

IPOP Coast and Sea

Sustainable use and climate proof organization of the sea, coastal zones and delta areas

Wageningen UR focus theme 2007-2010

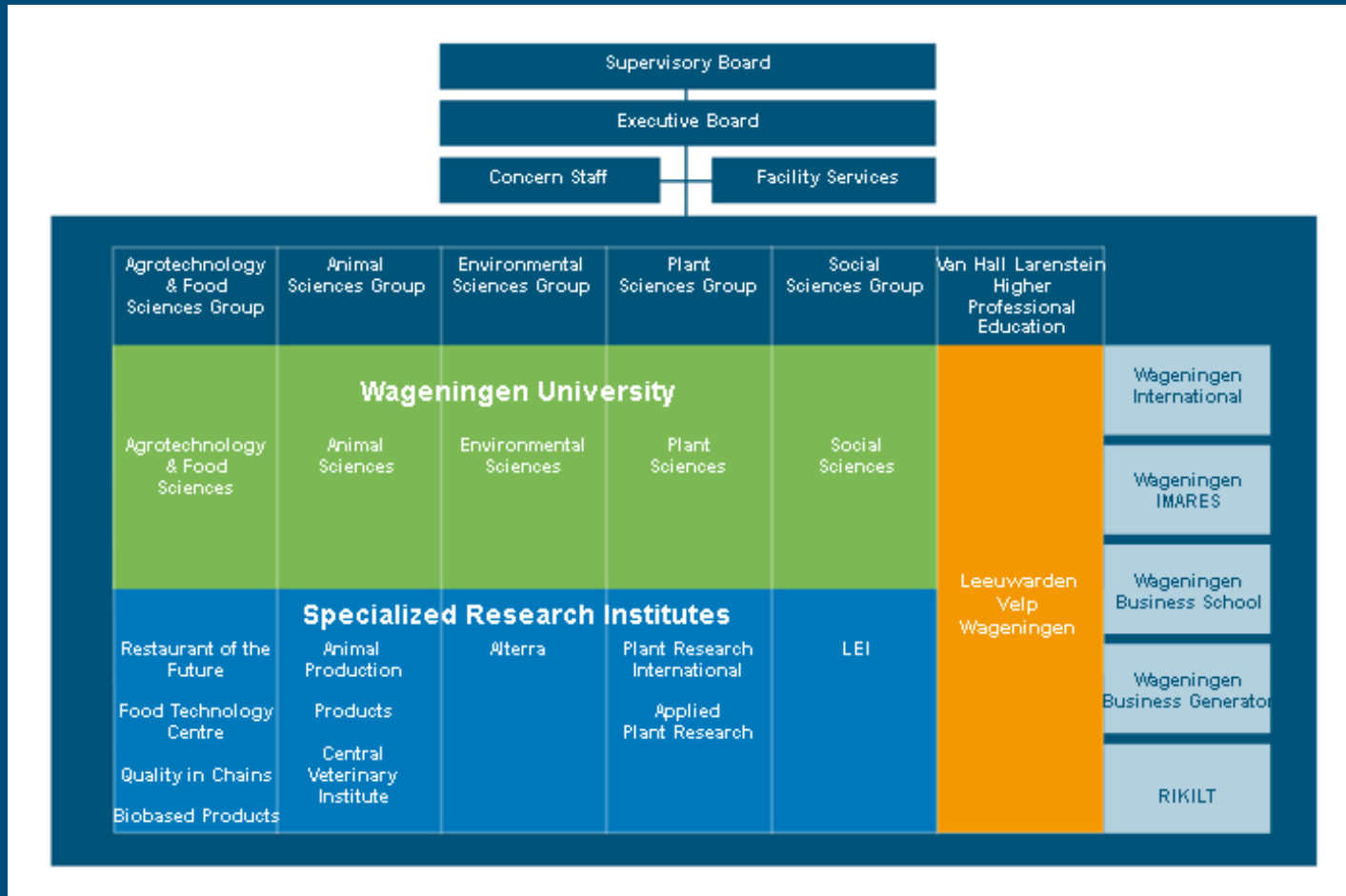


Aim of Coast and Sea program

- Initiate and perform (applied) research
- Cooperate and initiate partnerships
- Stimulate and (co) develop education

