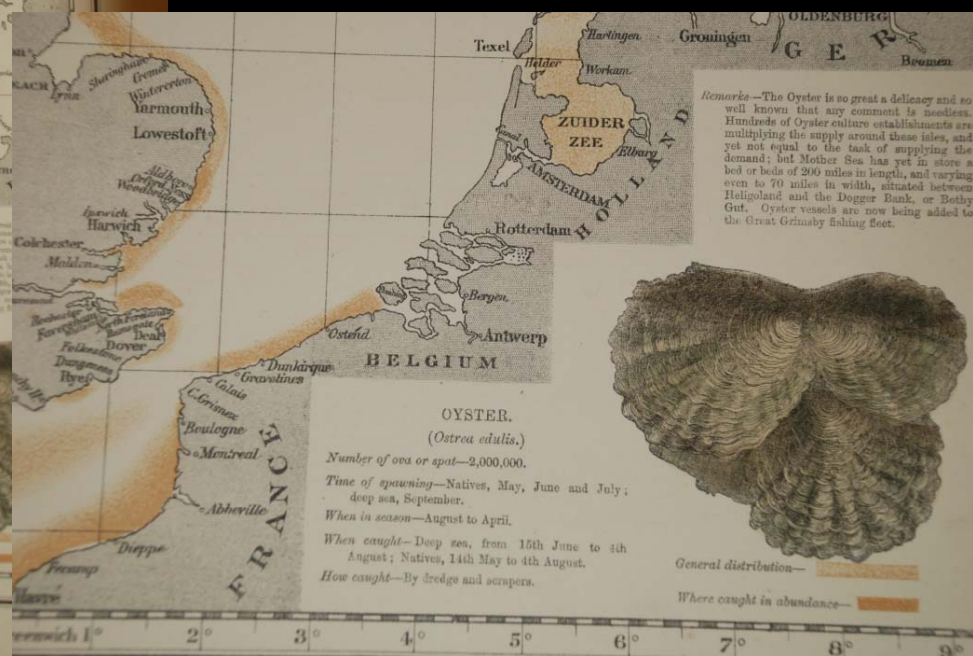
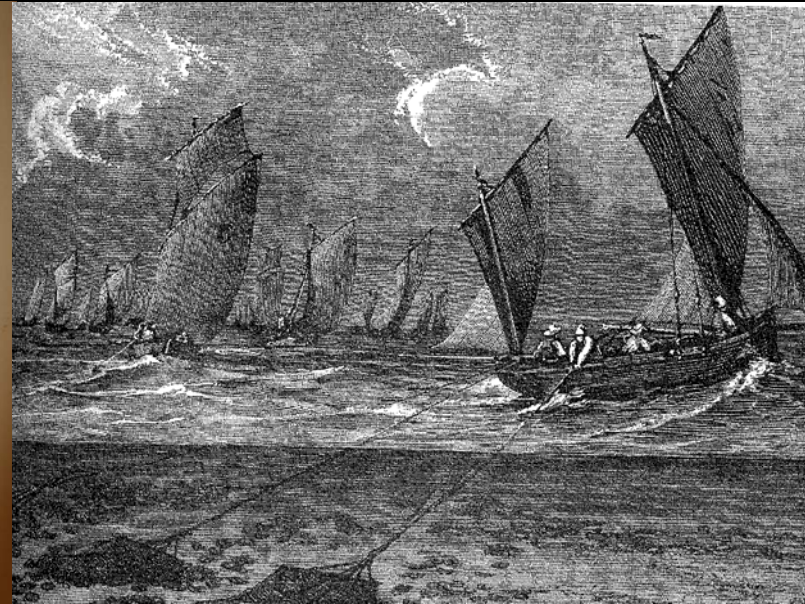
Interview Daniel Pauly – (c) Sea the truth

“The Southern North Sea is not in natural state, the bottom of the North Sea was once covered with animals, solidifying the seafloor”





THE PISCATORIAL ATLAS.



