Wageningen IMARES

The North Sea, past and present: shifting baselines and human uses

Han Lindeboom

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For quality of life

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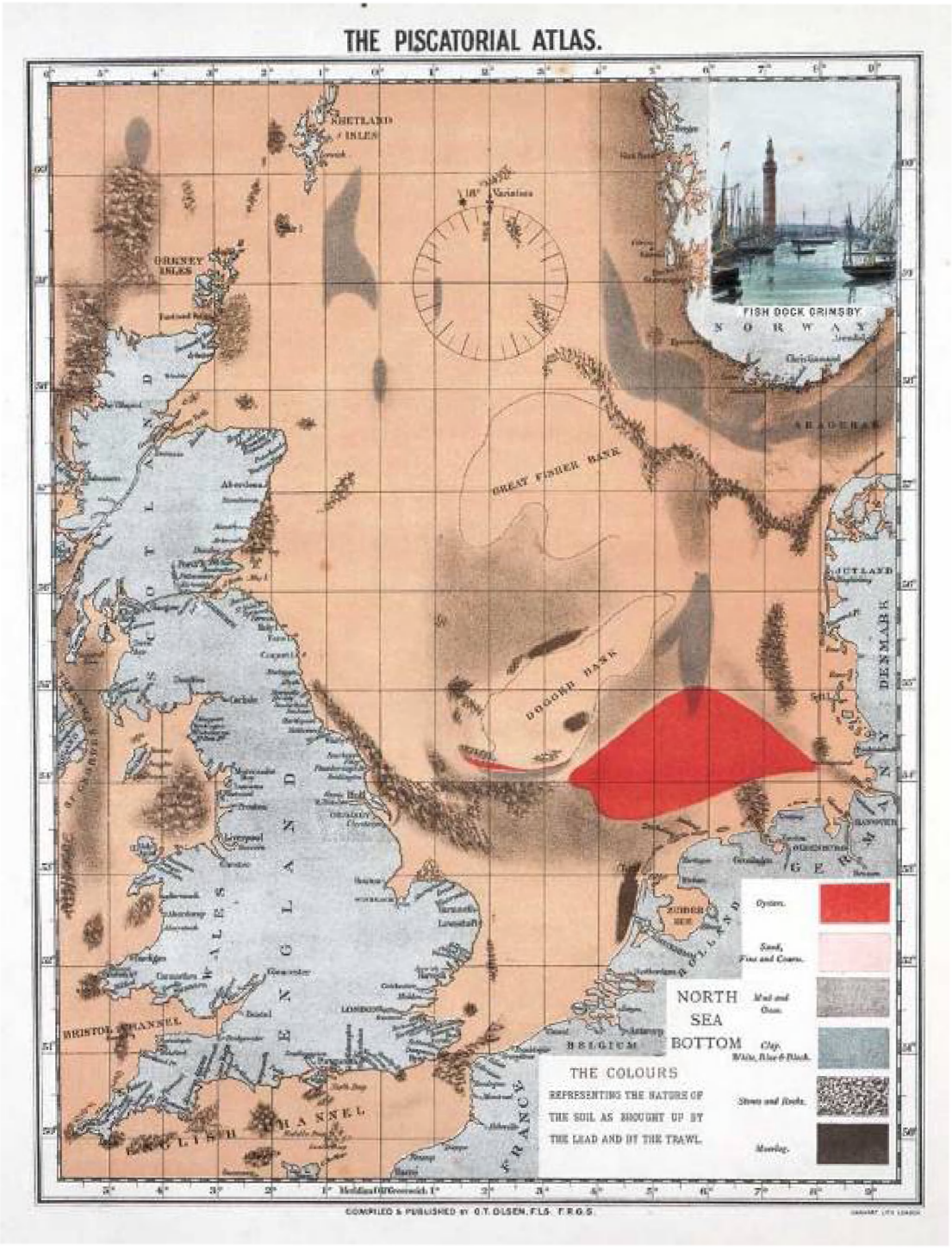
The North Sea

12.000 years ago



The North Sea in 1880

Olsen, Piscatorial Atlas (1883)

Mud, silt

Oysters

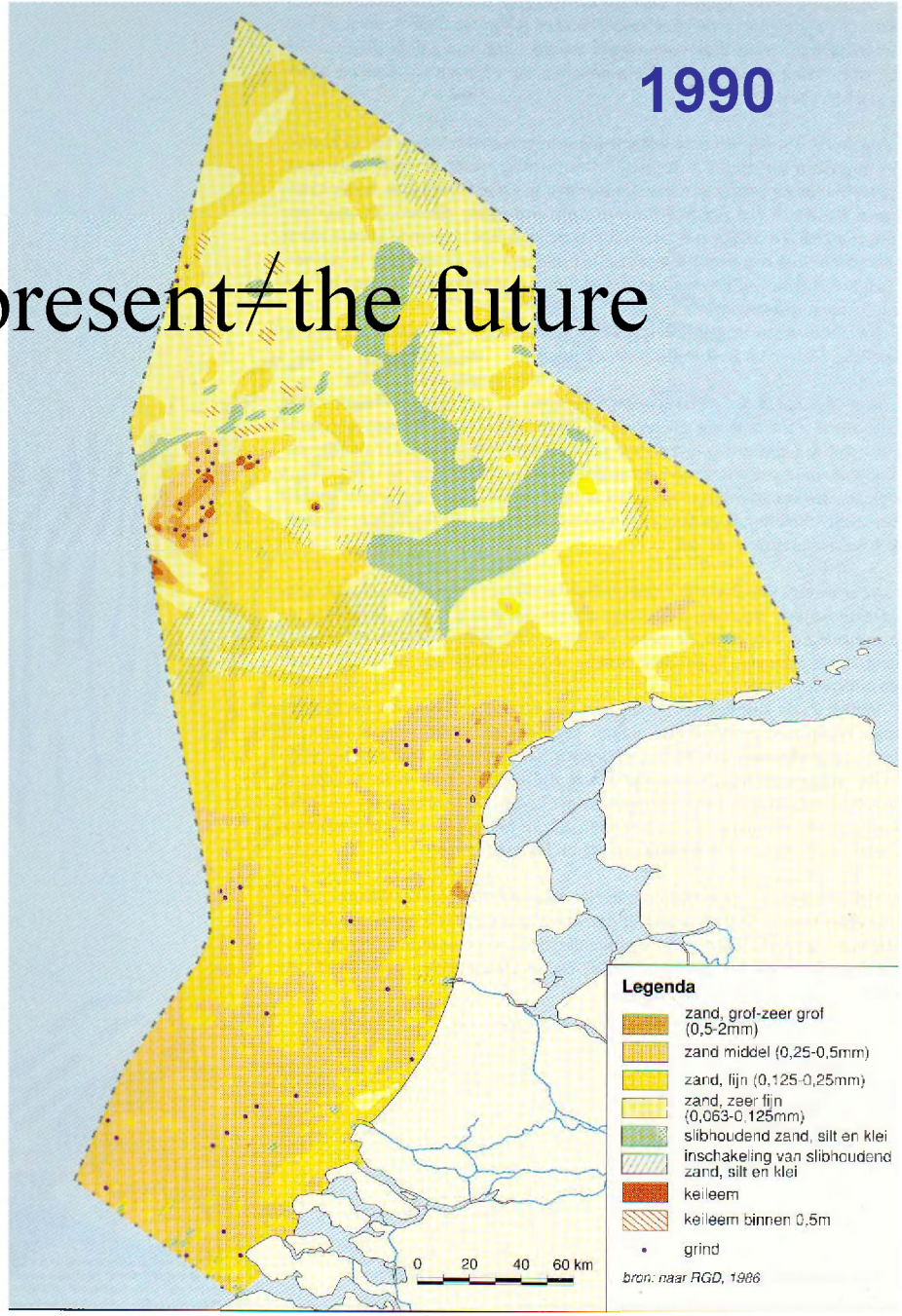
Stones

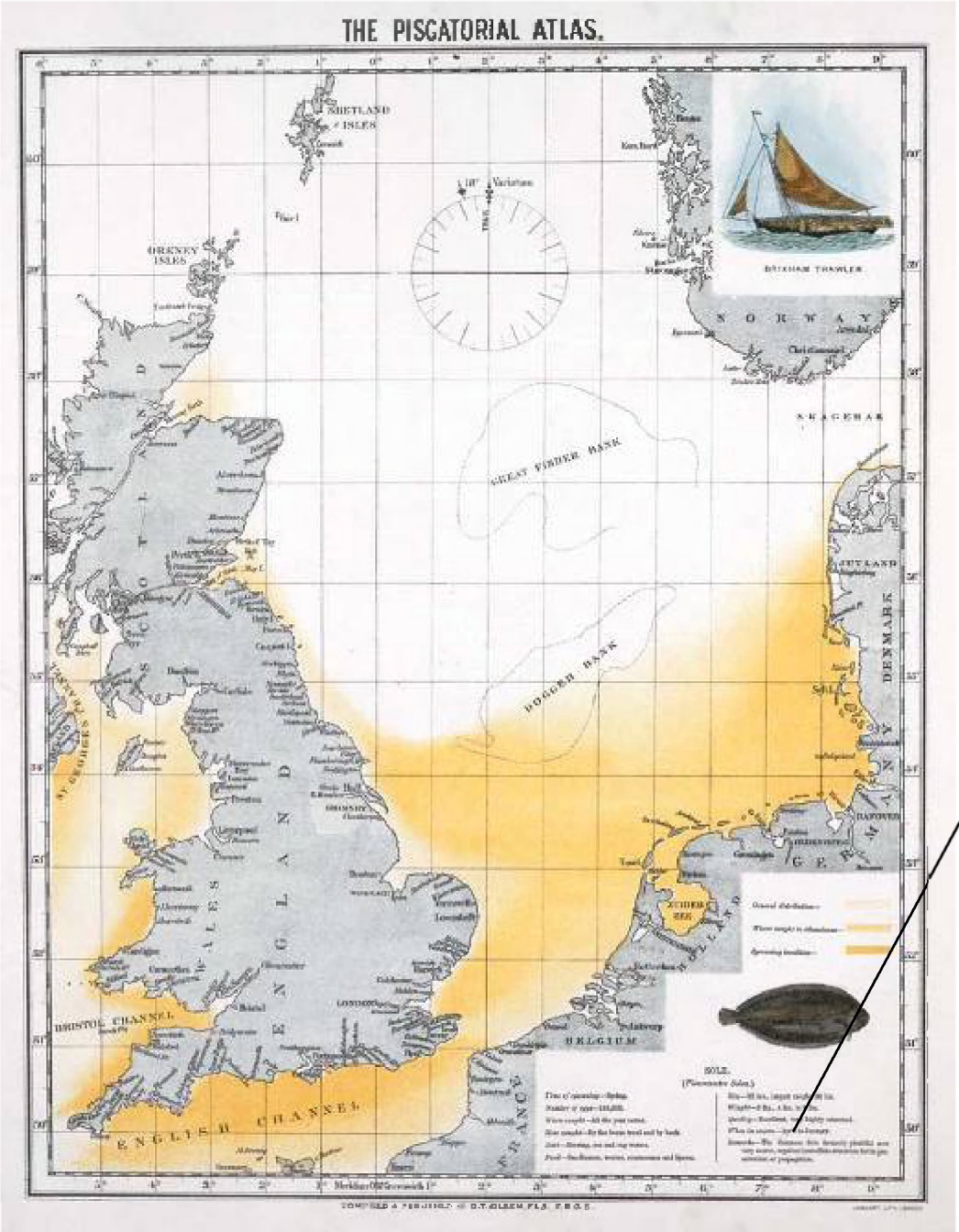
Moorlog

Sand

Olsen, Piscatorial Atlas (1883)

The past ≠ the present≠the future

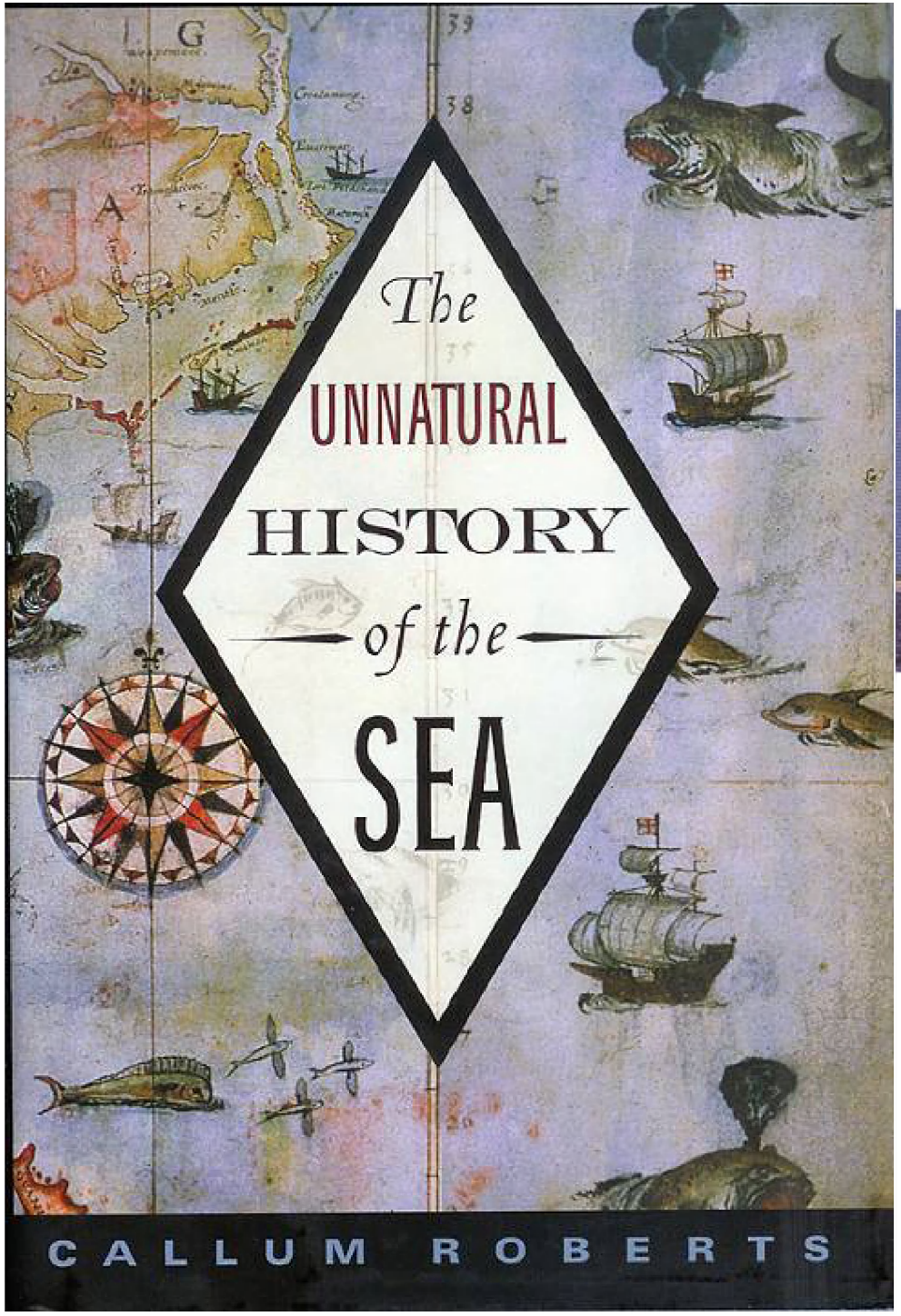




The sole

The Common Sole formerly plentiful now very scarce, requires immediate attention for its preservation or propagation. (Olsen, 1883)

Olsen, Piscatorial Atlas (1883)