Budget: € 1 million per year

Wageningen UR



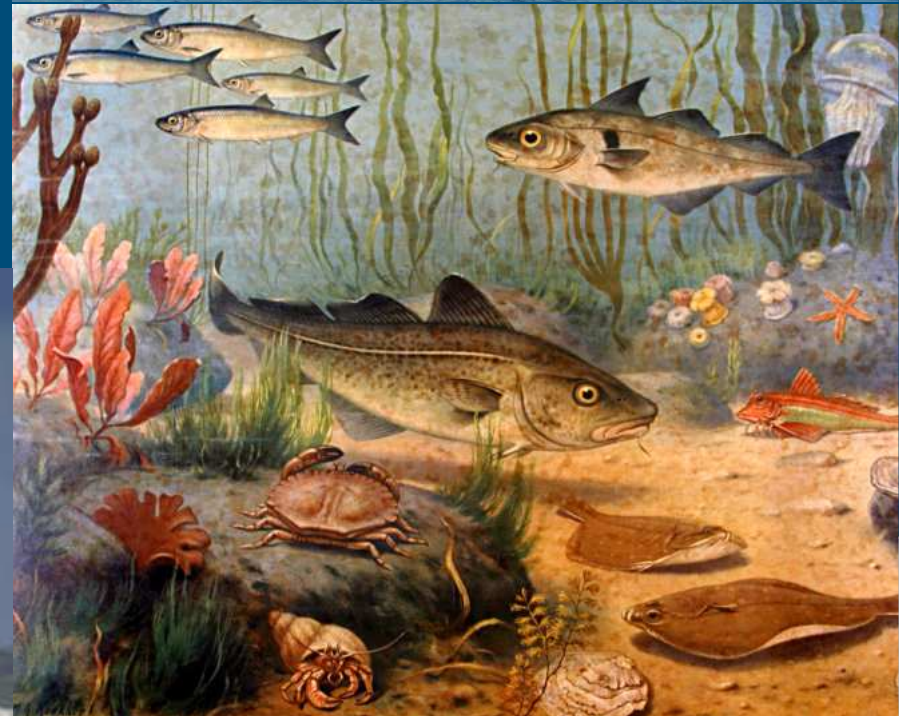
IPOP Research themes

1. The changing marine ecosystem
2. Ecologically optimized coastal defense
3. New production in sea and coastal areas
4. Climate proof delta metropolis
5. Governance



1. Changing marine ecosystem

- The North Sea has greatly changed
- We study effects of climate change and human use
- Study of sustainable exploitation



Project: Metapopulation research on terns



Problem: protected species breed in artificial habitats (harbours)
Q: Can we make the birds move to new (artificial) habitats?