Remarks.—The Oyster is so great a delicacy and so well known that any comment is needless. Hundreds of Oyster culture establishments are multiplying the supply around these isles, and yet not equal to the task of supplying the demand; but Mother Sea has yet in store a bed or beds of 200 miles in length, and varying even to 70 miles in width, situated between Heligoland and the Dogger Bank, or Bethy Gut. Oyster vessels are now being added to the Great Grimsby fishing fleet.



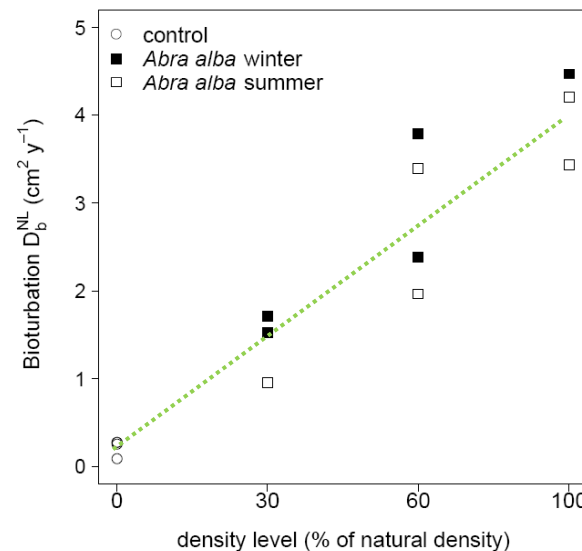
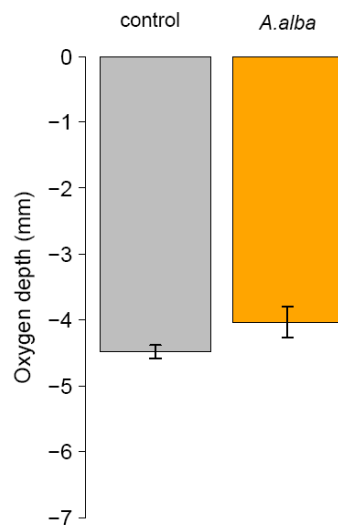
OYSTER.
(*Ostrea edulis*.)
Number of ova or spat—2,000,000.
Time of spawning—Natives, May, June and July; deep sea, September.
When in season—August to April.
When caught—Deep sea, from 15th June to 5th August; Natives, 14th May to 4th August.
How caught—By dredge and scrapers.

General distribution—
Where caught in abundance—

Biological mixing influence on benthic fluxes and bioturbation

Bioturbator - *Abra alba*

- Burrowing bivalve
- Efficient **bioturbator**: organic matter redistribution
- *A. alba* densities are important to maintain bioturbation
- *A. alba* does not draw oxygen deep into sediment



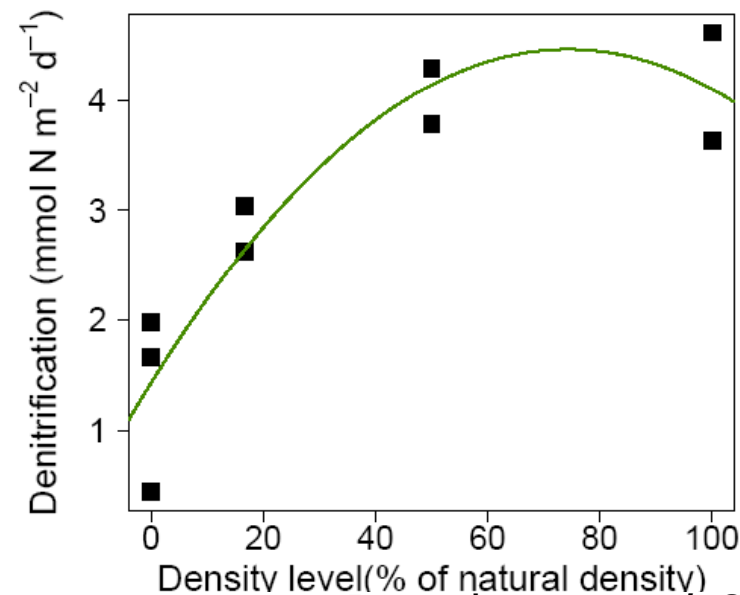
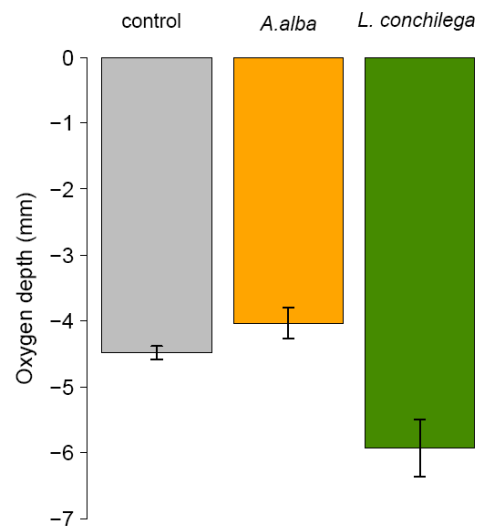
Braeckman *et al*, 2010



