

Current status of assessment of environmental quality and inventories of nature values in Estonian coastal waters of the Baltic Sea

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Outline of the presentation

Introduction

Inventories of nature values in coastal sea areas

Methods used

Examples of inventory projects (2005-2008)

Marine environmental monitoring programme

Principles and sampling strategy

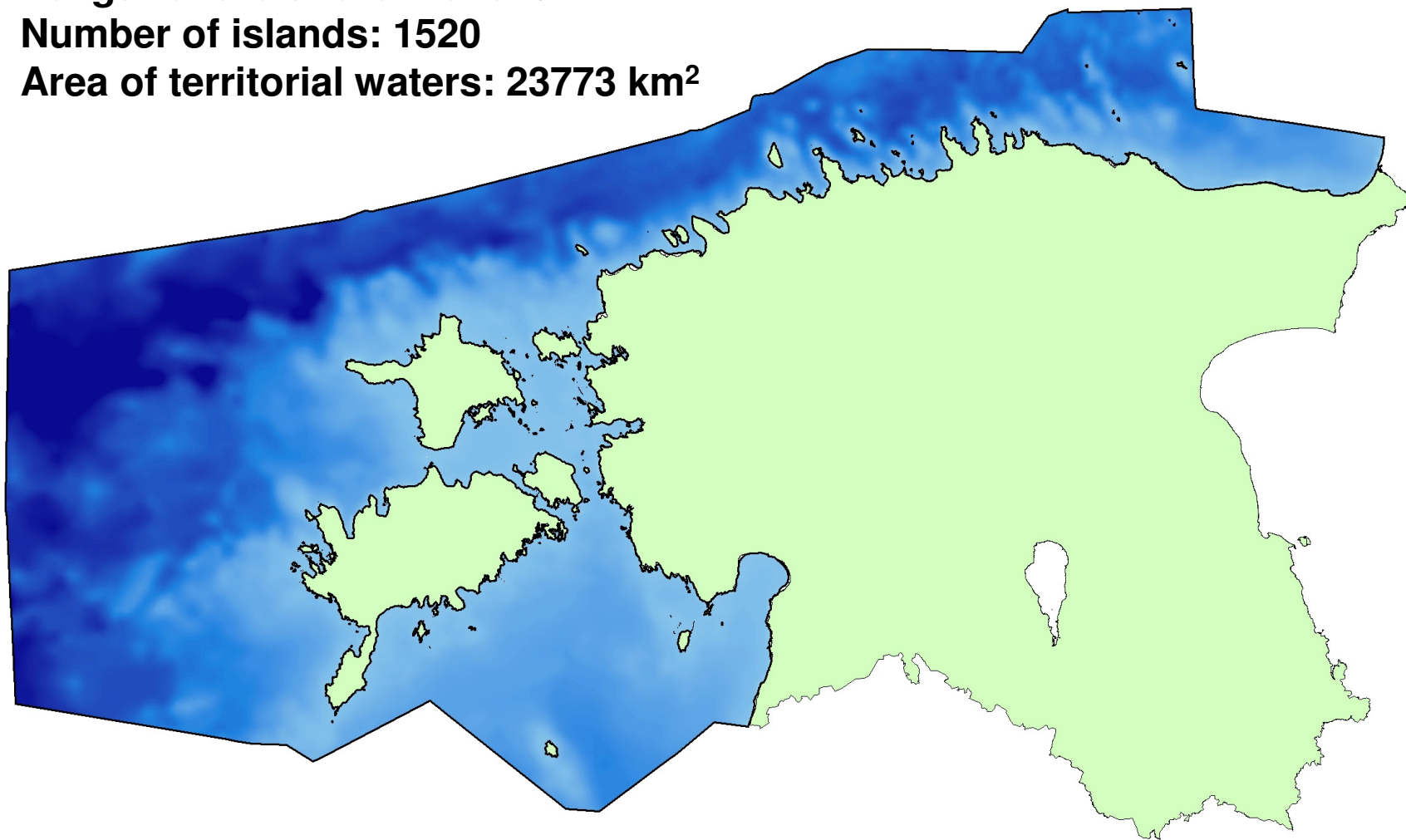