Method: metapopulation model

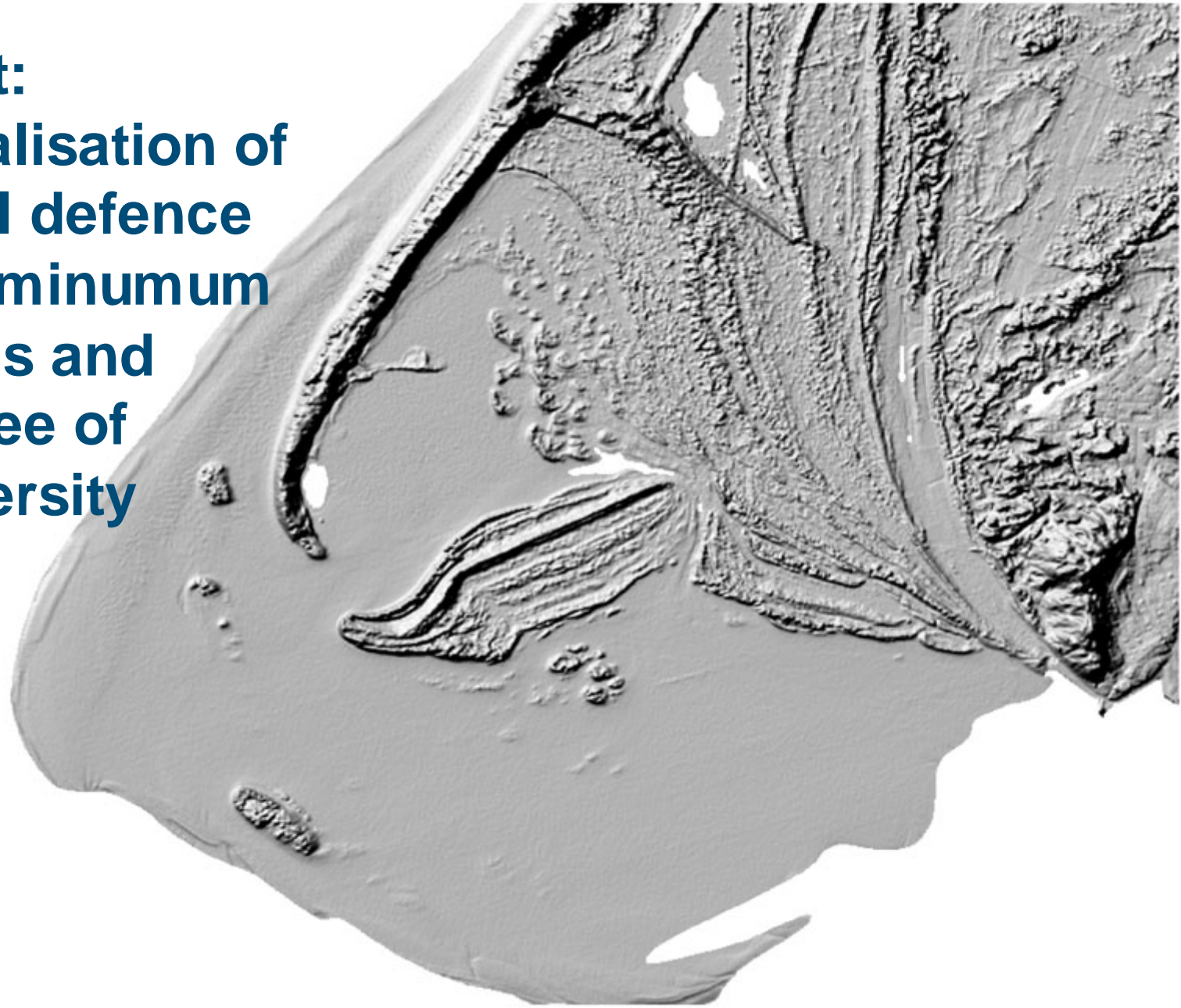


2. Ecologically optimized coastal defense

- How can we use ecological and geological processes to protect the coast?
 - Soft coastal defence (dunes, etc)
 - Hard coastal defence (dikes, etc)



**Project:
Optimalisation of
coastal defence
with a mininum
of costs and
garantee of
biodiversity**

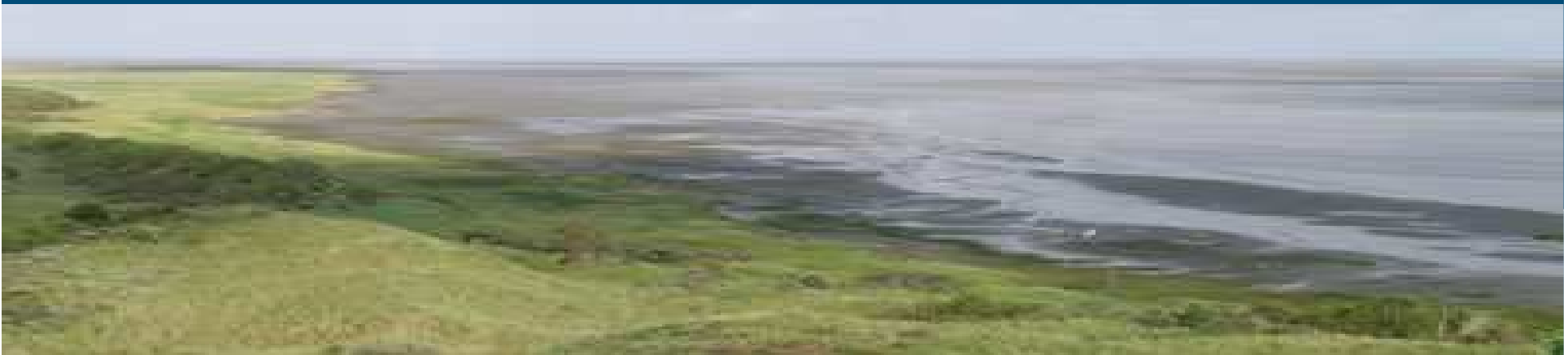
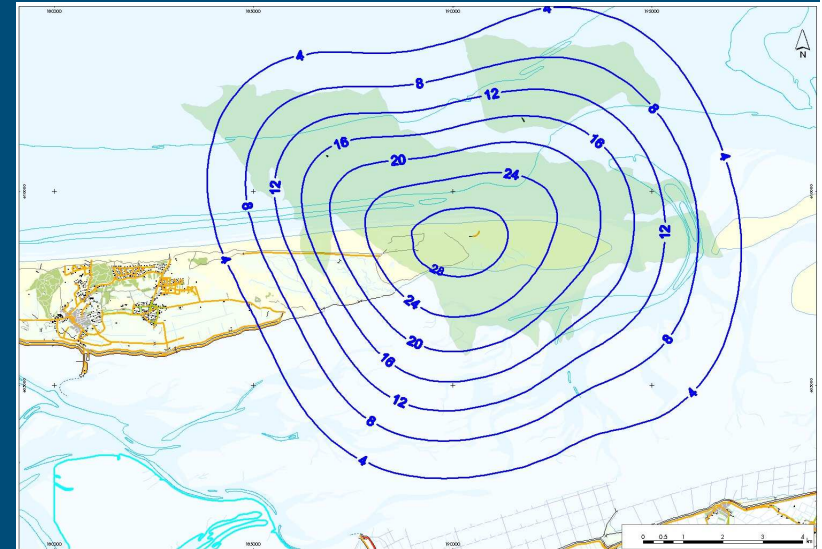