Shifting baselines

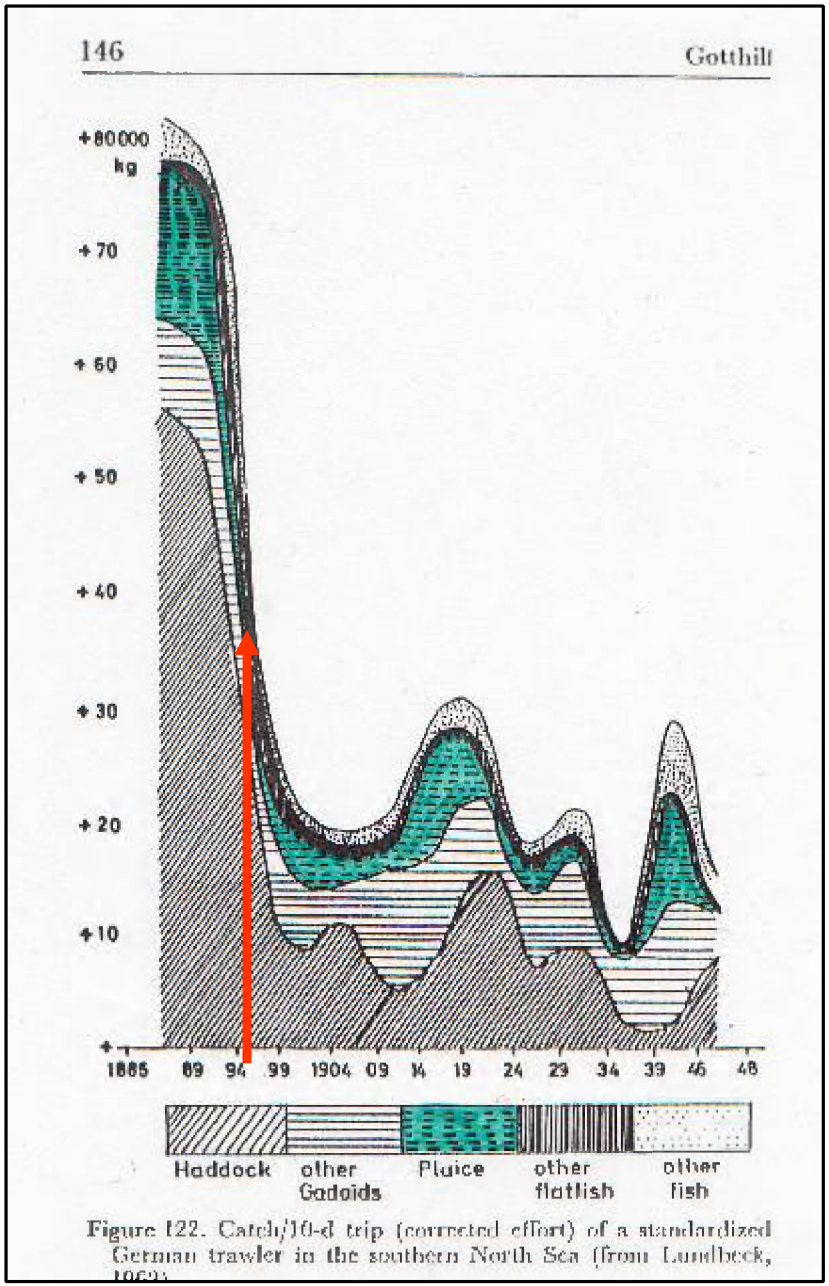
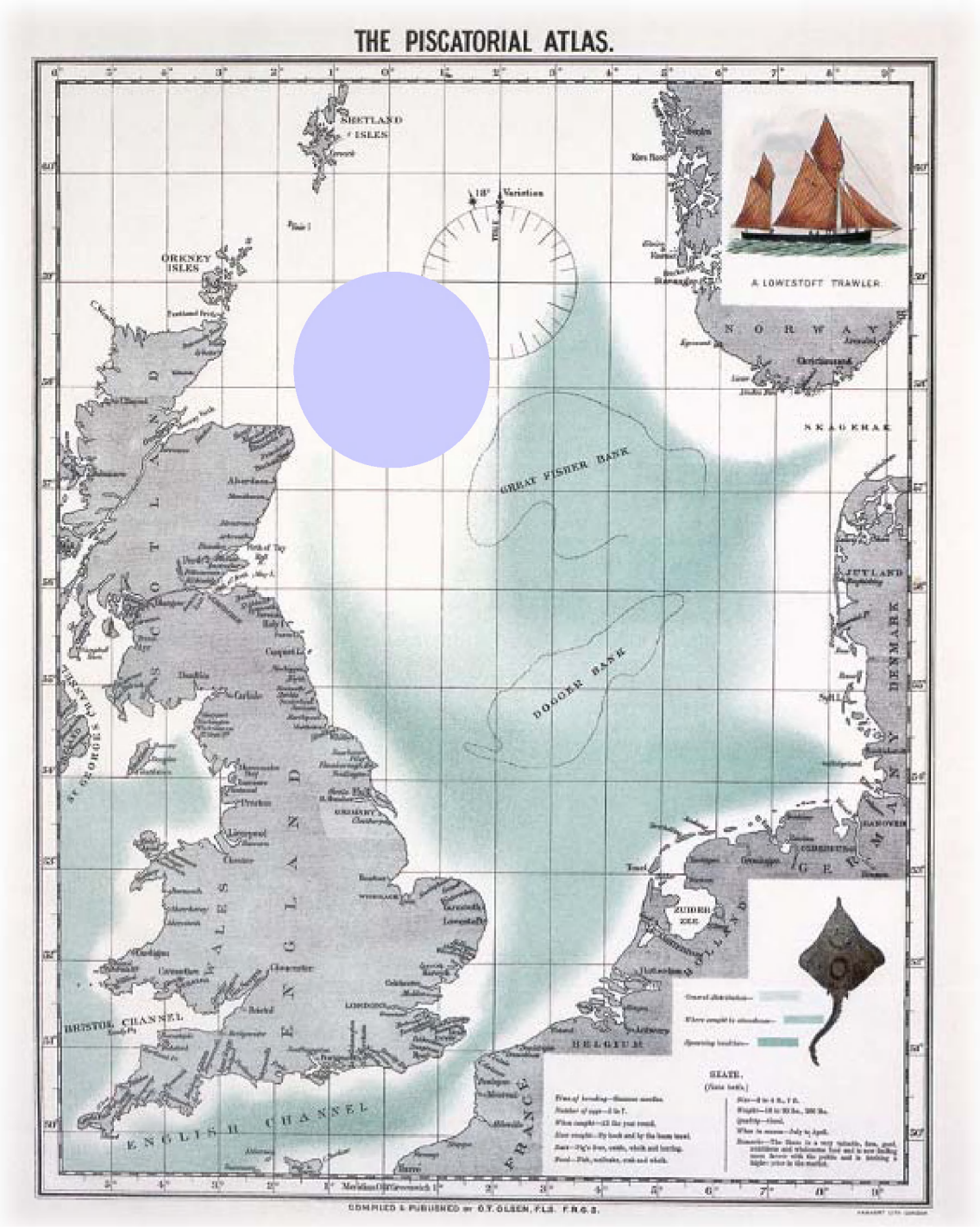


Figure 122. Catch/10-d trip (corrected effort) of a standardized German trawler in the southern North Sea (from Lundbeck, 1962).

Around 1895 the North Sea fisheries collapse

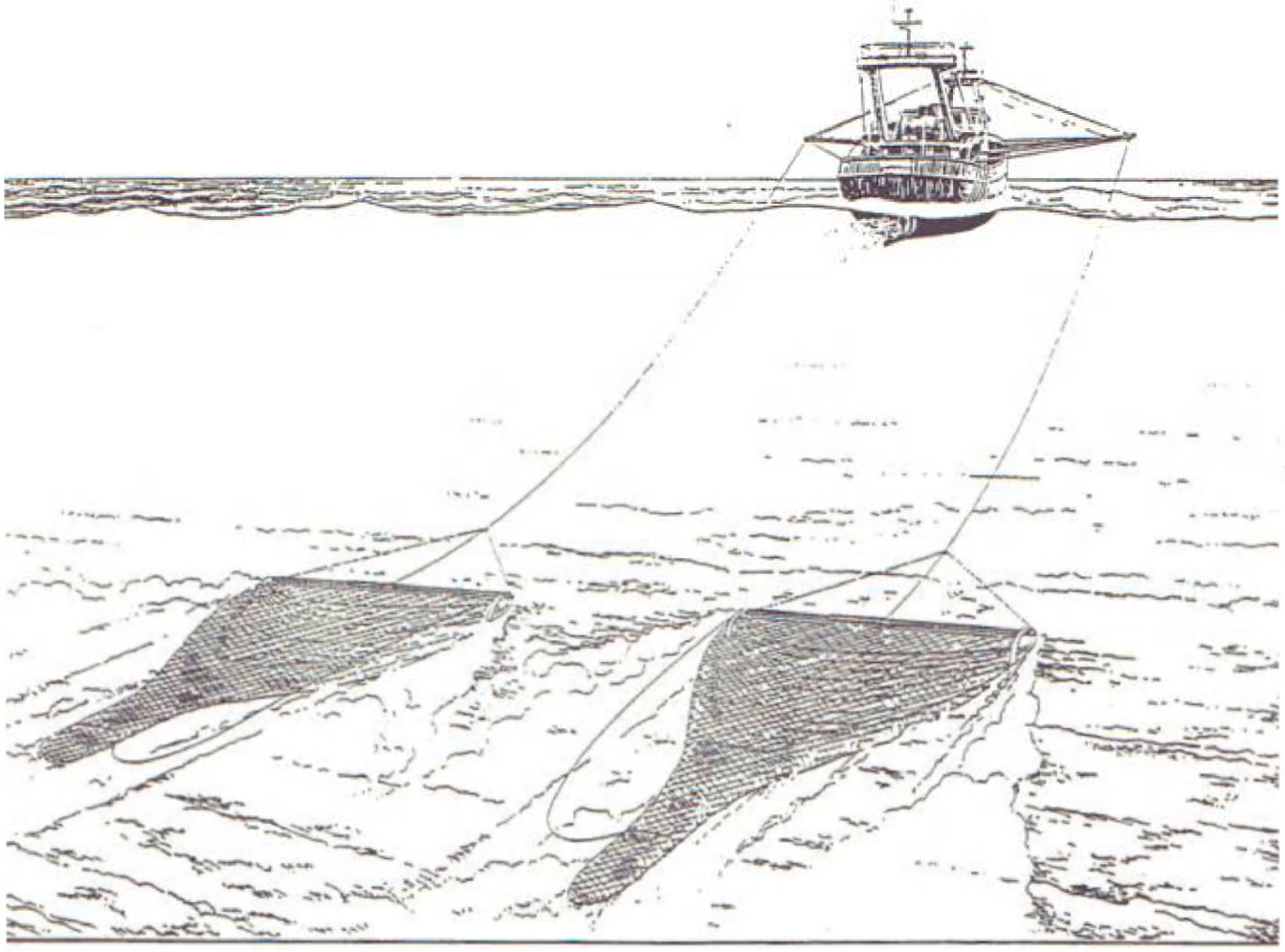
Lundbeck (1962)

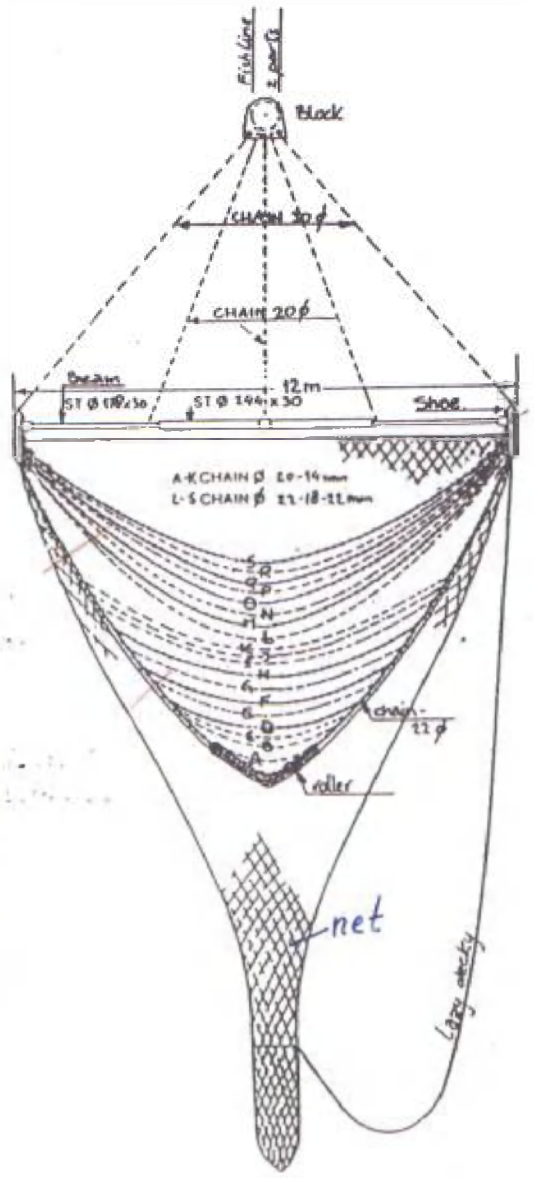


Skate

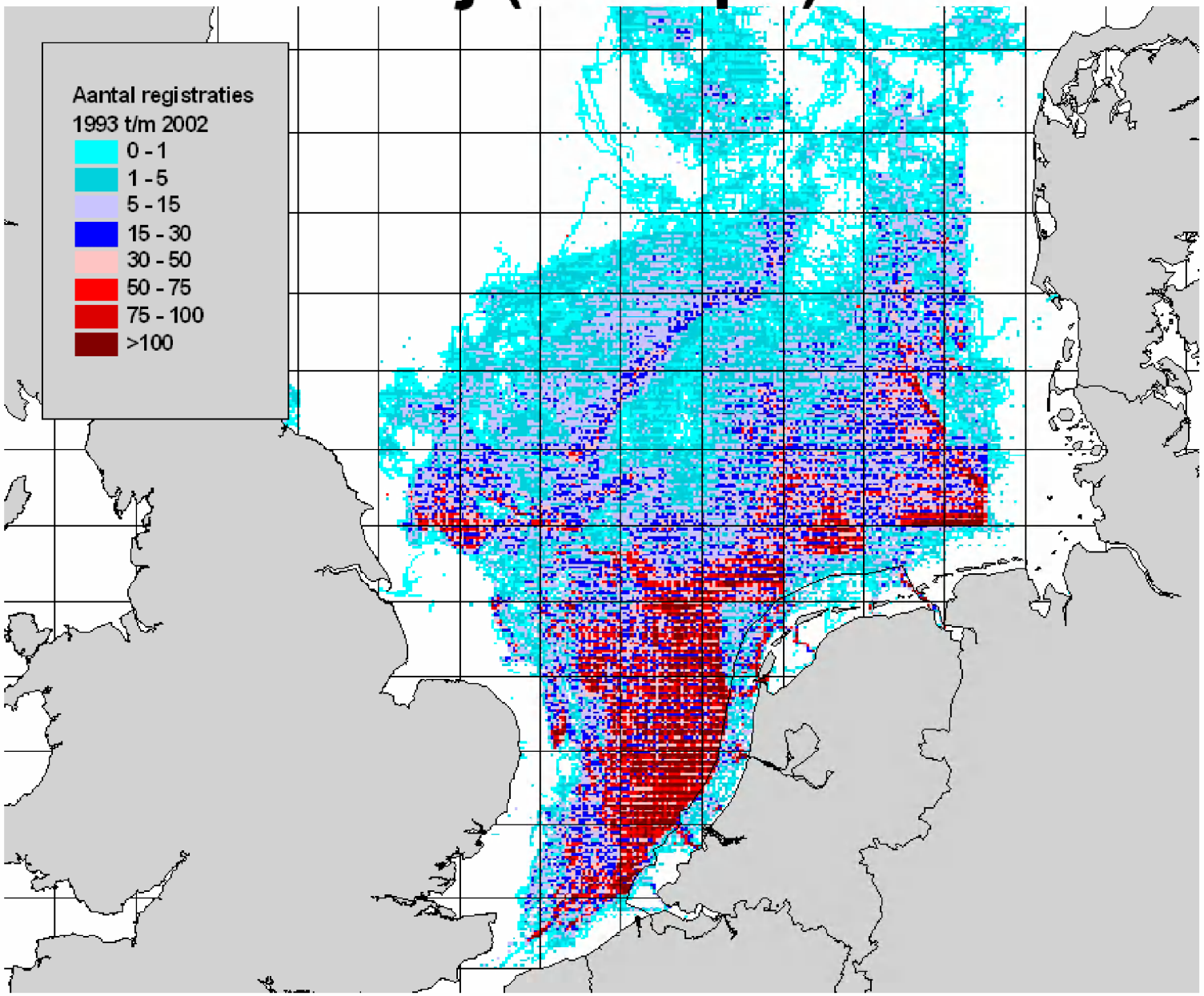
Olsen, Piscatorial Atlas (1883)

Fisheries: bottom trawling

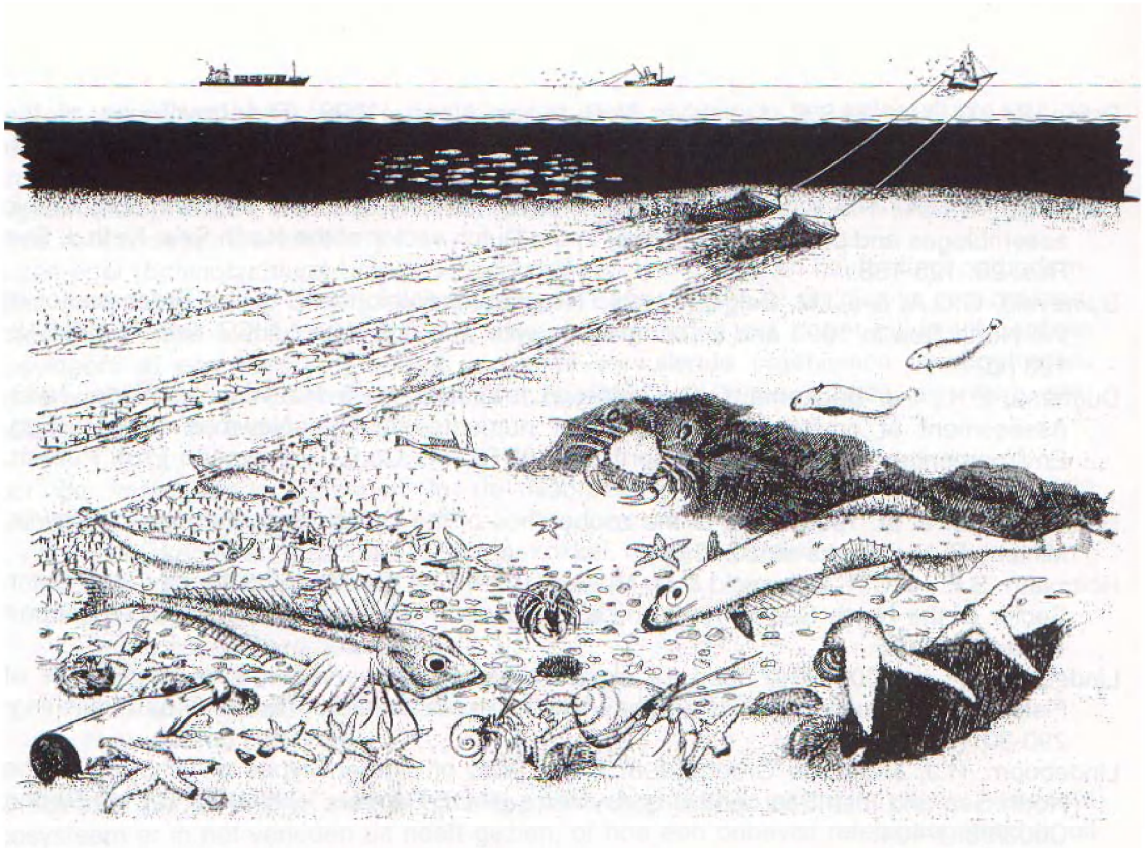




Visserij (>300 pk)