Conclusions

Estonian coastal waters of the Baltic Sea

Length of the shoreline: 3794 km

Number of islands: 1520

Area of territorial waters: 23773 km²



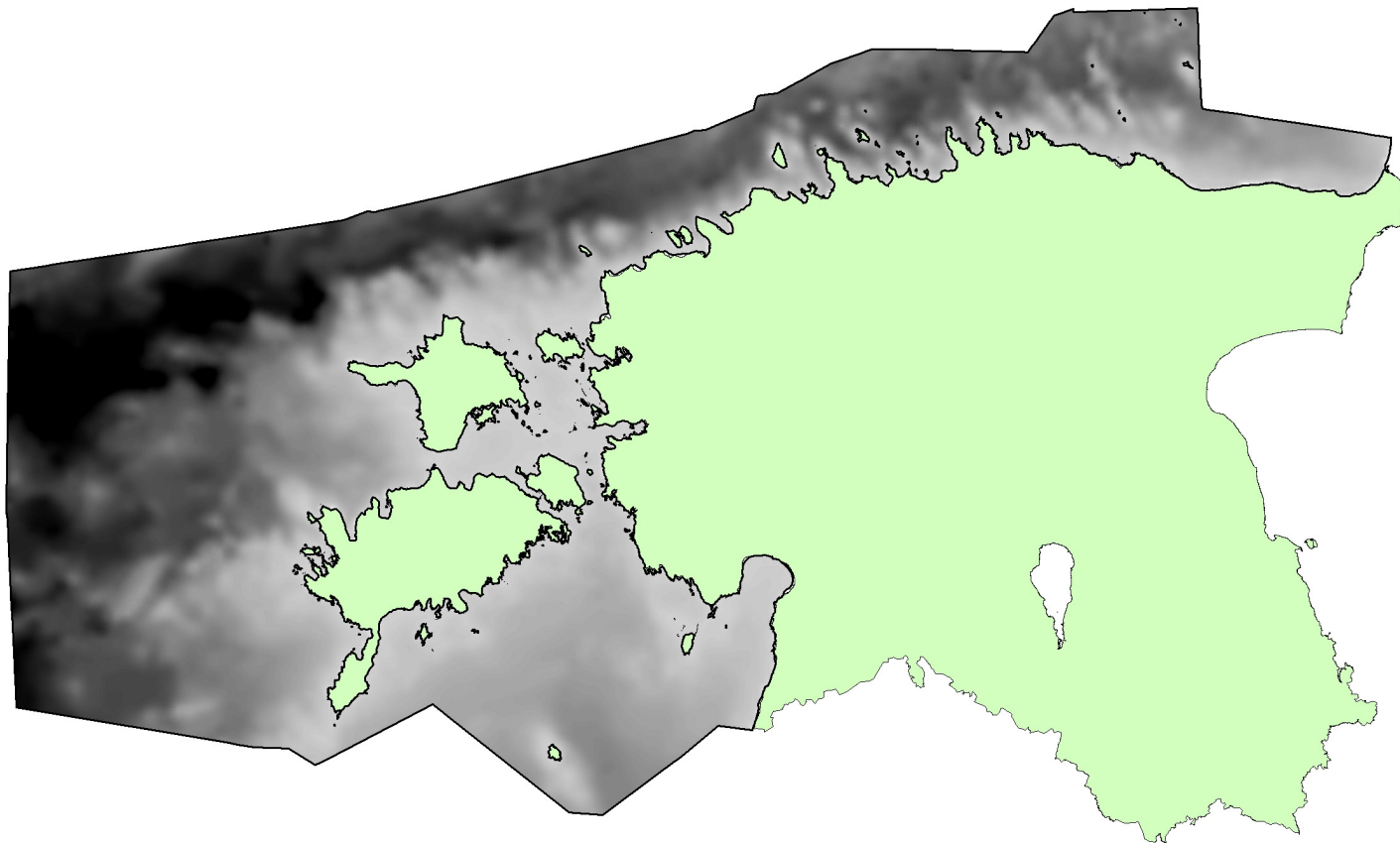
0 25 50 100 KM

Estonian coastal sea conditions

Salinity: 3-7 PSU

Ice cover: up to 90 days/year

Maximum depth: 140 m



0 25 50 100 KM

Existing knowledge on marine nature values

History

Marine research traditions date back centuries.