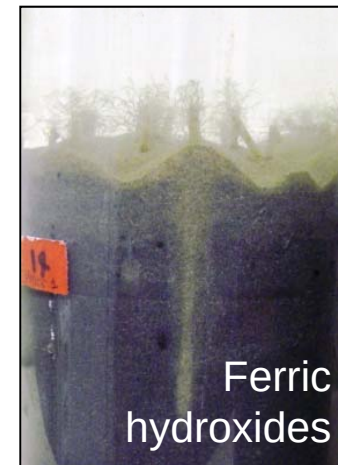
Biological mixing influence on benthic fluxes

Bio-irrigator - *Lanice conchilega*

- Tube-dwelling polychaete
- Bio-irrigator: Oxygen deep in sediment
- Stimulates mineralization processes (e.g. denitrification)
- *L. conchilega* densities are important for mineralization



Braeckman *et al*, 2010

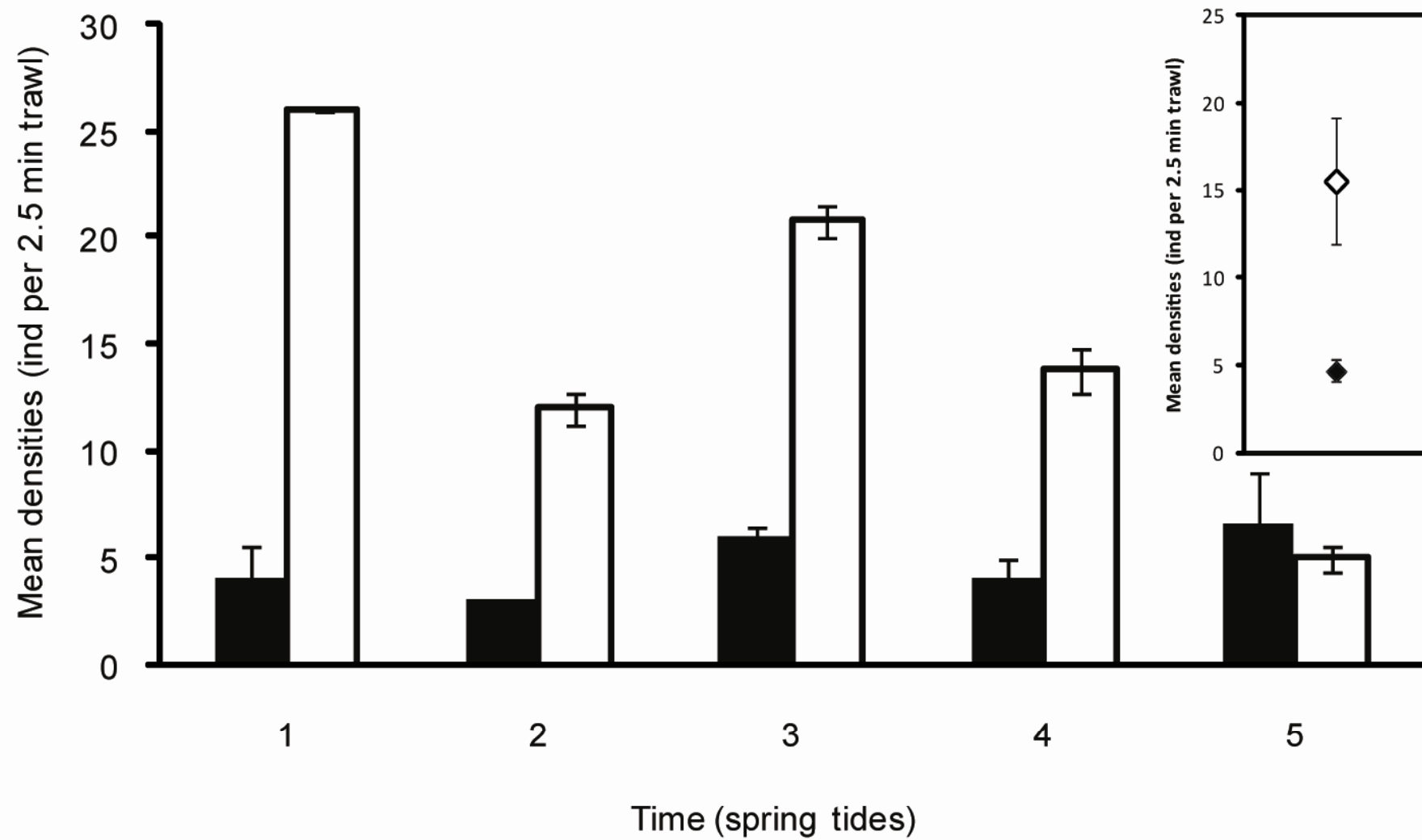






© Studio Lore (L. Rabaut)