Effects beam trawling



Killing target and non-target species

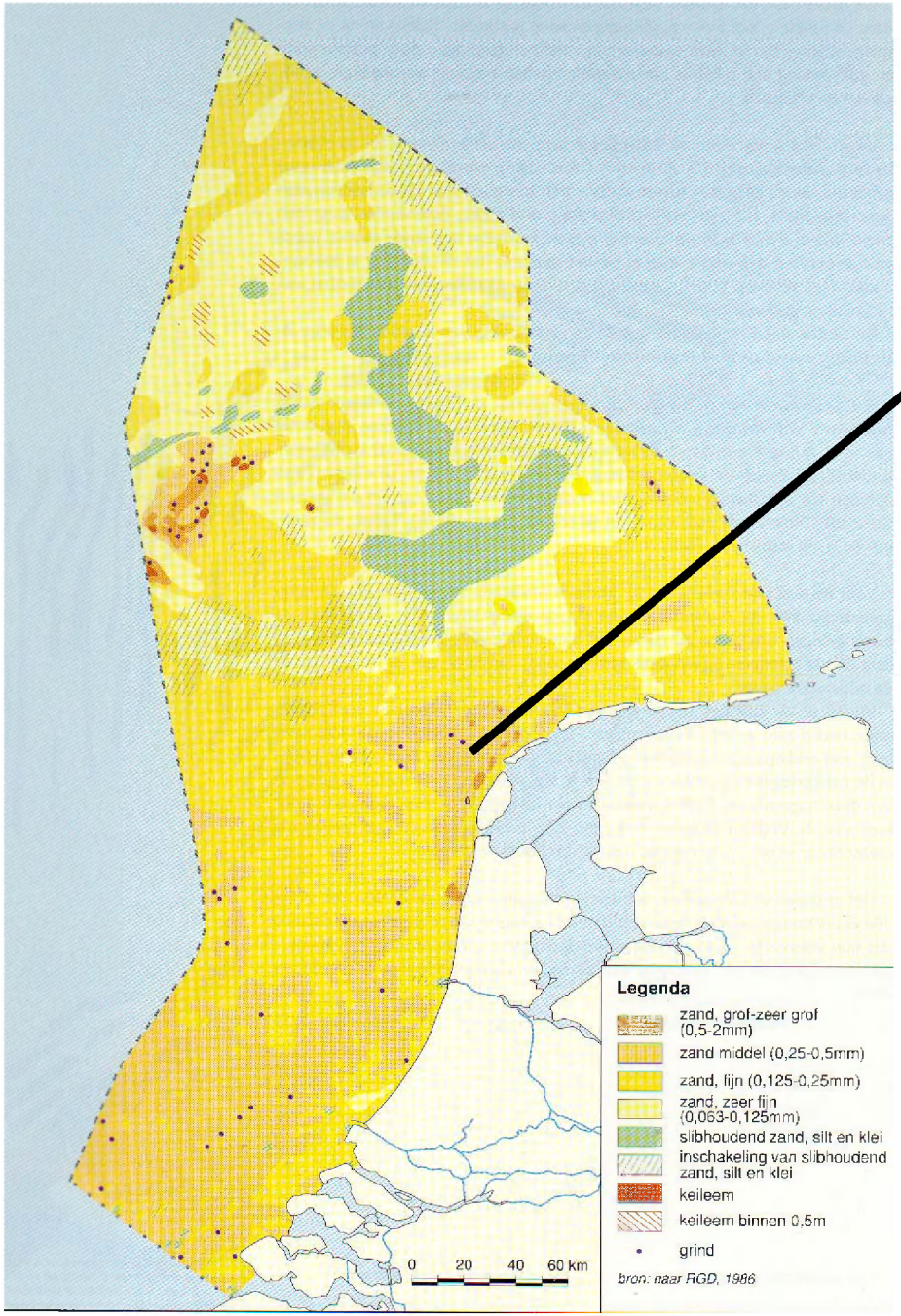
Food → birds

Changing:

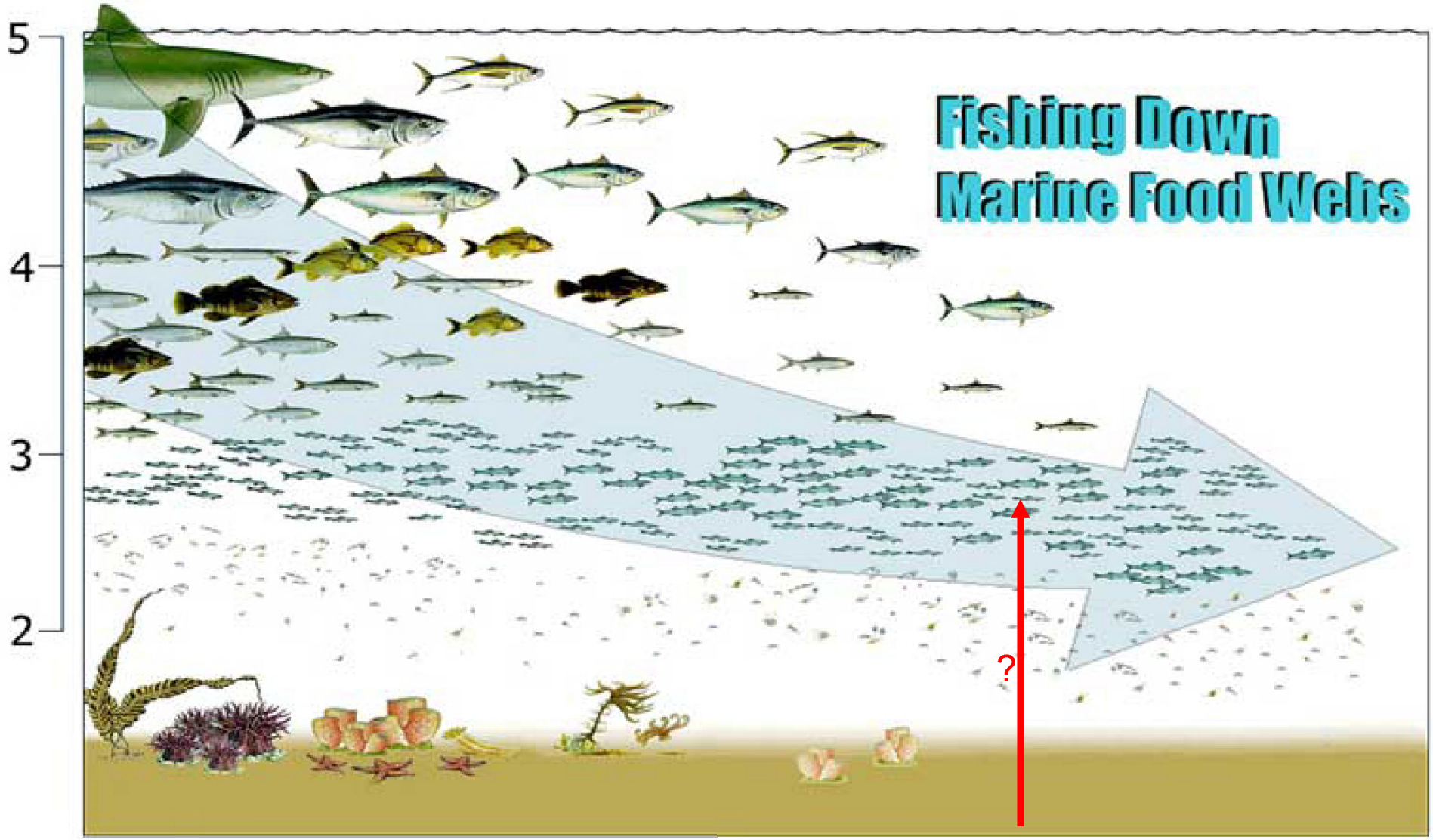
- **species ↓**
- **age ↓**
- **habitats ↓**

Before

After

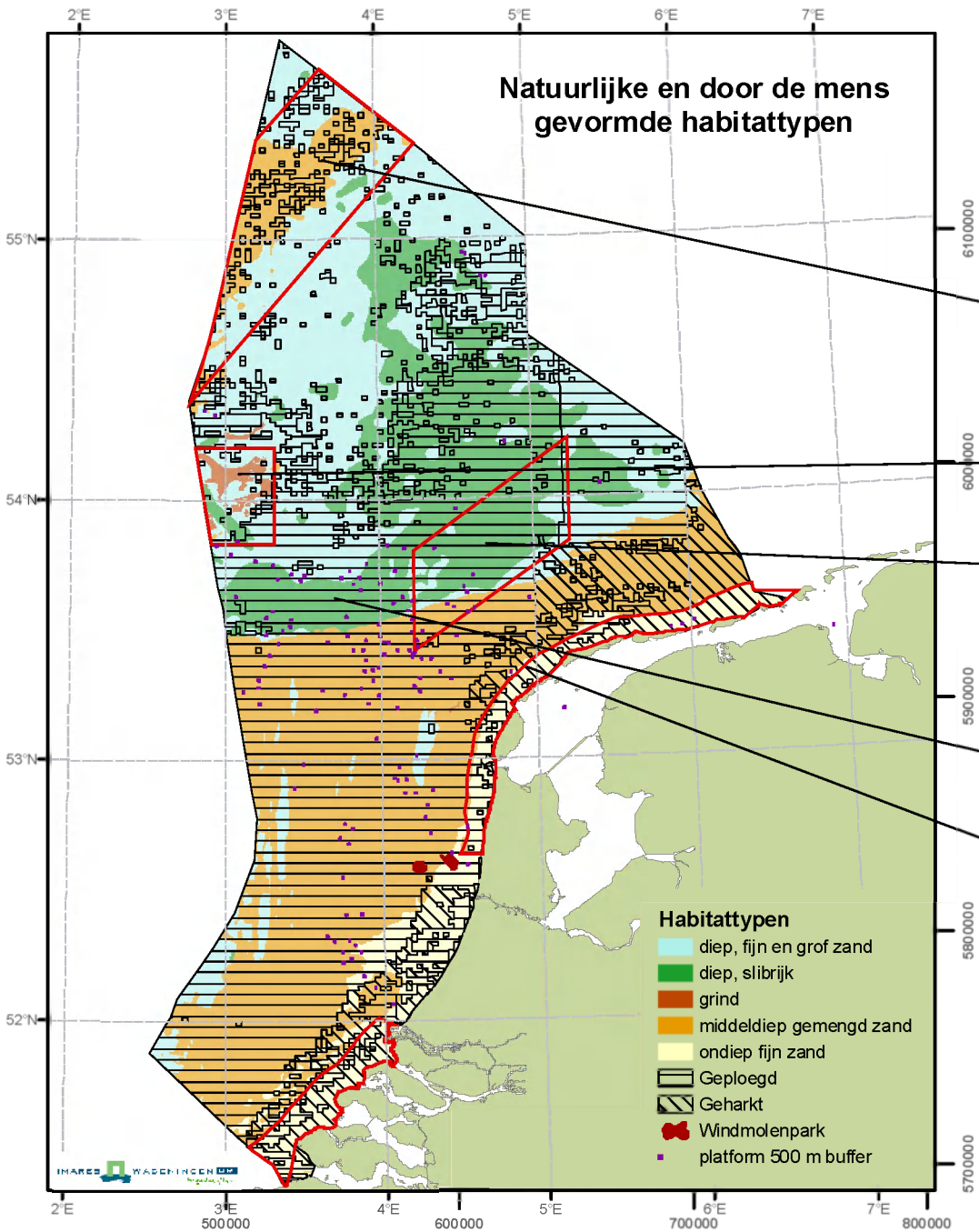


Texel stones



Pauly et al.

Habitat types in the North Sea



“Old habitat types”

Sand bank

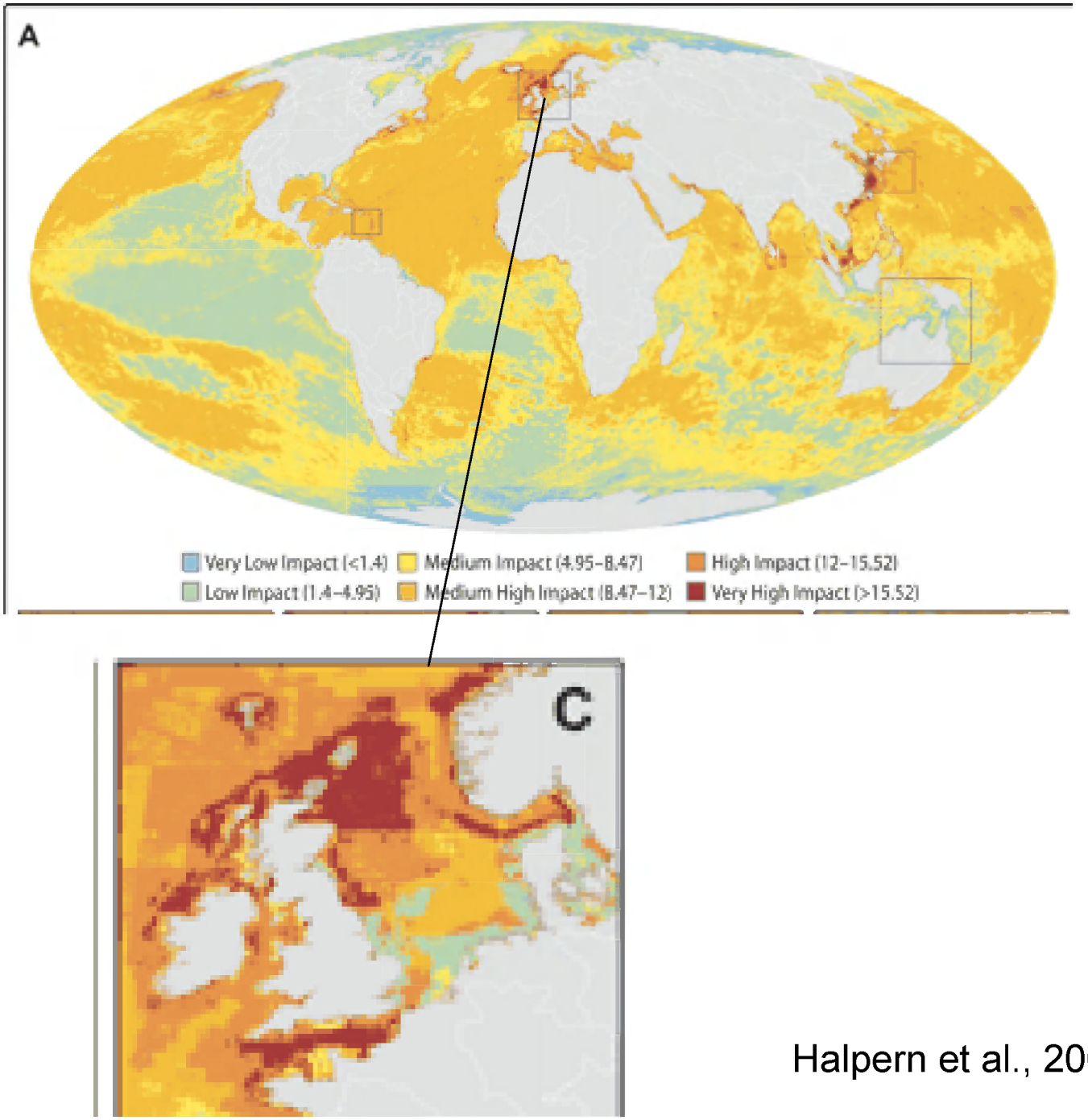
Gravel

Silt

“New habitat types”