After WWII marine research concentrated on open waters (N Atlantic and Baltic Sea)

Physical oceanography as priority

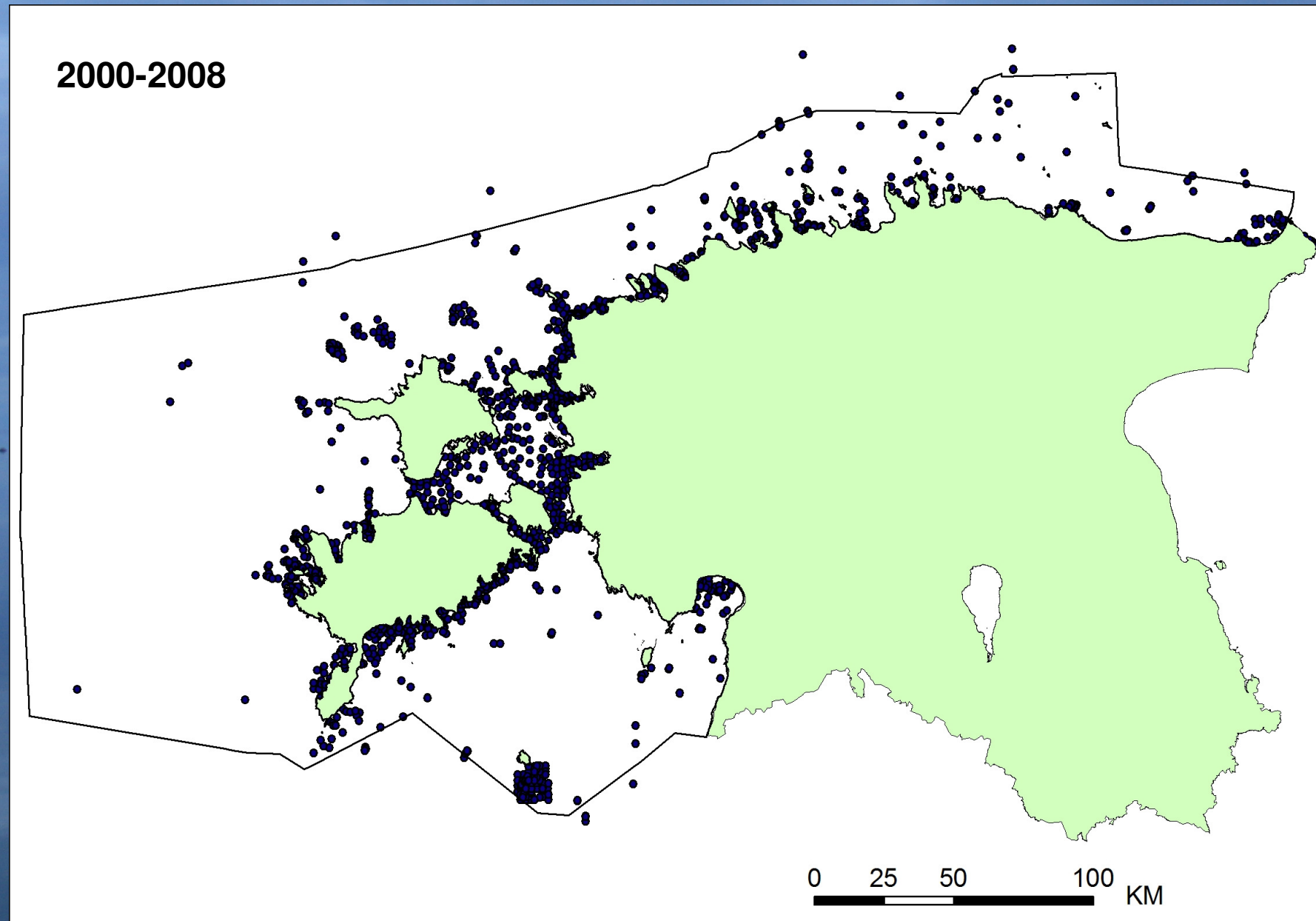
Present state:

Information on marine biodiversity of Estonian coastal waters insufficient

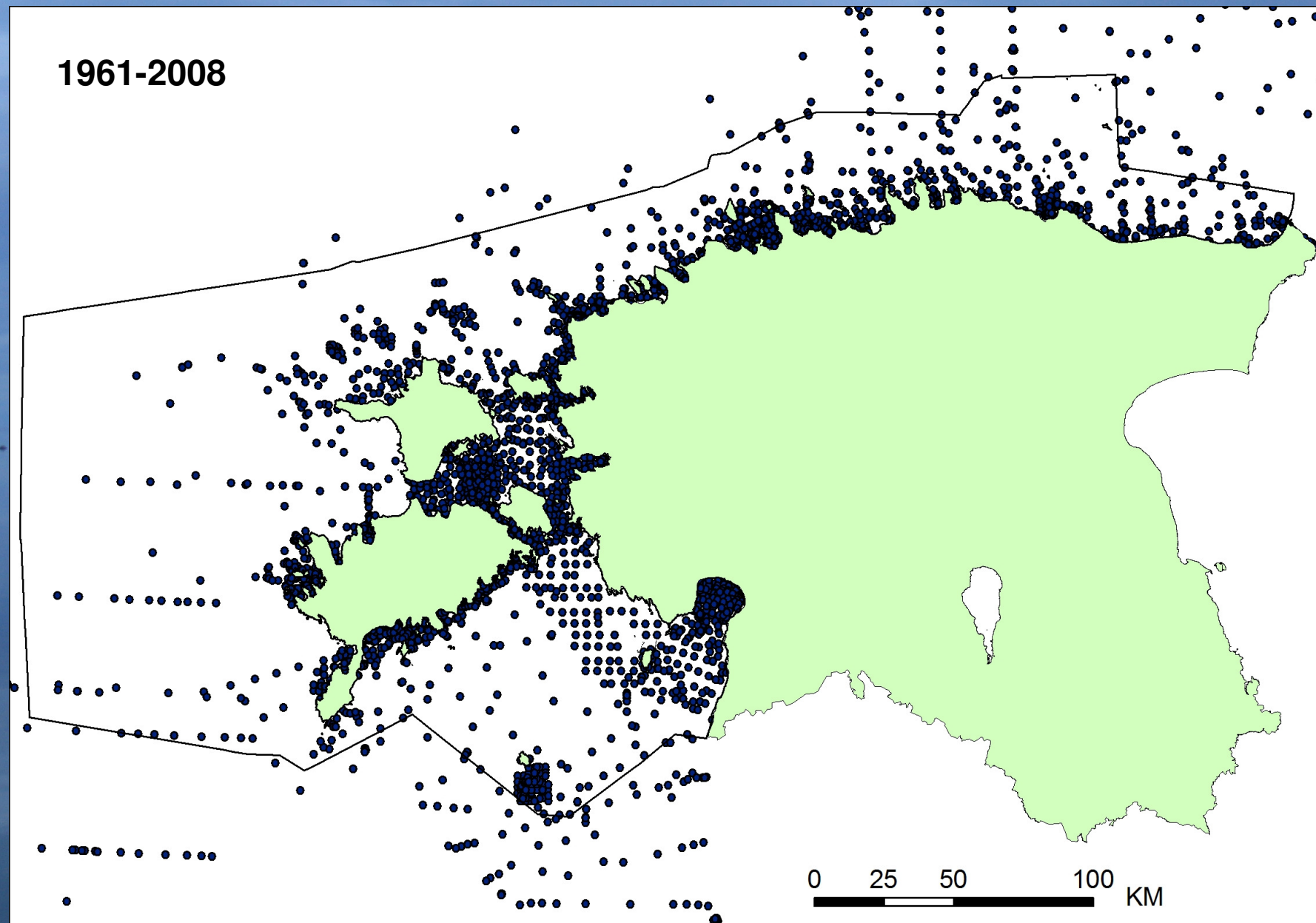
Long-term time series of physical and biological features available only for some areas (Pärnu Bay, Tallinn Bay)

Geological and bathymetrical information not sufficient in shallow coastal areas

Example: existing data on bethic conditions and communities



Example: existing data on bethic conditions and communities



Inventories of nature values in Estonian coastal sea

First large scale complex inventories started in 2005
(Baltic Life project)

Currently inventories carried out for:

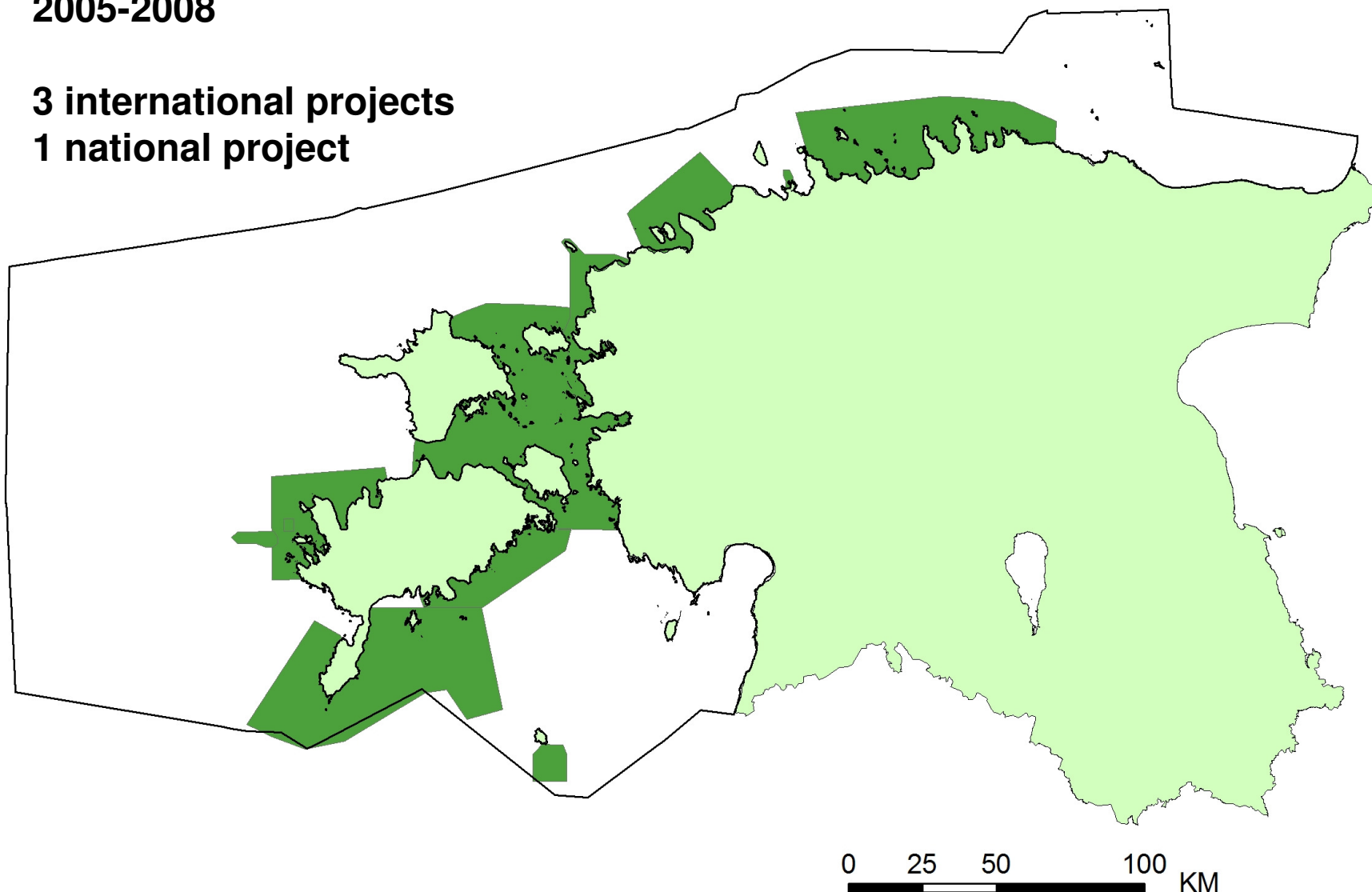
Establishment and development of Natura 2000 and
MPA network in marine coastal areas

EIA procedures for large technical projects (offshore
wind energy parks, construction and modernisation of
bridges and harbours, establishment of new fishfarms
etc.)