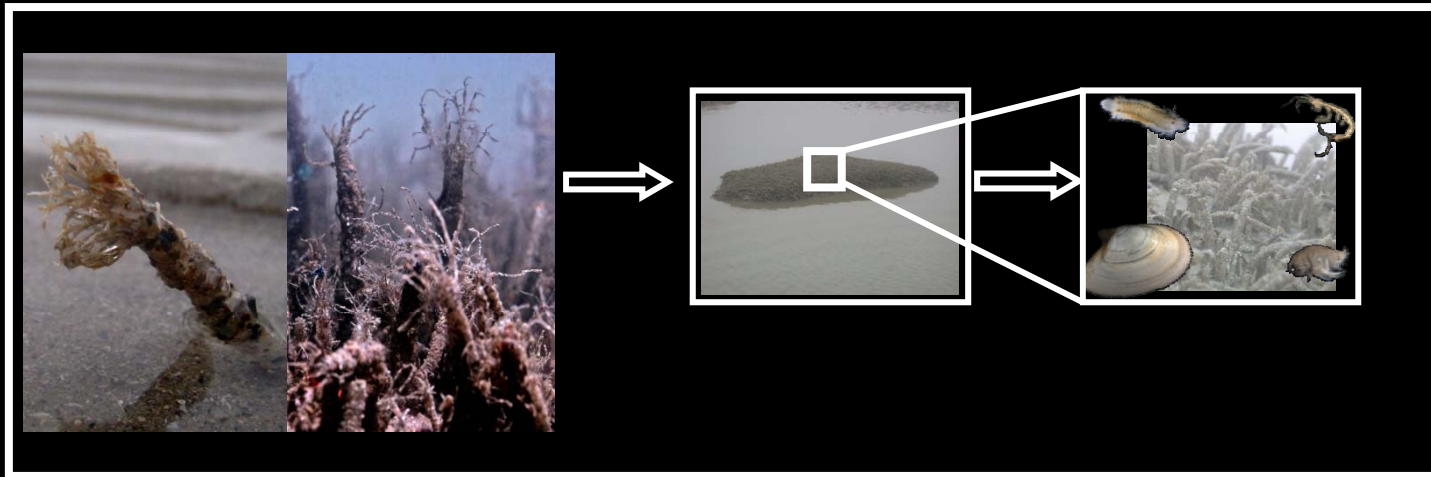




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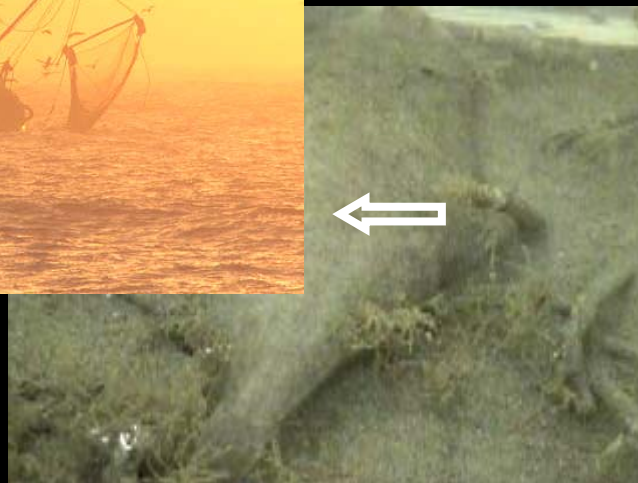




Habitat
modification



Interactions



**“REEFS ARE
THREATENING
OUR COAST”**

ORO NIEUWS Knokke-Heist: Exotische riffenworm bedreigt Heist als badplaats - Microsoft Internet Explorer

Address <http://oronieuws.blogspot.com/2008/05/exotische-riffenworm-bedreigt-heist-als.html>

22.5.08

Exotische riffenworm bedreigt Heist als badplaats



Als niet wordt opgetreden tegen de invasie van de Australische Buisworm (*Ficopomatus enigmaticus*) kan dit het einde betekenen van Heist als badplaats. Deze zogeheten trompetkalkkokerworm bouwt gevaarlijk scherpe riffen op het getijdendeel van het strand vanaf de Baai van Heist. Deze

kokerbouwende borstelworm heeft onze regio bereikt door vasthechting op scheepsrompen en door te overleven in het water van ballasttanks. De exoot werd in 1950 voor het eerst in ons land waargenomen. Dat gebeurde toen op de romp van een marien onderzoeksschip in de haven van Oostende. De 2cm lange buisworm bouwt en leeft in verticale kalkachtige buisjes waarvan de boordringen vlijmscherp kunnen zijn. Inmiddels gedijt de buisworm op de Zeebrugse strekdam en in de luwte van de Baai van Heist. Volgens

23.05.2008
Vrijdag
12:04:02

Radio Paradijs Knokke-Heist
[De nieuwe site van Radio Paradijs](#)

Zeezender Radio Paradijs 1981



Dit Maakt Je Wijzer

kneistiKRANT.be: Borstelwormen en verzanding bedreigen toekomst van onze badstad

Address <http://kmoinfo.typepad.com/kneistikrant/2008/05/borstelwormen-e.html>

kneistiKRANT

Wie doet iets?

Borstelwormen en verzanding bedreigen toekomst van onze badstad

De trompetkalkkokerworm *Ficopomatus enigmaticus* is een kokerbouwende borstelworm die van nature voorkomt in gematigde en warme streken. Door het

Gouden koppels in Knokke-Heist
Marguerite Desagher is 100 geworden
Kate Ryan komt de verjaardag vieren van Yssi's café
Surfers Paradise doet mee aan de watersportdag