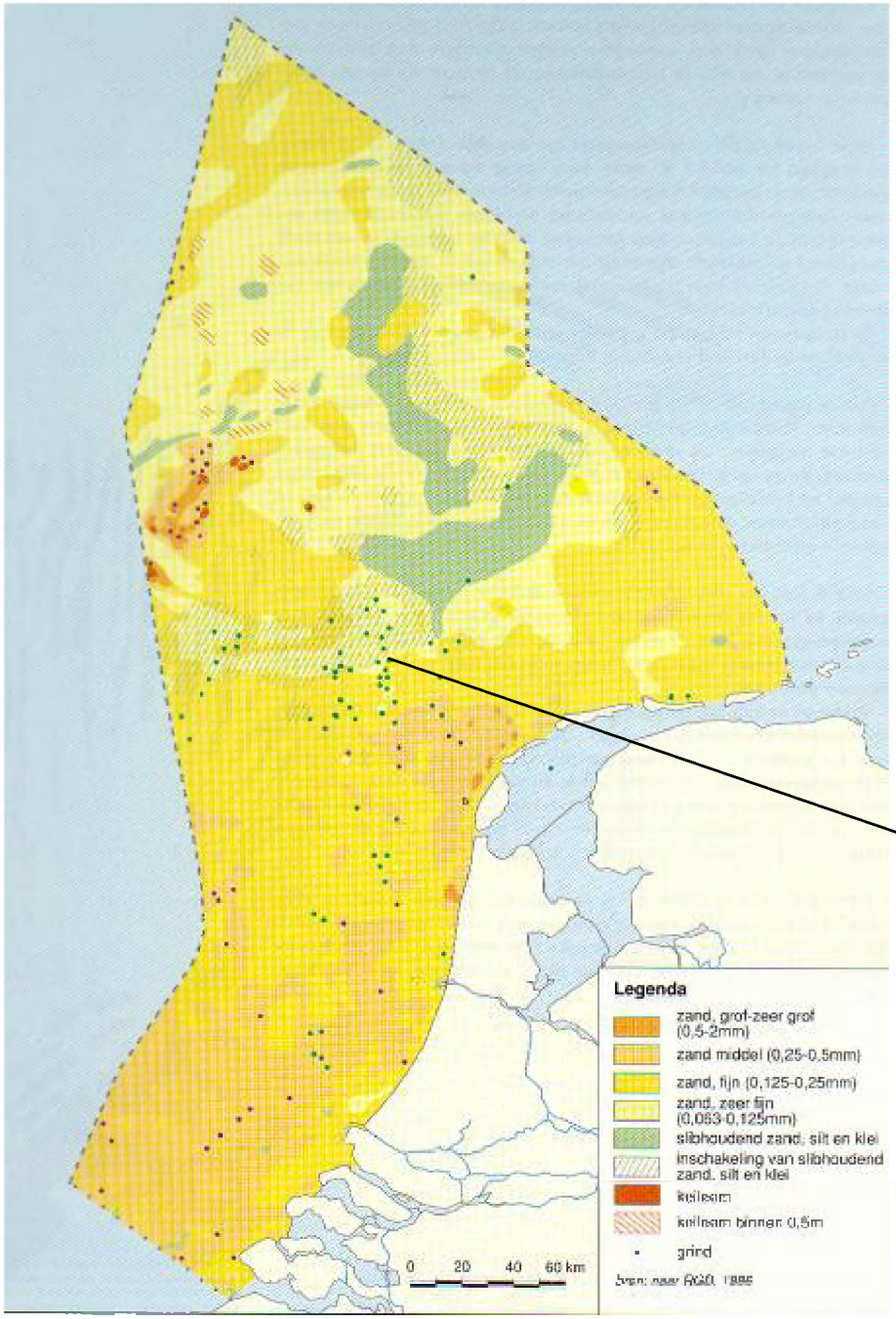
Ploughed habitat

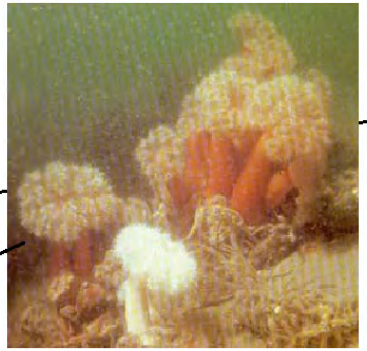
Raked habitat

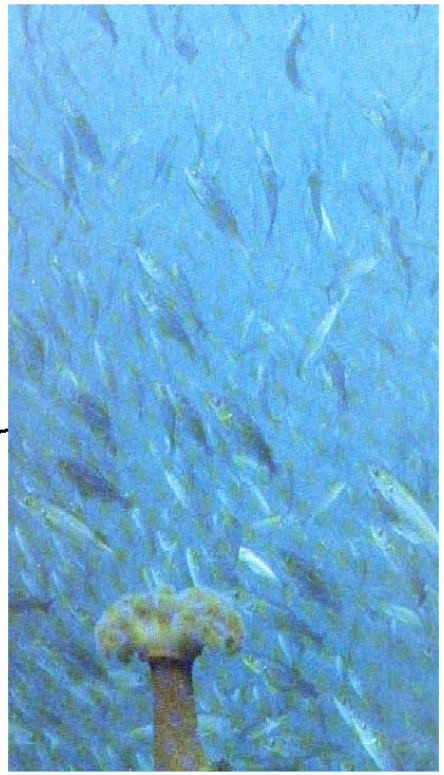


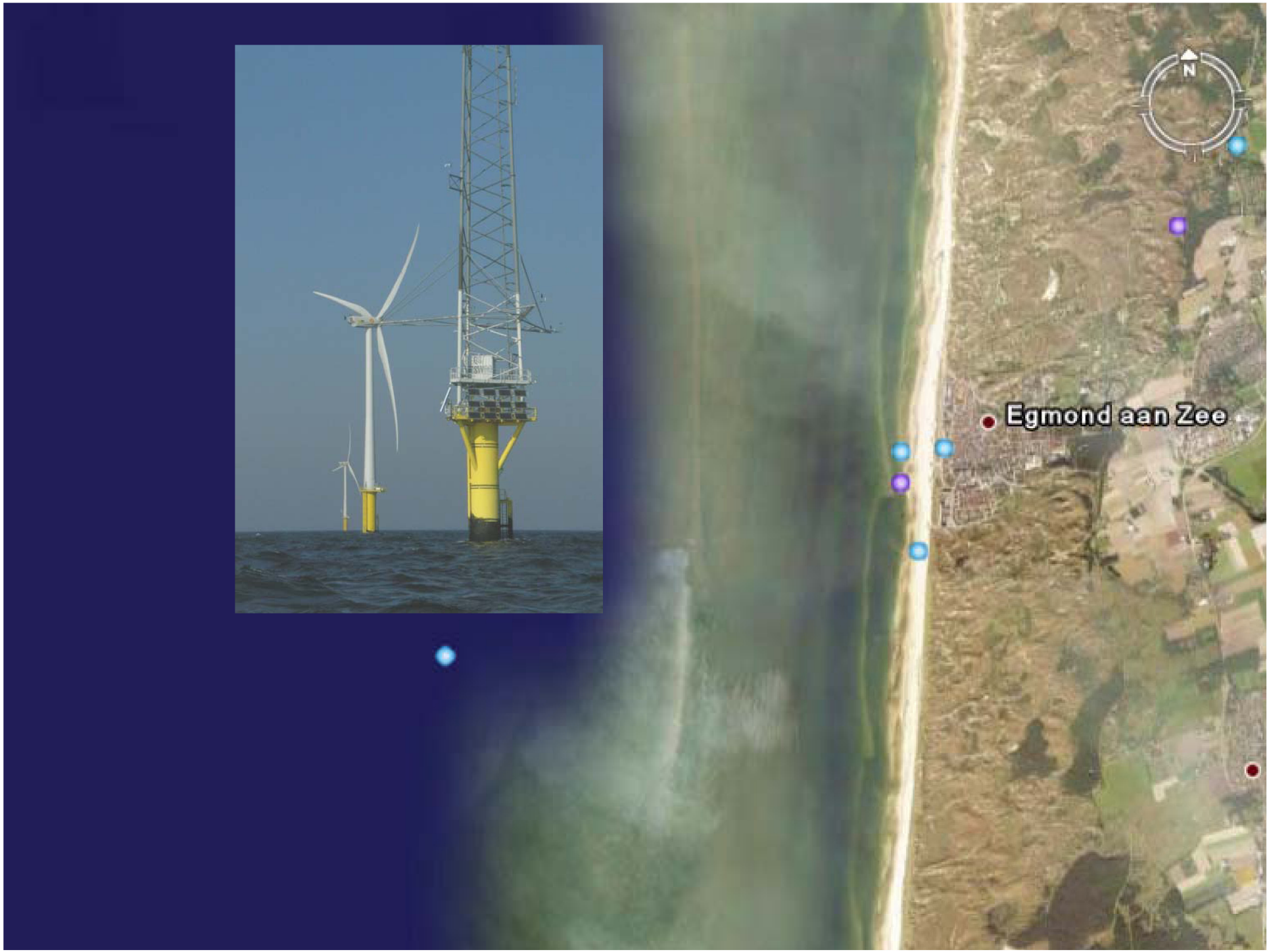
Halpern et al., 2008. Science 15 Febr.

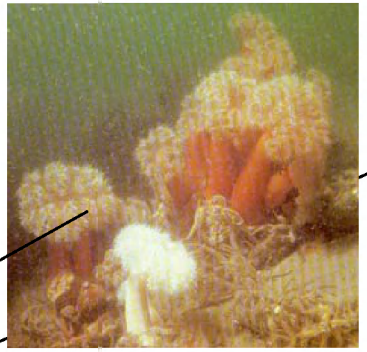
Gas- and Oil-platforms

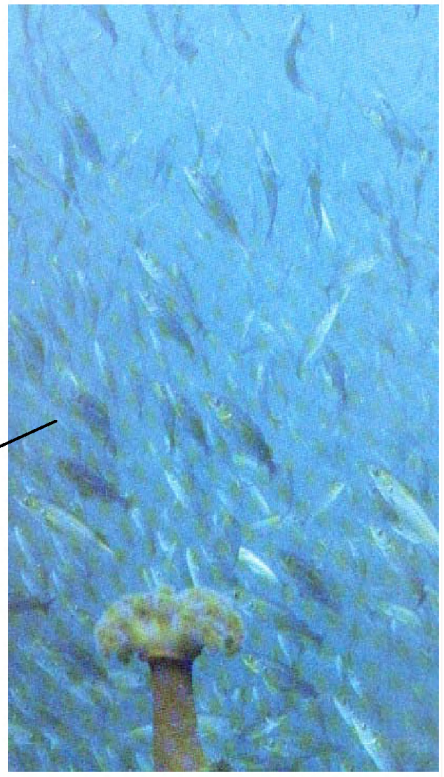






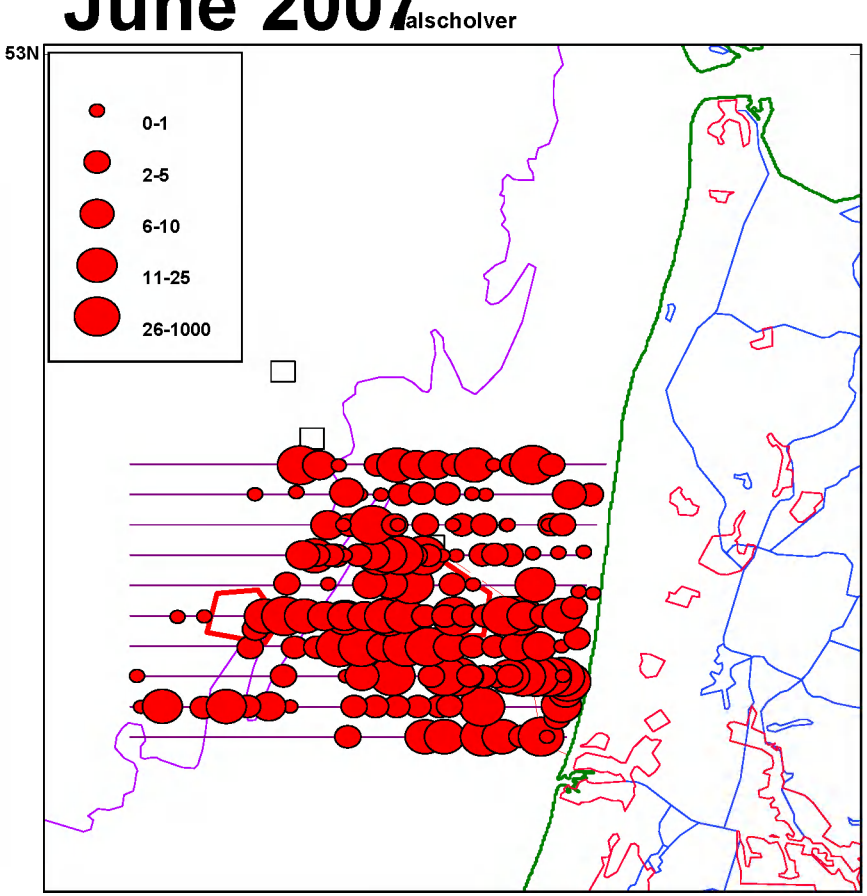

N
Egmond aan Zee



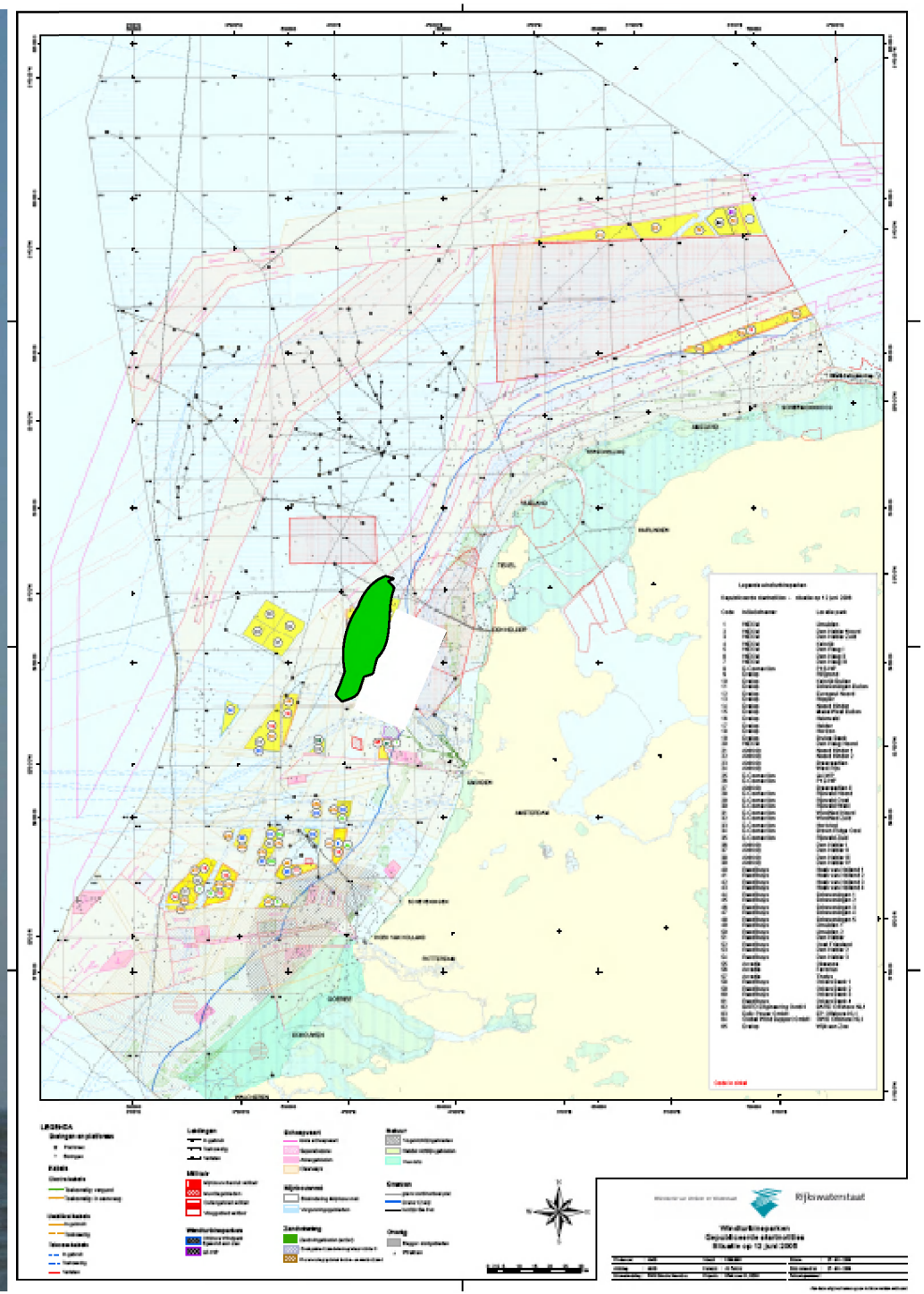


Great cormorant

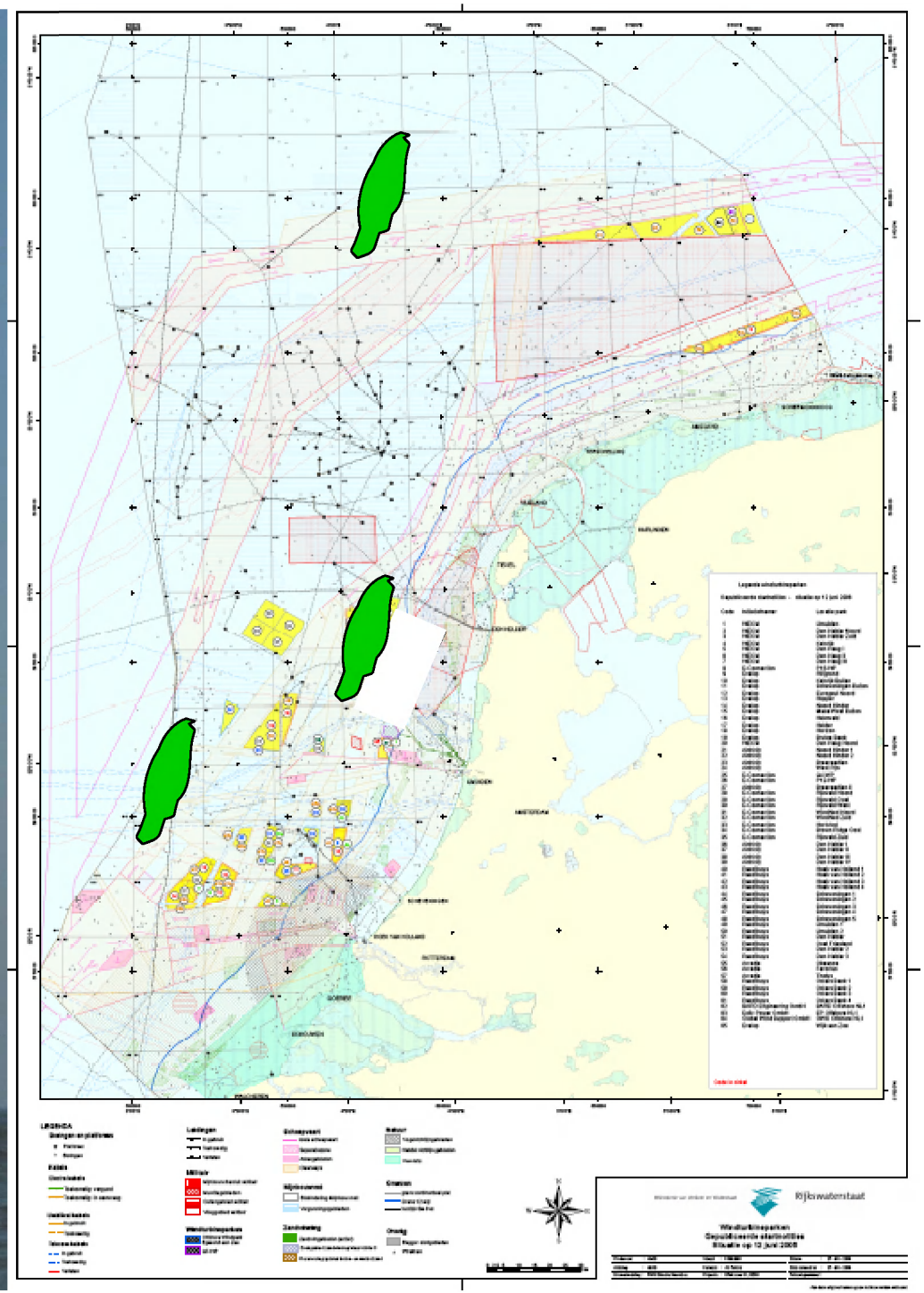
June 2007



New parks ?