Sea areas covered by inventories of nature values - Natura 2000

2005-2008

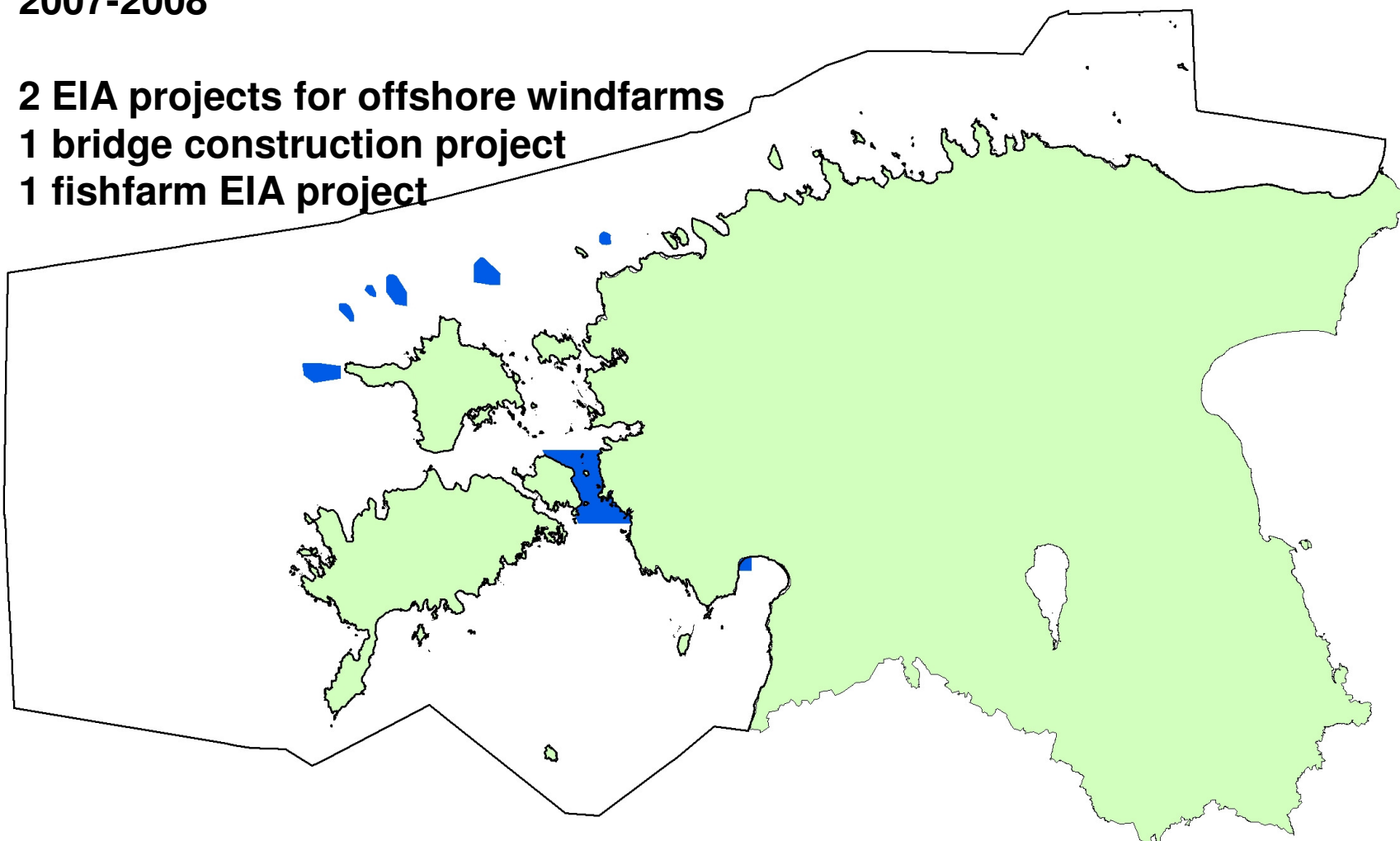
**3 international projects
1 national project**