KHshopping

ne... hier een GRATIS
onnement op
w digitale krant

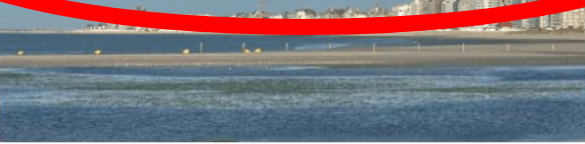
Categorieën

Actualiteit

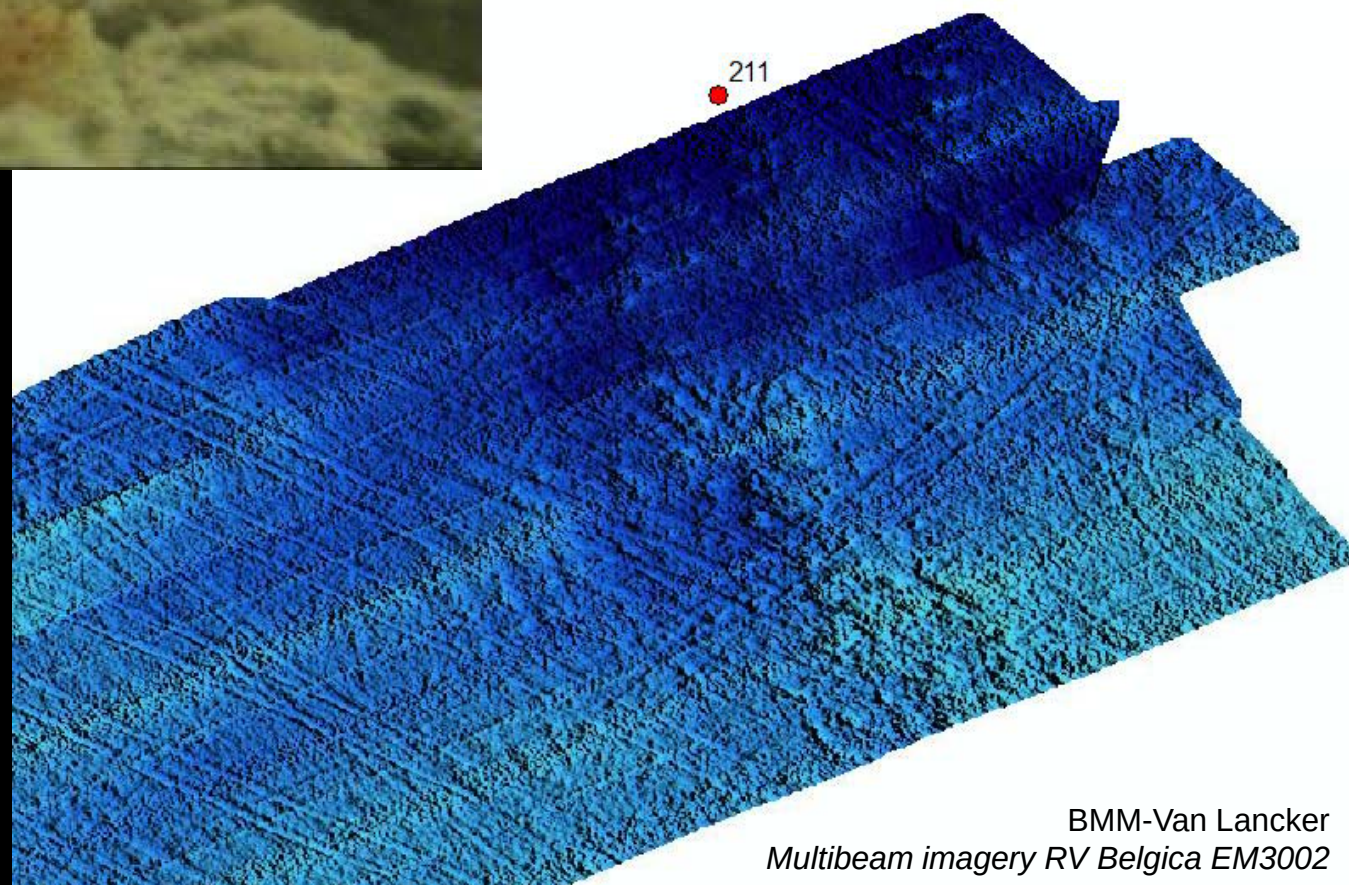
Burgelijke stand Heist Het
Zoute kneistSPORT Knokke Ramkapelle
Westkapelle

Kneistinfo

Ladies
Bike
Ride
KNOKKE-HEIST



MER SAUVAGE
River



BMM-Van Lancker
Multibeam imagery RV Belgica EM3002





(c) Kerckhof