0 125 250 500 Meters



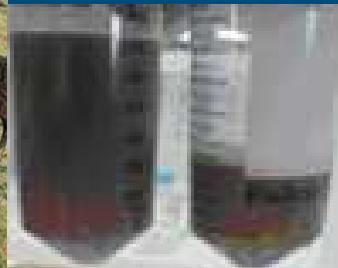
Project: subsidence as an example of sea level rise

- 30 cm subsidence near island of Ameland
- Same magnitude as sea level rise
- Study of effects on salt marches (since 1980s)



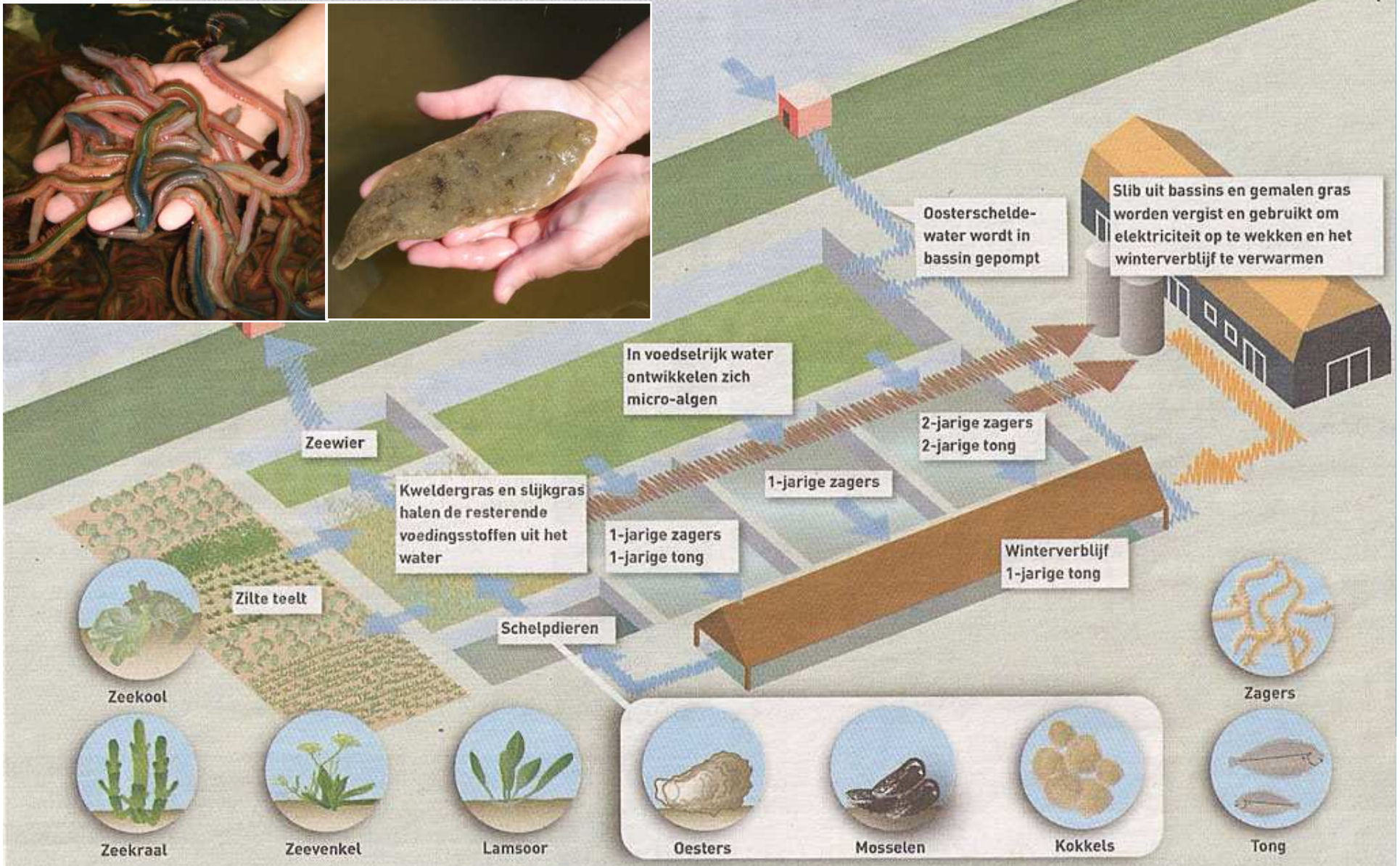
3. New production in sea and coastal areas