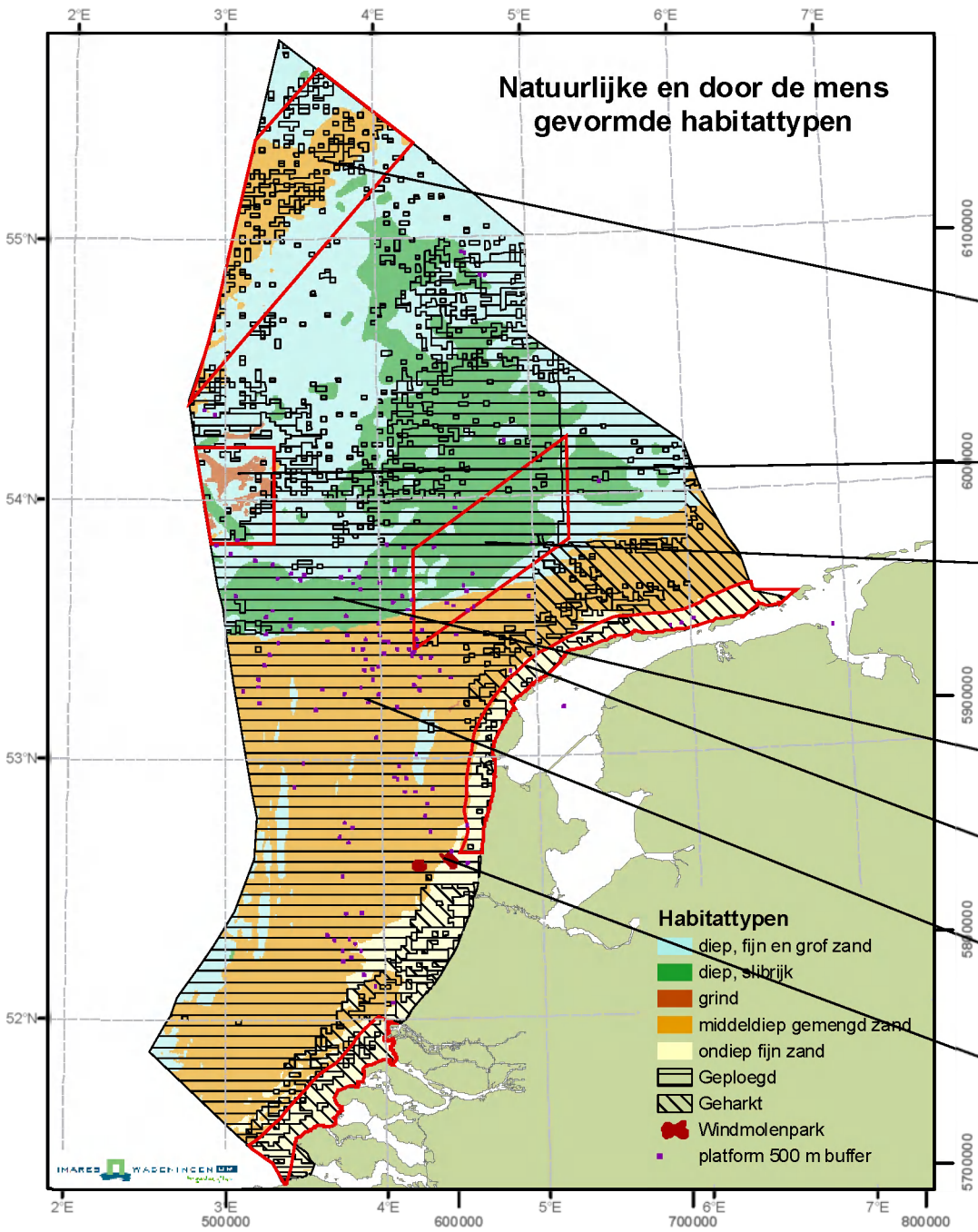


New parks ?



Rudolf
D A 5
Lievense
KEMA

Habitat types in the North Sea



“Old habitat types”

Sand bank

Gravel

Silt

“New habitat types”

Ploughed habitat

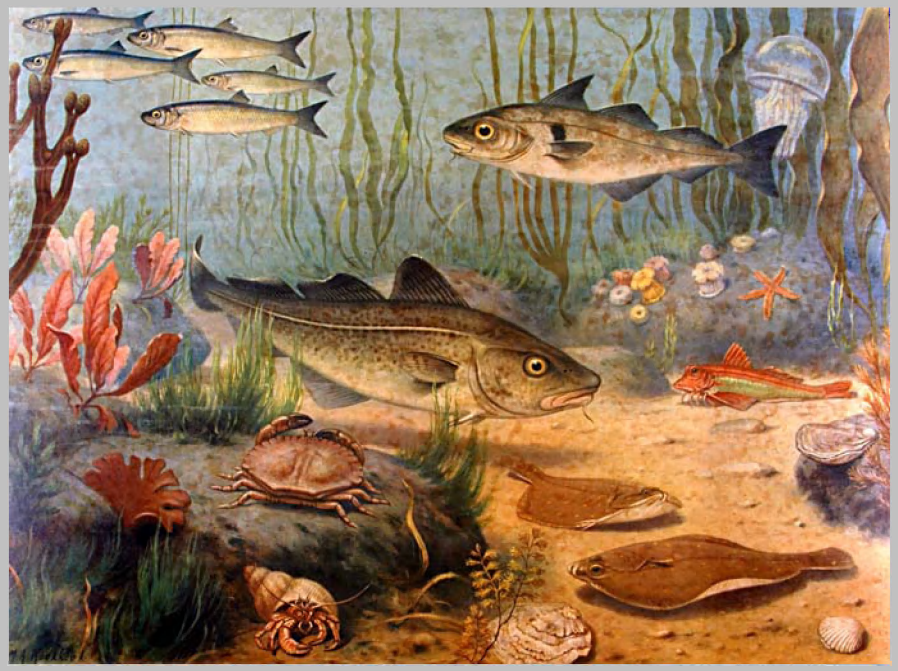
Raked habitat

Platforms

Wind park

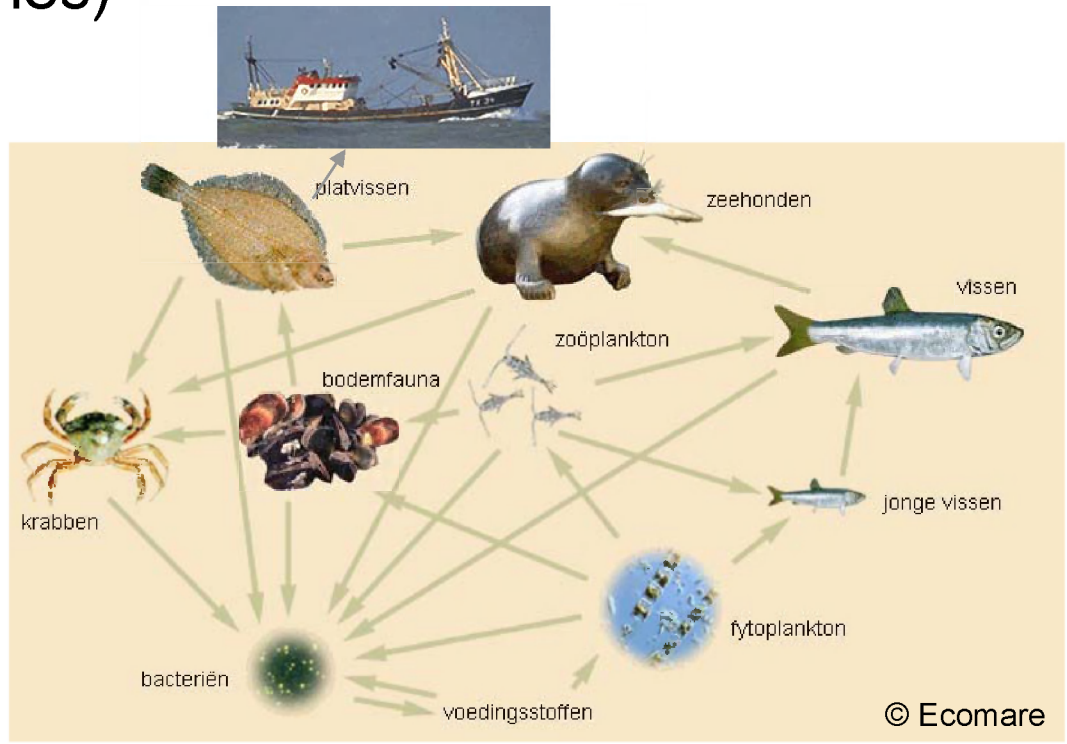
The marine ecosystem, a matter of:

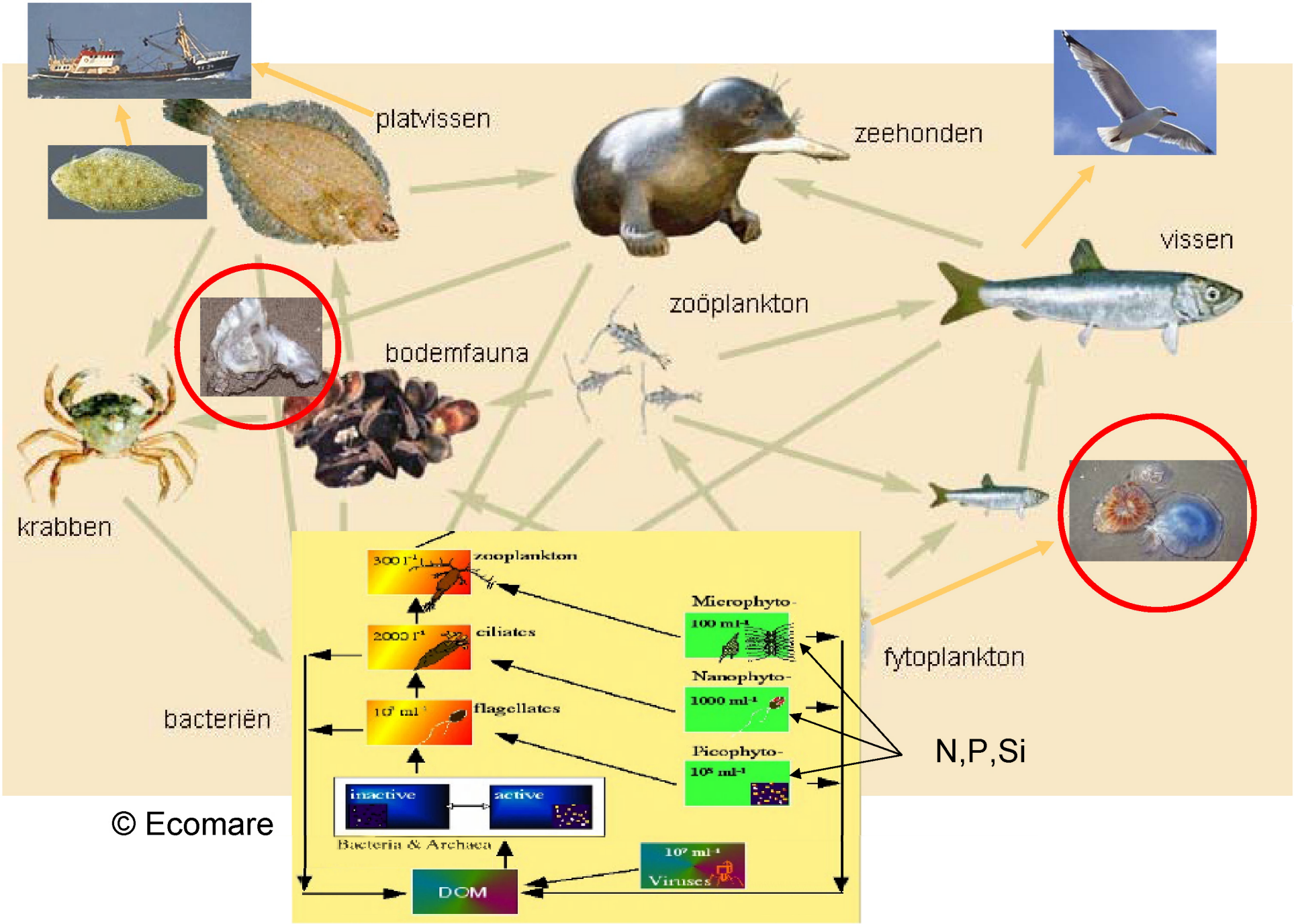
- Habitat types
- Complexity
- Timing
- Man and nature



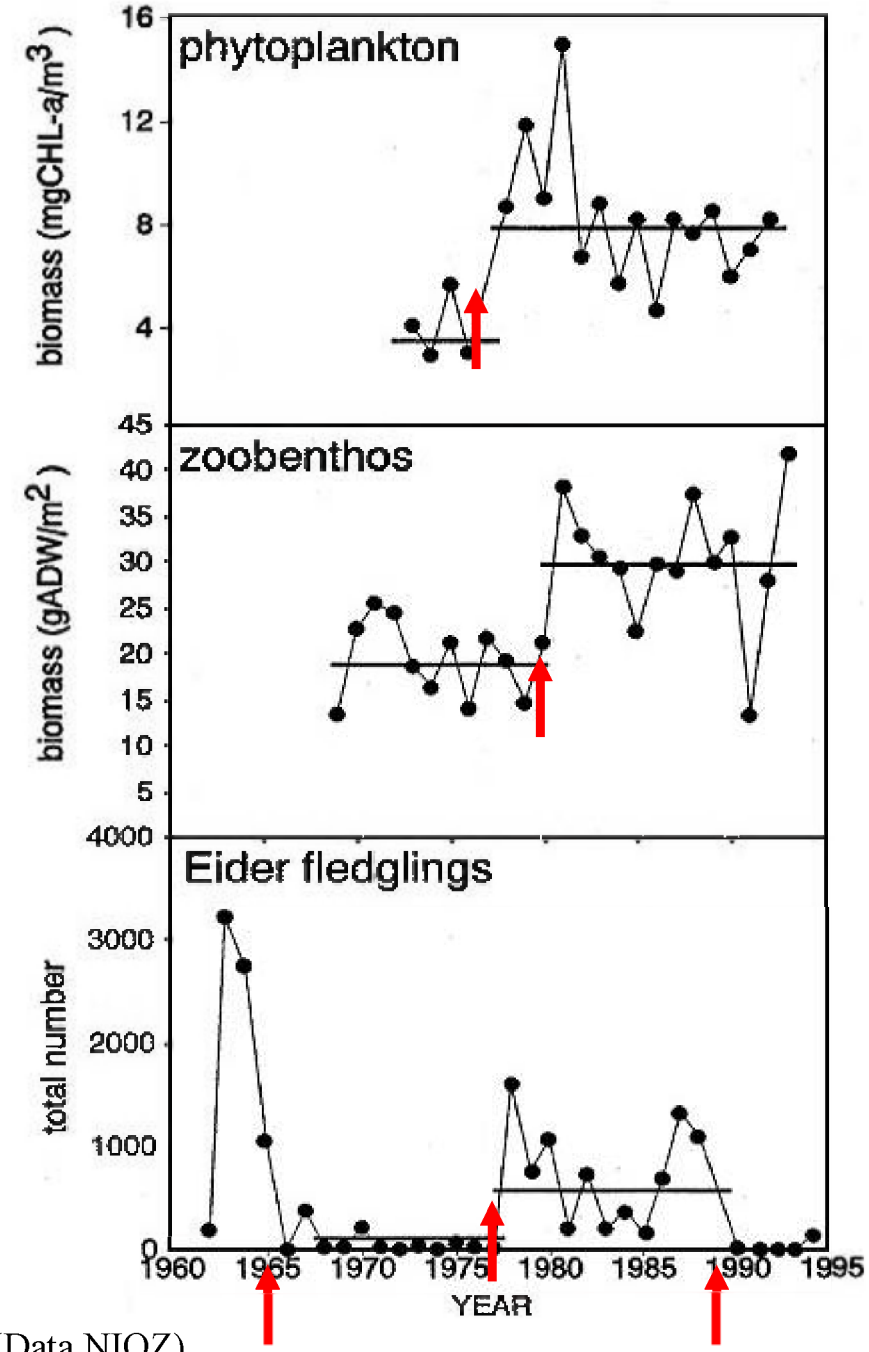
A combination of factors determine the numbers:

- Food: quantity, place, timing, quality
- Predation (incl. fisheries)
- Recruitment
- Habitat
- Climate
- ??