- Sea level rise causes increase in salty agricultural land
 - Can we grow different plants and cattle?
 - How was it done in the past?
- Aquaculture in closed systems
- Medicines from sponges





Project: Mixed aquaculture on land (sole)



4. Climate proof delta metropolis

- Climate change and sea level rise:
 - What are consequences for the Netherlands?
 - What are the opportunities?



Amersfoort



5. Governance



- Project about climate change:
 - Climate change forces governments to adapt their policy/rules/etc. How do they cope with it?
- Project about fisheries:
 - The government want to stimulate innovation, cooperation and self regulation with help of policy arrangements
 - Do we need new forms of trust and governance for a sustainable fishery?



Newly developed education

- MSc: Management of Marine Ecosystems
- Introduction Marine Ecosystems
- Marine Resources Management
- Saline agriculture
- Green hydraulics
- Advanced marine biotechnology
- Climate studies

Programme summary
The worldwide growth in population and economic activities is placing environmental pressure on the sea. Fishing reduces some marine species, boaters can destroy coral reefs, and pollution threatens entire ecosystems. Sustainable management of the sea is clearly necessary.

The Management of Marine Ecosystems programme provides an integrated approach to these problems. Bottom-up approaches range from the study of dynamic interactions between species, their environment and human interference. Top-down approaches start with the analysis and development of realistic goals and strategies, their implementation, the fine-tuning of their economic effect and the evaluation of their ecological effects.

MANAGEMENT OF MARINE ECOSYSTEMS

Management of Marine Ecosystems
Management of Marine Ecosystems is provisionally offered as a bundle of specialisations that form part of the MSc Environmental Sciences (see next page) and the MSc Aquaculture & Fisheries (see next page).


Specialisations
A wide range of approaches is possible to realise the sustainable management of marine ecosystems. There are four specialisations ranging from predominantly natural scientific approaches (biology, chemistry, toxicology) to interdisciplinary approaches (economics, policy, public administration).


Specialisation: Marine Environmental Quality (MSc Environmental Sciences)
This specialisation focuses on the physical, chemical, toxicological and biological processes that occur in the sea. Marine environmental quality is related to the functioning of marine ecosystems, while insights into these relations provide a foundation for management and policy recommendations.

Specialisation: Marine Ecology (MSc Aquaculture & Fisheries)
This specialisation focuses on the ecological processes that form the basis for marine food chains, the interaction between species and the functioning of the various ecosystems. The sustainability of marine ecosystems in relation to human interference is analysed, including climate change, fisheries and habitat destruction.

Specialisation: Marine and Coastal Resource Management (MSc Aquaculture & Fisheries)
This specialisation focuses on the sustainable management of the living resources in the sea. Models of population dynamics and fishing yield are applied. International regulations, management tools and economic driving forces are studied and their impact on marine and coastal resources evaluated.

Specialisation: Governance of Marine and Coastal Systems (MSc Environmental Sciences)
This specialisation focuses on the sustainable governance of marine systems aimed at commercial activities, non-governmental and government organisations. The goals and strategies are analysed, alternatives are developed and their effects are evaluated in relation to both the organisations and ecosystems involved.



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7 PhD projects, 1 Post-doc

Project	Name
1. Informational governance on marine environmental protection: fishing and pollution from shipping at the North Sea	Hilde Toonen
2. Institutional arrangements to reduce decision making uncertainty in the Dutch flat fish sector: a contractual approach	
3. Coping with stochasticity in fish stocks under costly capital adjustment and high information costs	Diana van Dijk
4. Ecological optimization of dynamic coastal defence	Mink Zijlstra
5. Sole bred in captivity	Julia Mas Muñoz
6. Saline threats for agriculture; Saline opportunities for ecology	Esther Vermue
7. Allergen-free mussels	Gerco den Hartog
8. Immortalized sponge cell cultures	Klaske Schippers



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