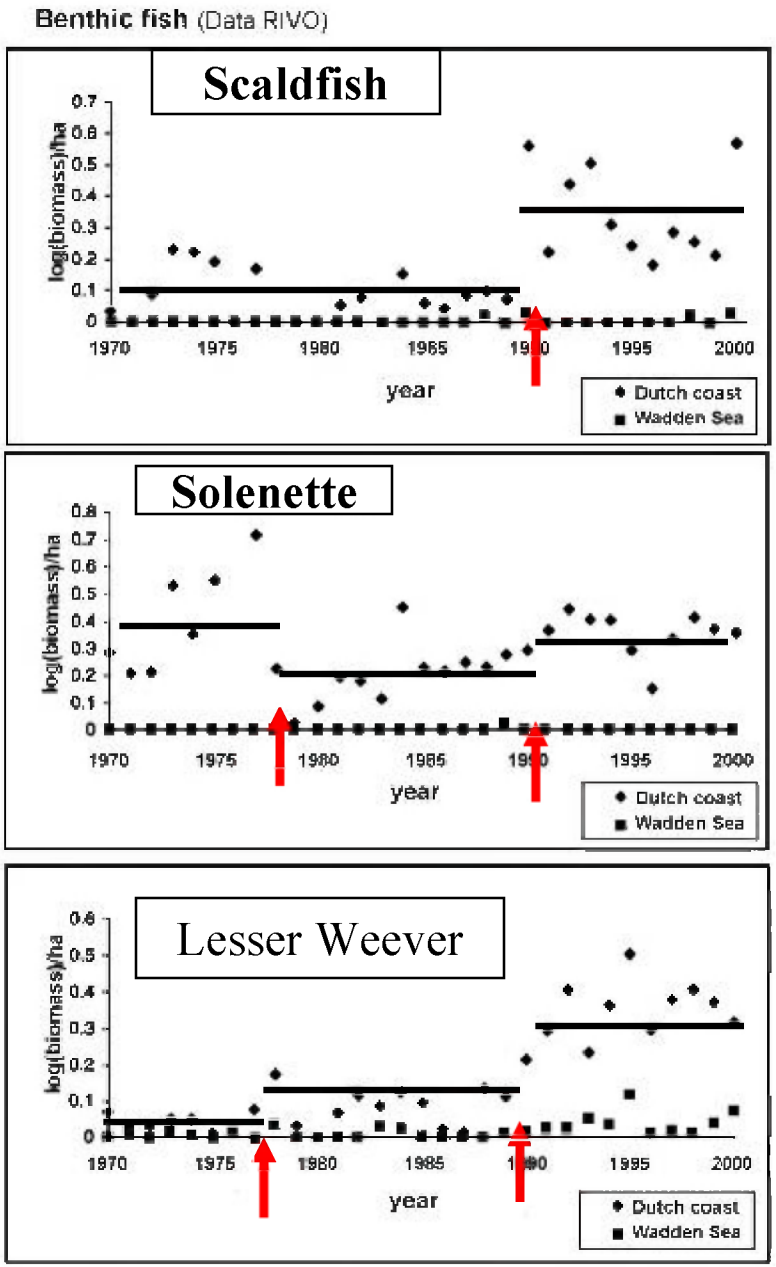



platvissen
zeehonden
vissen
zoöplankton
bodemfauna
krabben
bacteriën
fytoplankton
N,P,Si
zooplankton
ciliates
flagellates
Microphyto-
Nanophyto-
Picophyto-
inactive
active
Bacteria & Archaea
DOM
Viruses

© Ecomare


phytoplankton
biomass (mgCHL-a/m3)
zoobenthos
biomass (gADW/m2)
Eider fledglings
total number
YEAR

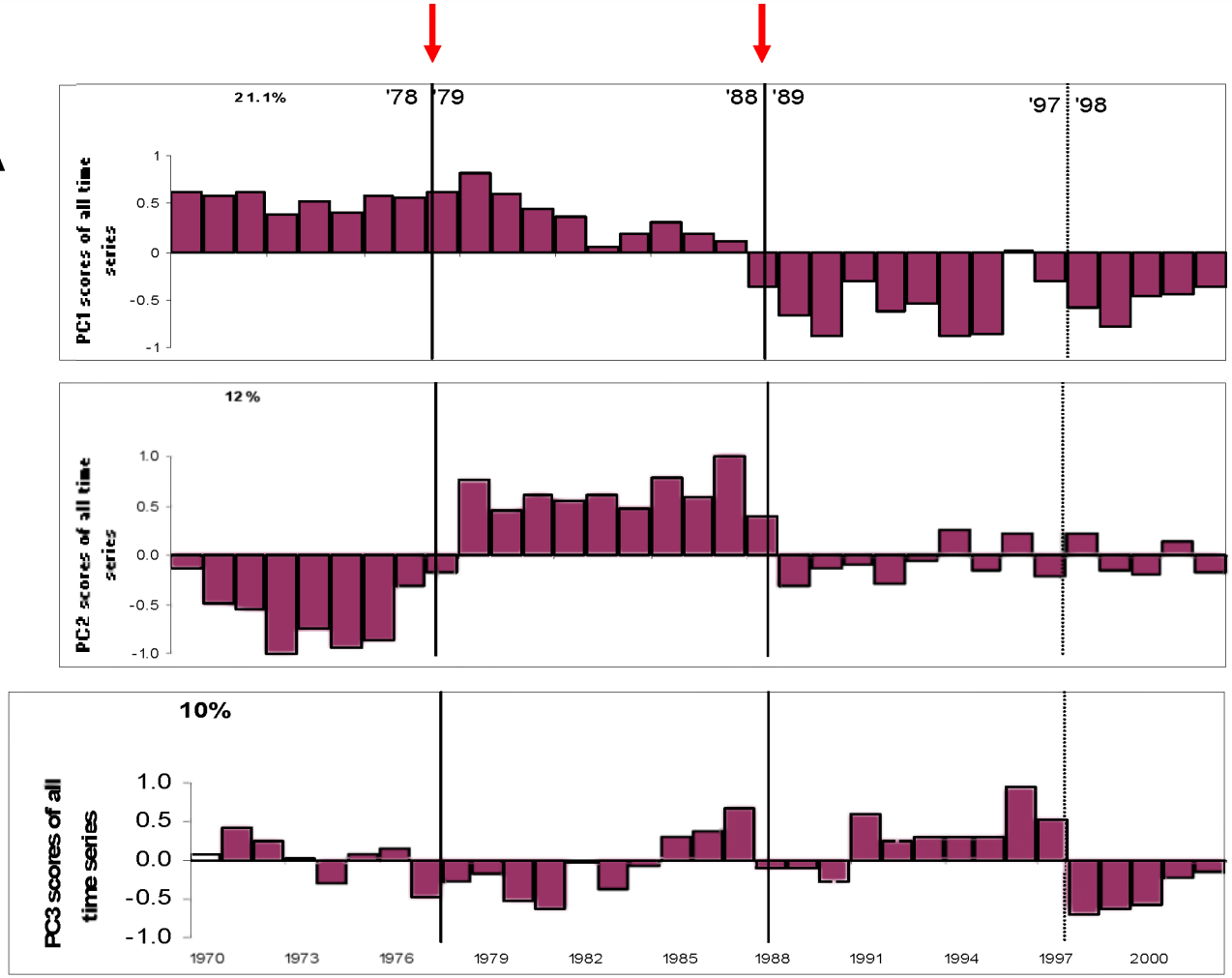
(Data NIOZ)


Benthic fish (Data RIVO)
Scaldfish
Solenette
Lesser Weever
log(biomass)/ha
year
Dutch coast
Wadden Sea

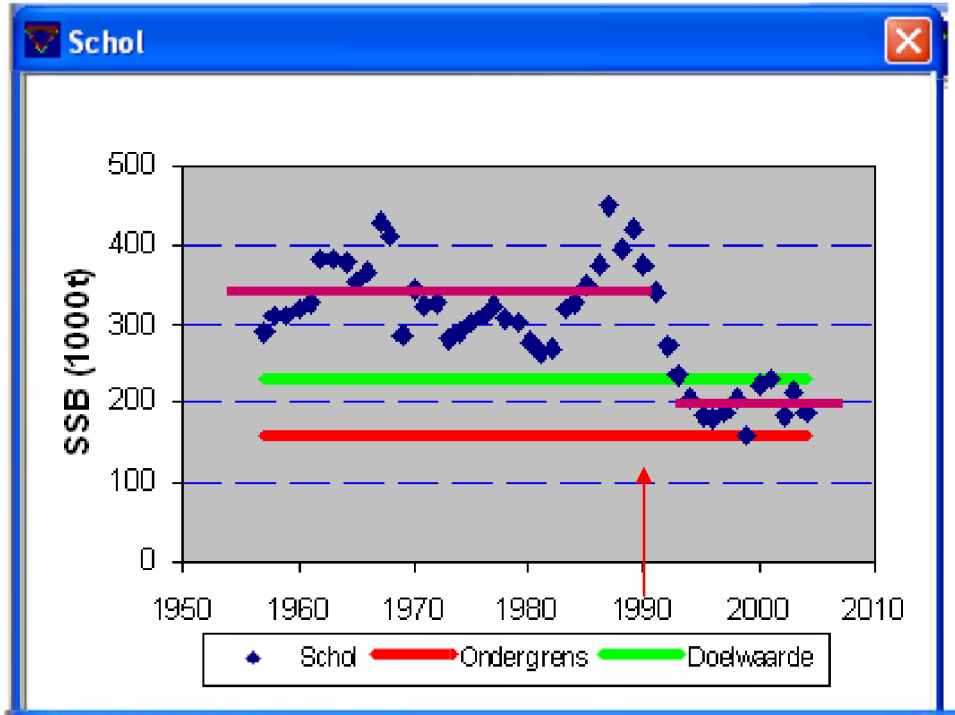
Regime shifts in marine ecosystems of the North Sea and Wadden Sea

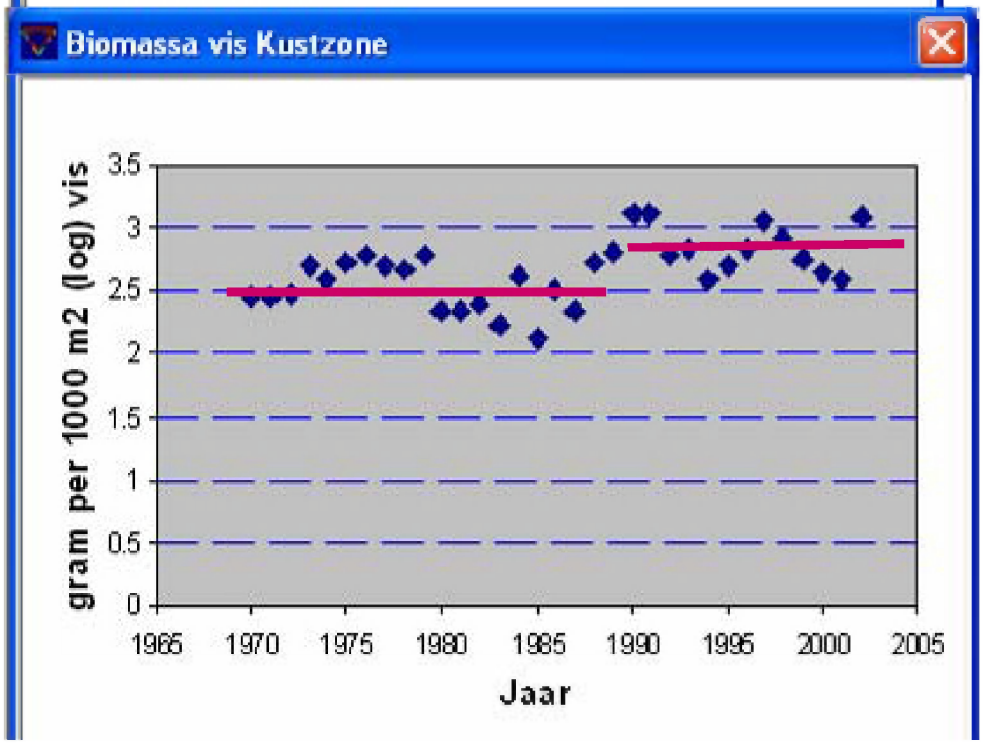
Mariska Weijerman[1], Han Lindeboom[1,*], Alain F. Zuur[2]

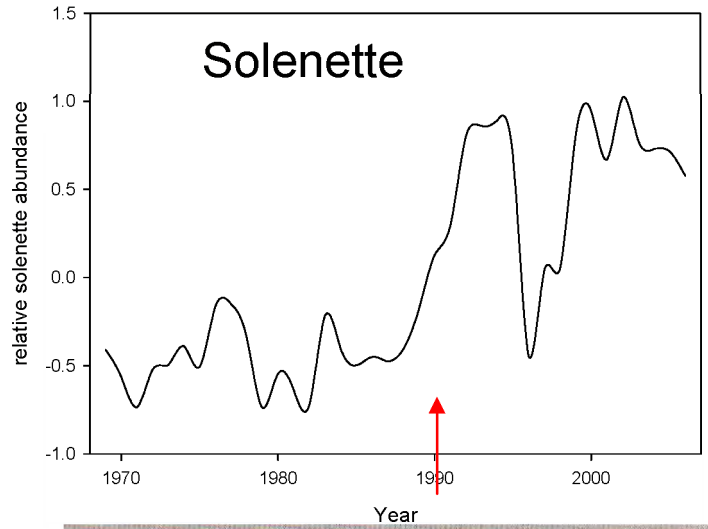
Resultaten: PCA

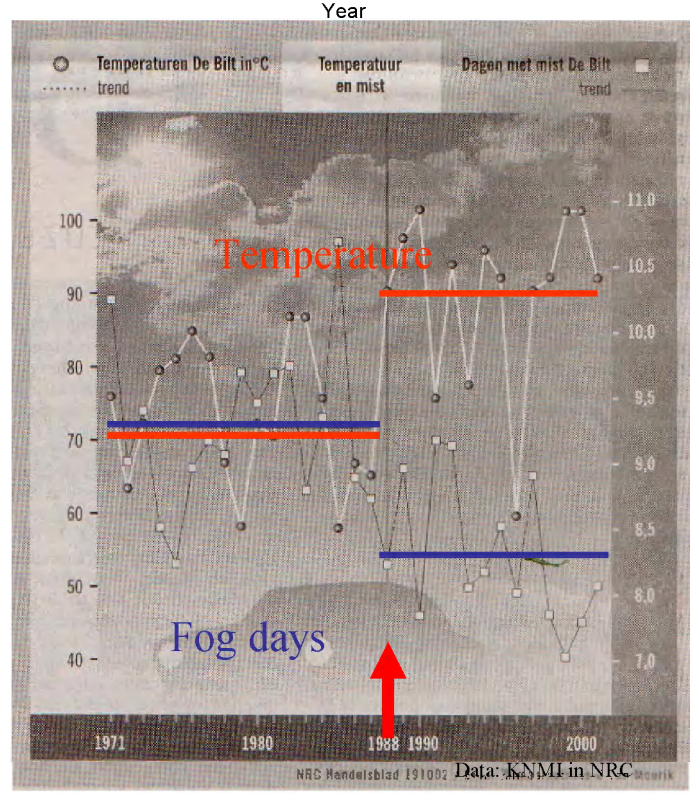


MEPS 298: 21-39

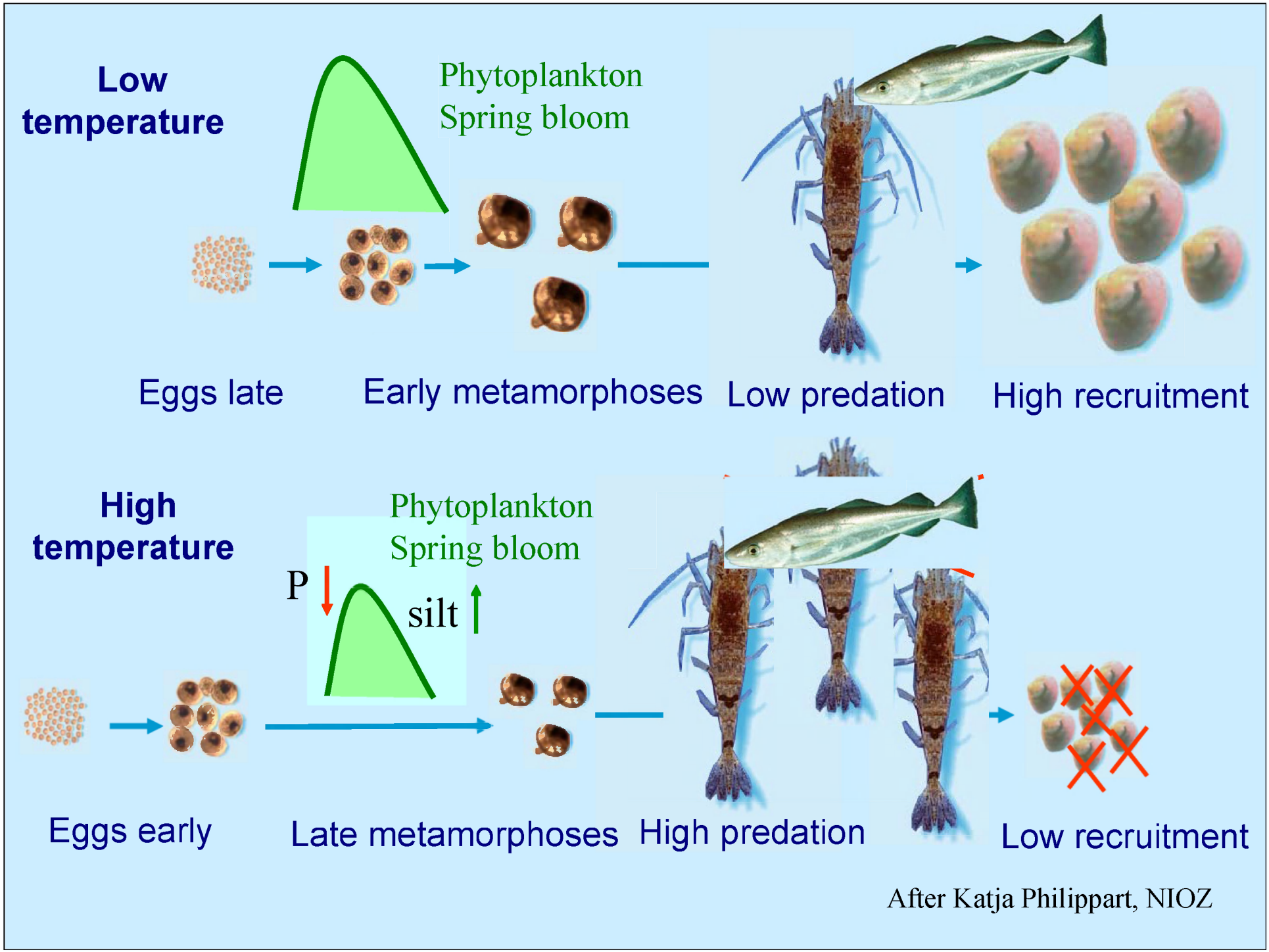




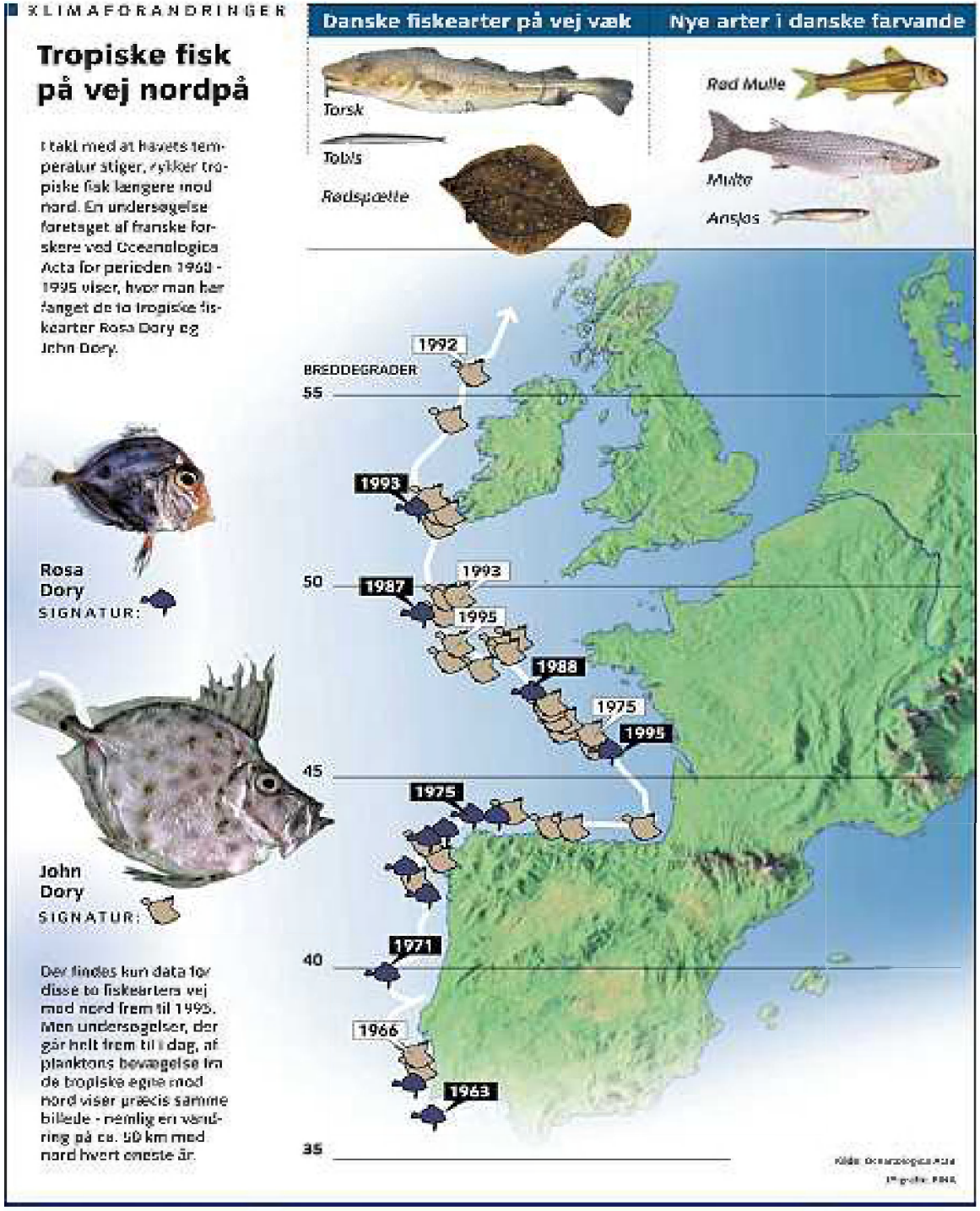




Data: KNMI in NRC



After Katja Philippart, NIOZ



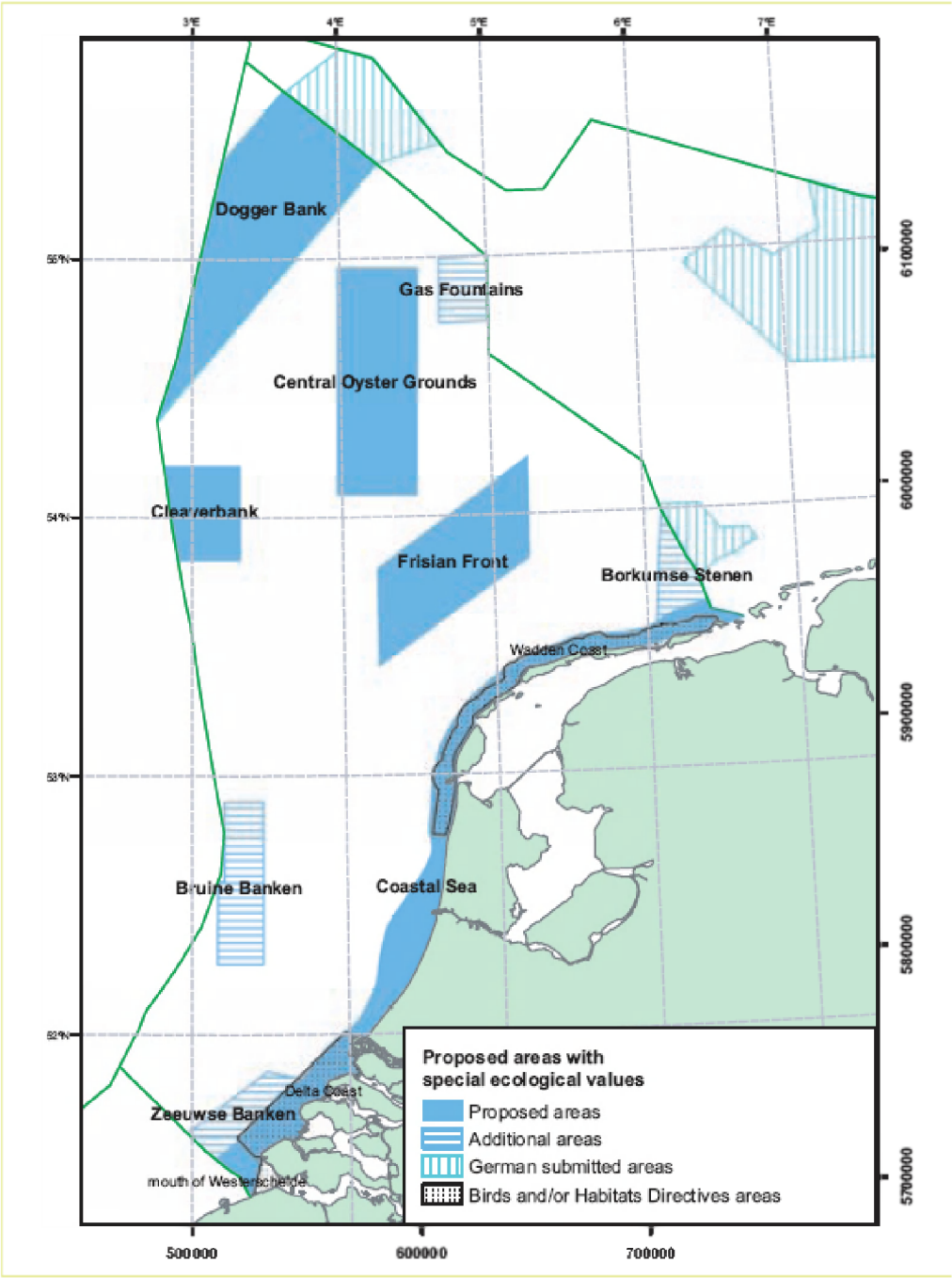
From Keith Brander

The future of the North Sea in the Anthropocene ?

What type of nature do we want?:

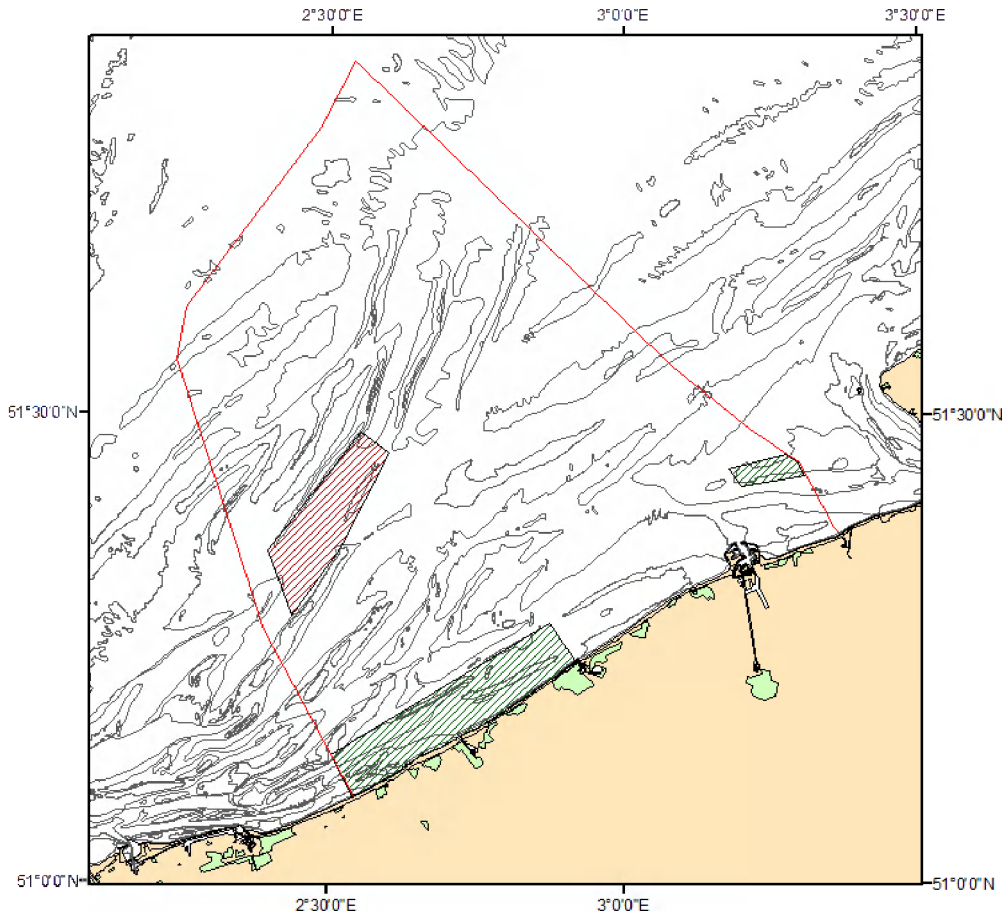
- Wilderness
- Productive nature
- Constructed nature
- Perceptive nature
- Broader context nature
- ??

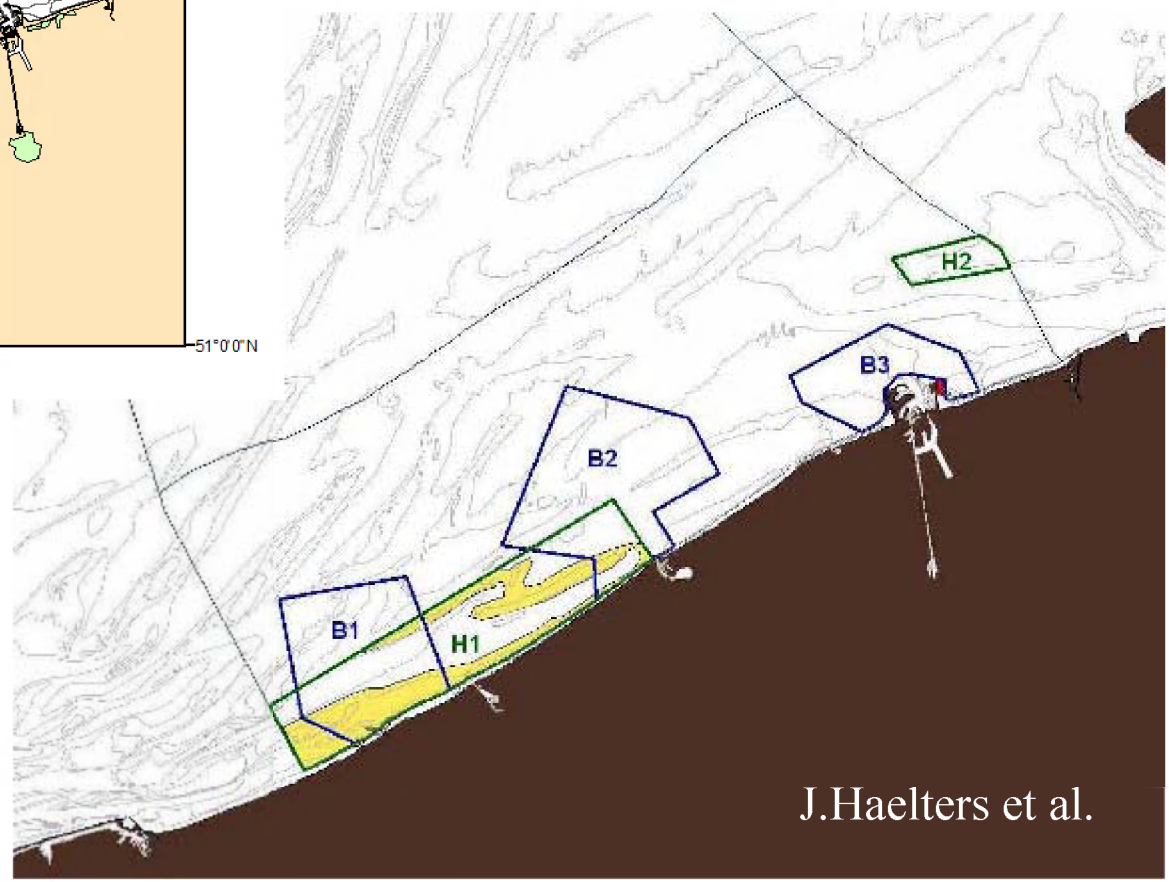
Make clear choices in place and time



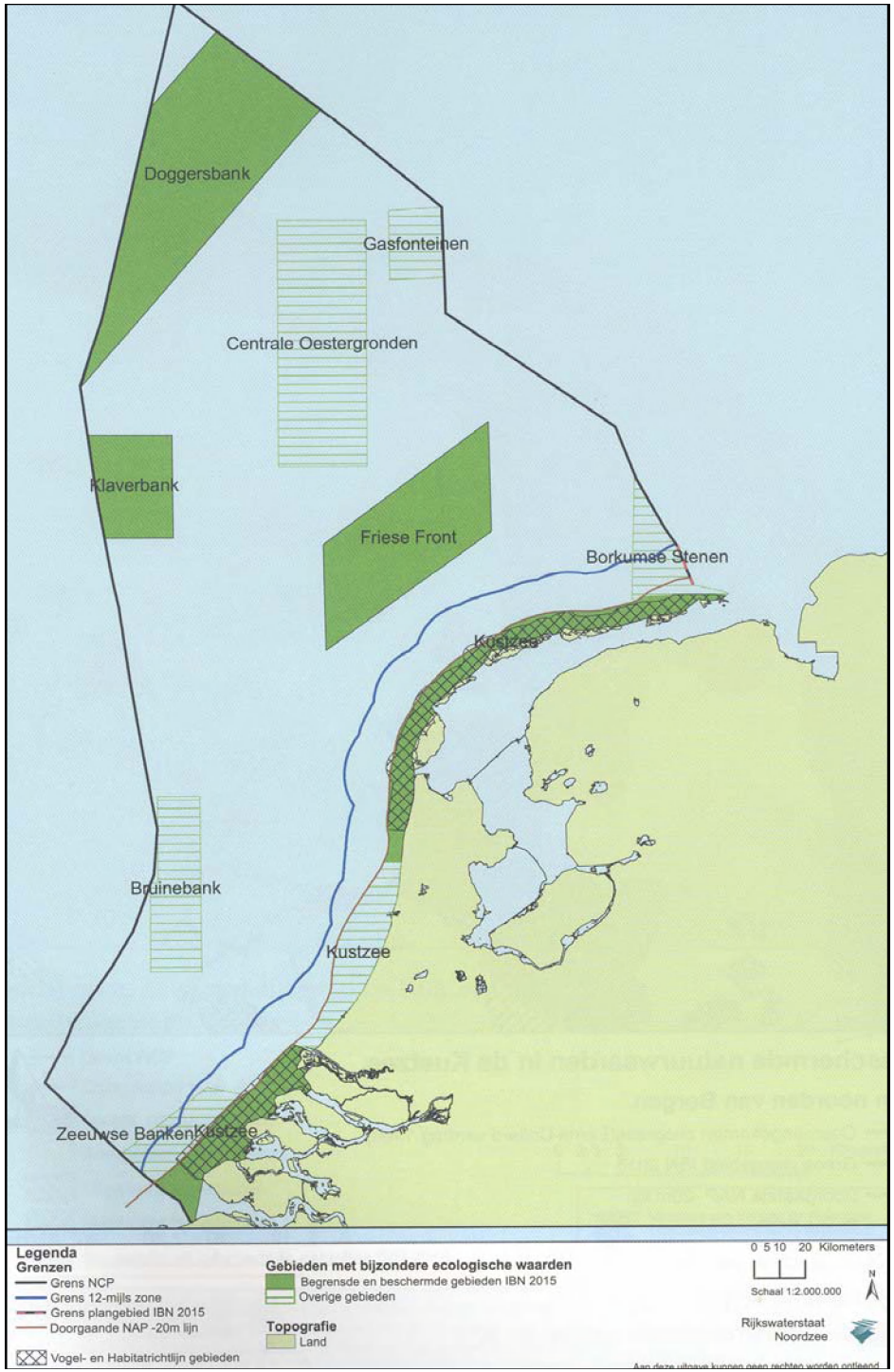
Proposed areas with special ecological values

(Lindeboom et al., 2005)





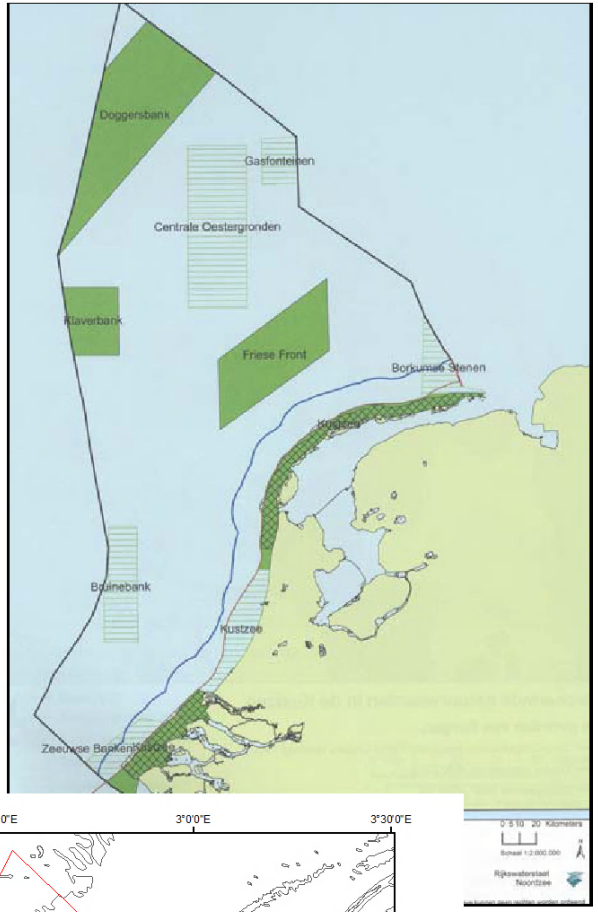
J.Haelters et al.

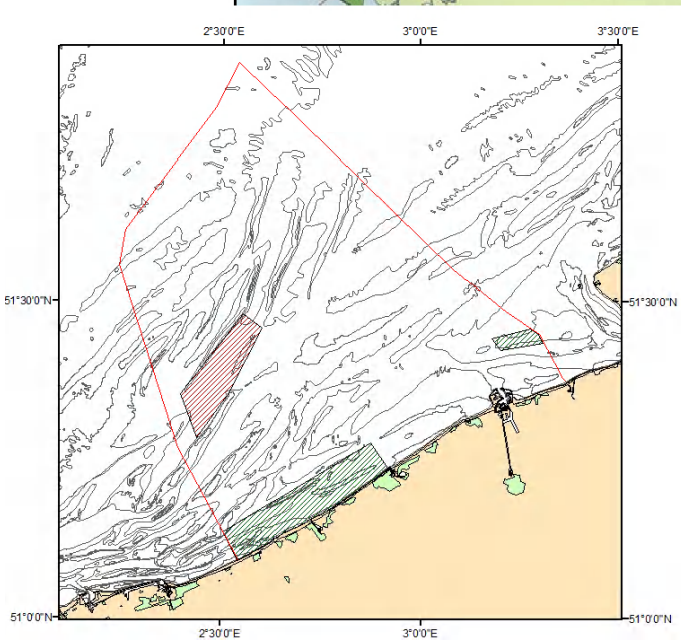


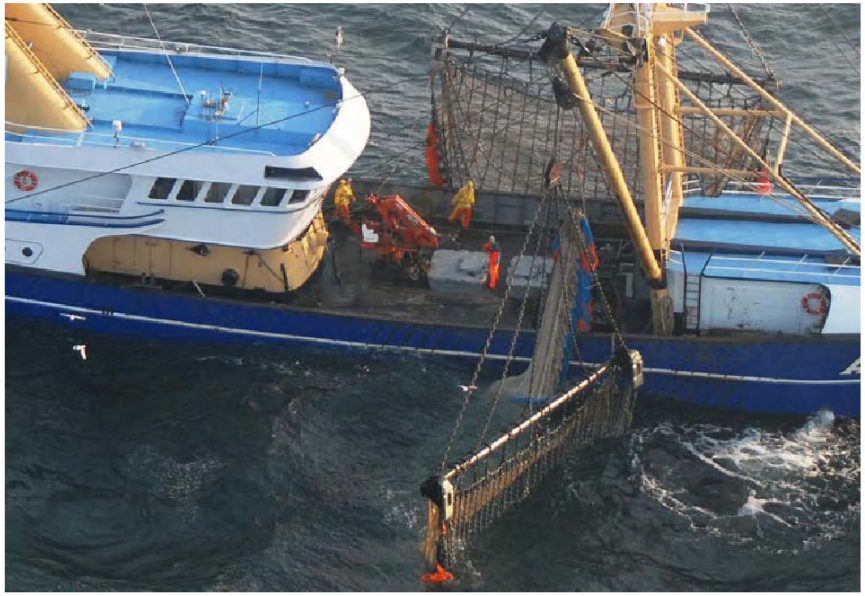
Integrated Management plan North Sea 2015

4 areas nominated

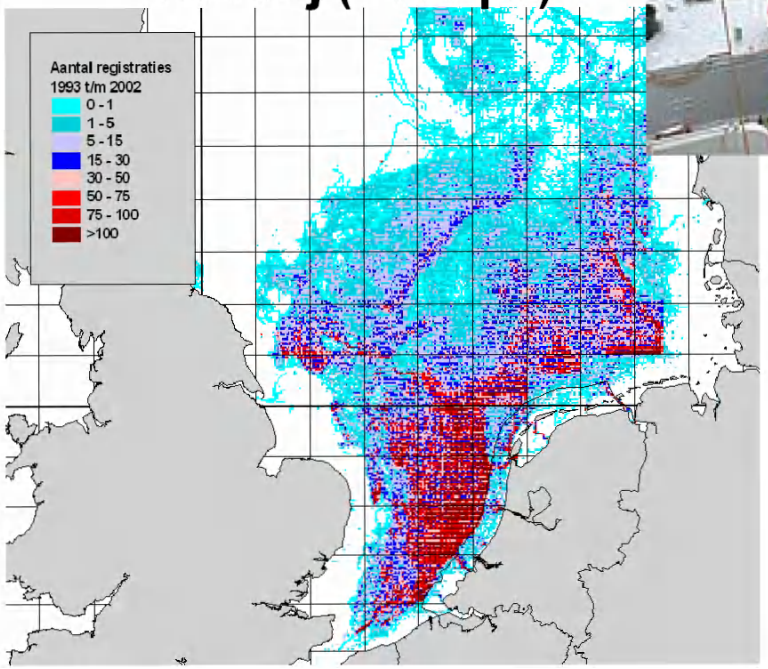
Existing use will not change

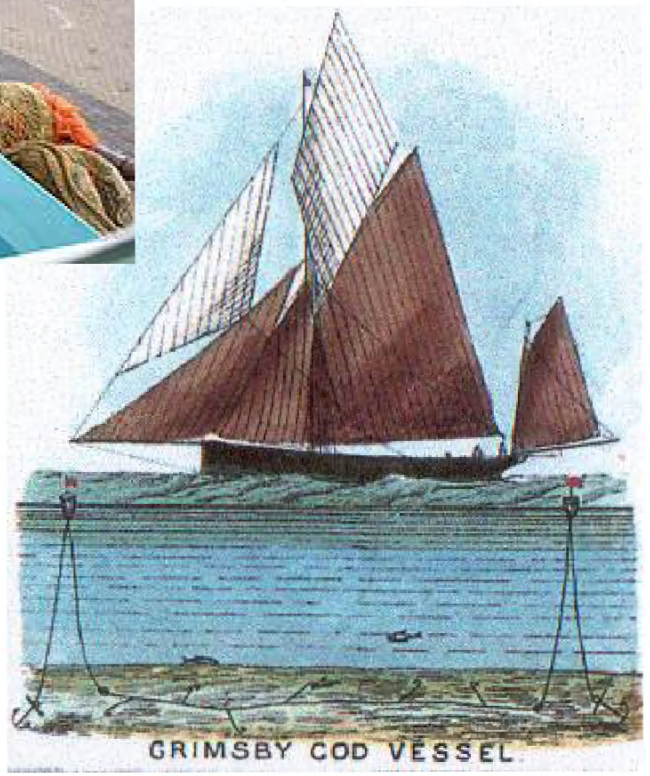

Doggersbank
Gasfonteinen
Centrale Oestergronden
Klaverbank
Friese Front
Borkumse Stenen
Kustzee
Bolnebank
Kustzee
Zeeuwse Banken
0 5 10 20 Kilometers
Schaal 1:2.000.000
Rijkswaterstaat
Noordzee

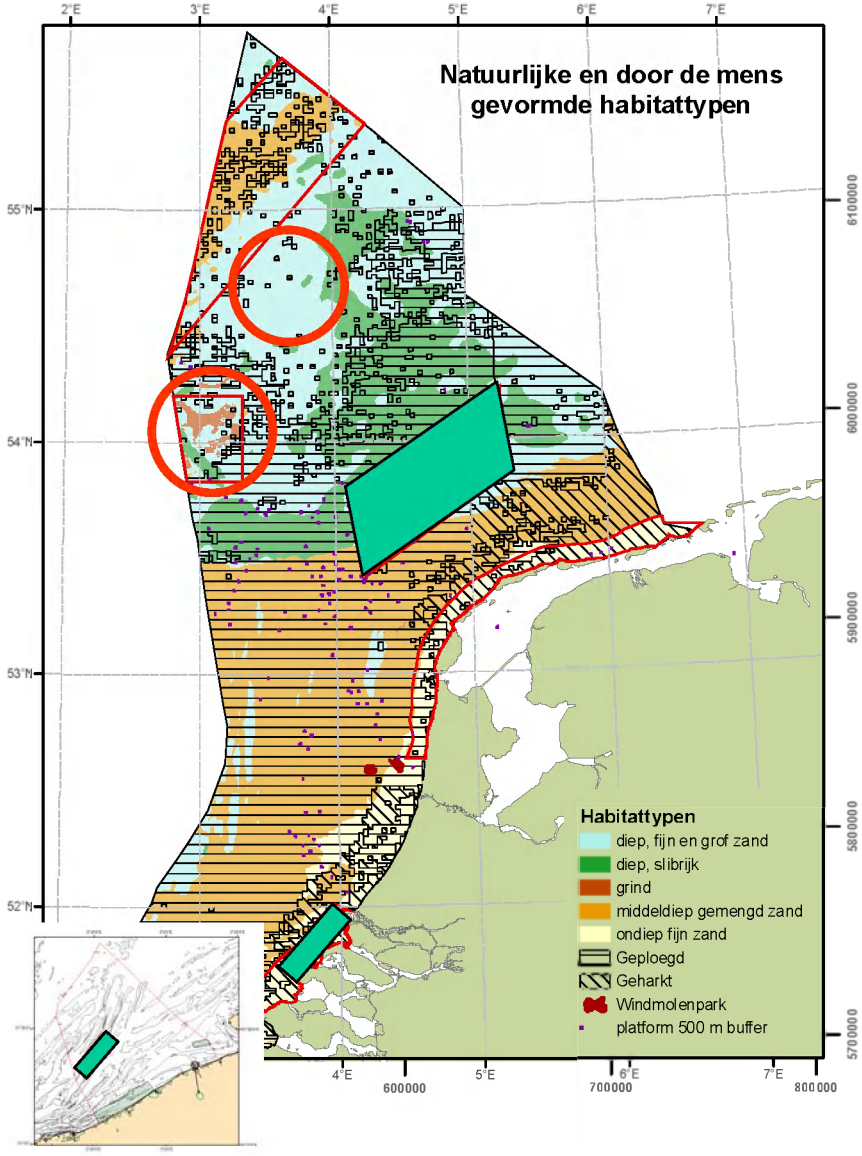

2°30'0"E
3°0'0"E
3°30'0"E
51°30'0"N
51°0'0"N



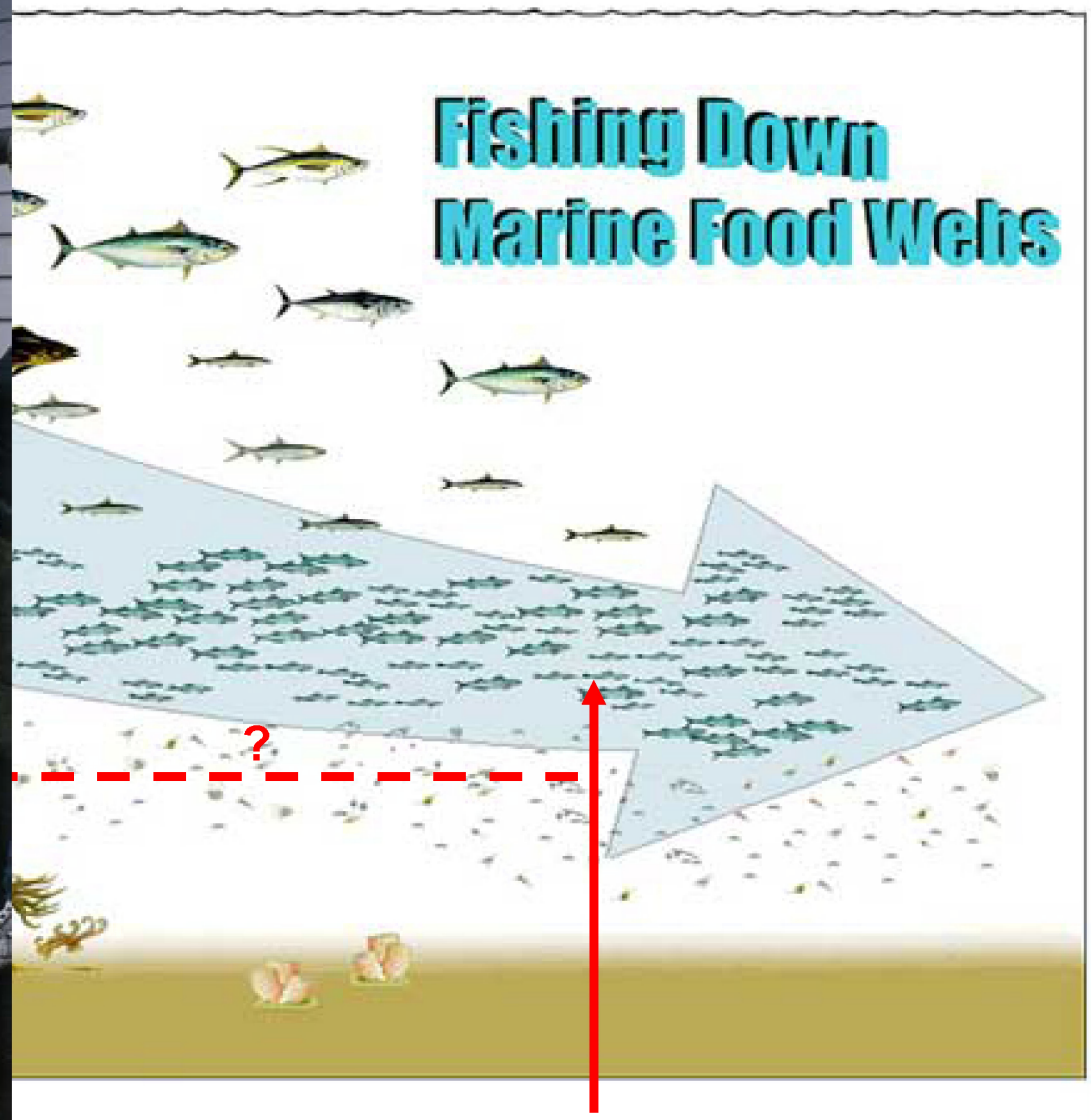
Visserij (>300 pk)







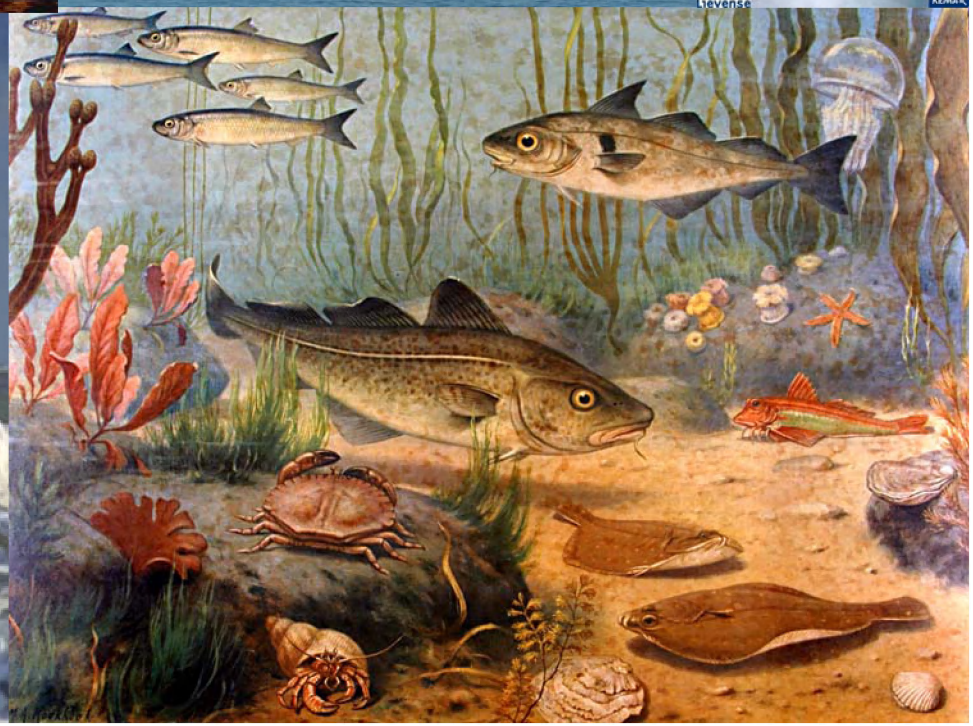
Or real closures ?



5
4
3
2

Pauly et al.

Lievense
KEMA



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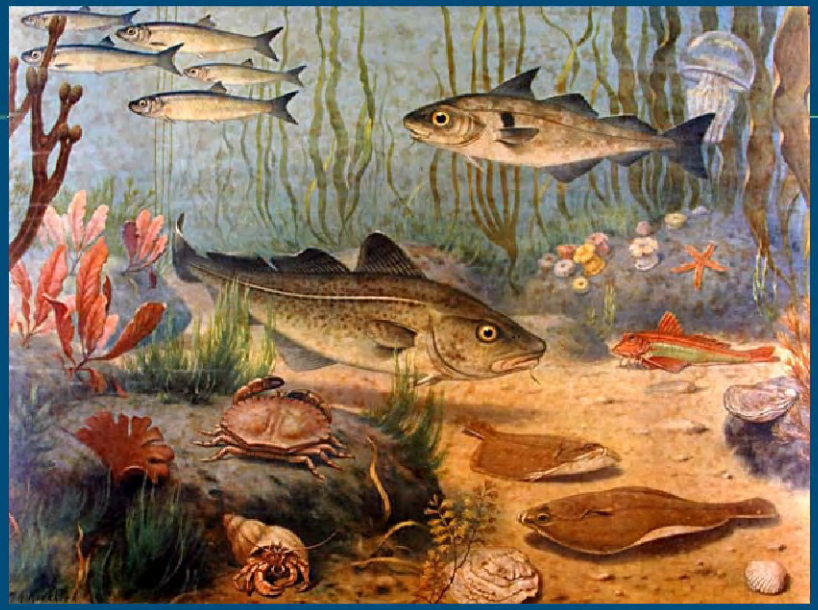

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