Sea areas covered by inventories of nature values, EIA studies

2007-2008

**2 EIA projects for offshore windfarms
1 bridge construction project
1 fishfarm EIA project**



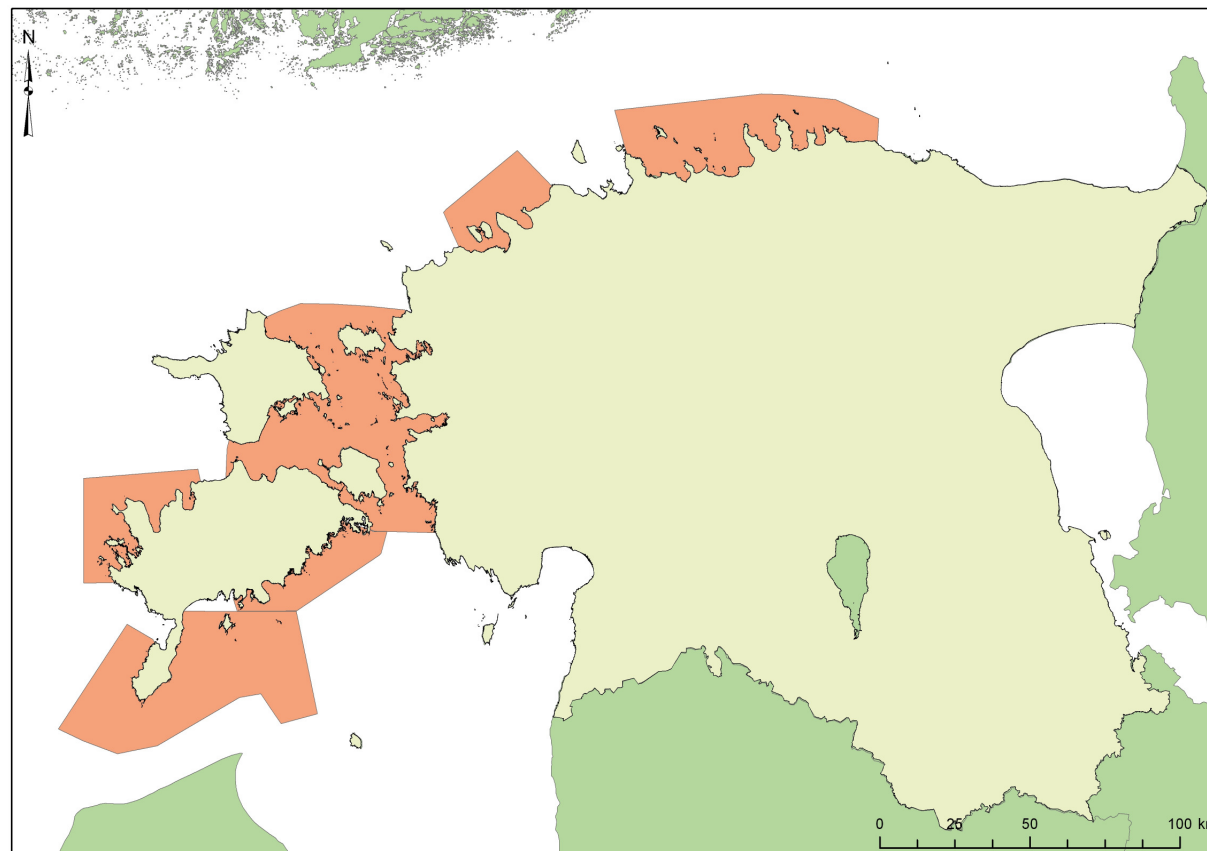
0 25 50 100 KM



marine protected areas
in the Eastern Baltic Sea

6 project areas

Inventories 2006-2007



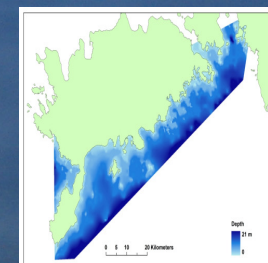
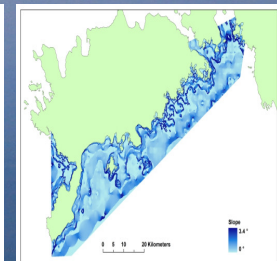
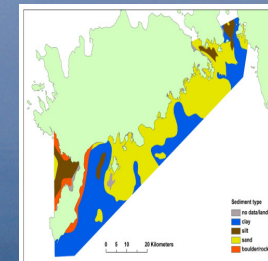
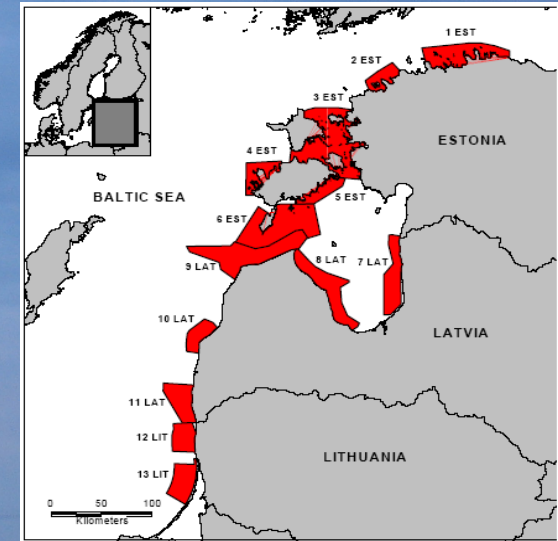
EU Life project: Marine Protected Areas in the Eastern Baltic Sea 2005-2009



marine protected areas
in the Eastern Baltic Sea

Objectives:

- Completing the establishment of Natura 2000 in the marine territories of Estonia, Latvia and Lithuania (site selection, designation, protection rules and management plans)
- Assessing and reducing the impact of fishery by-catch on target bird and mammal species.
- Assessing and addressing other threats to marine Natura 2000 sites (e.g. caused by constructions /developments, disturbance of species by economic or recreational activities, pollution)
- Increasing public and stakeholder awareness on Natura 2000, marine protected areas and biodiversity.
- Promoting transboundary networking and capacity building on marine protected areas between the Baltic States, other EU Member States and Russia.

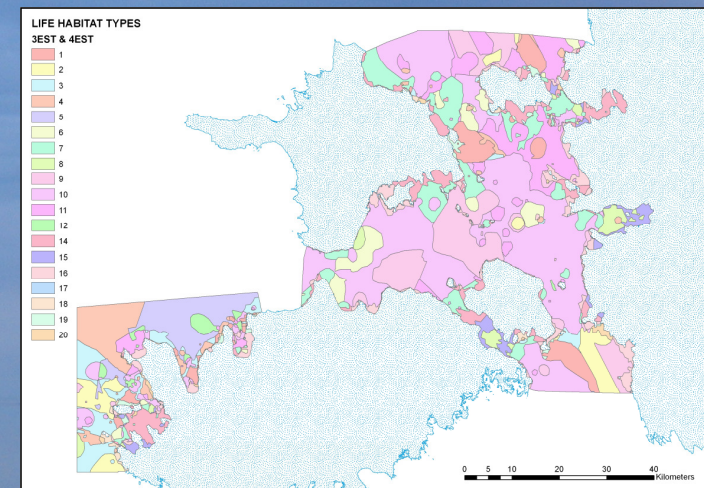




Habitat classification system developed for EU Life project “Marine protected areas in the Eastern Baltic Sea”

Classification system is based on:

- Exposure
- Bottom substrate
- Light availability
- Biological communities



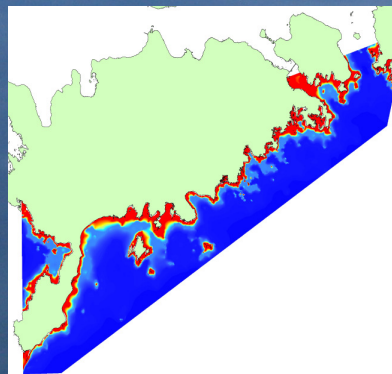
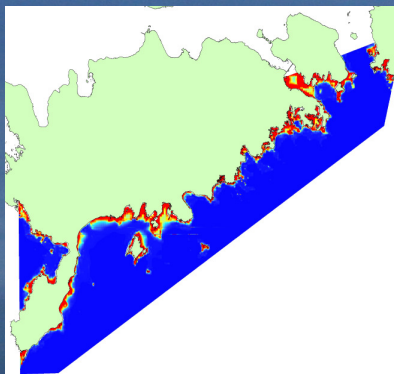
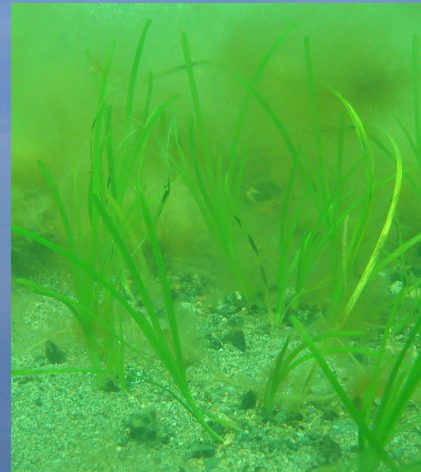
28 classification units for Eastern Baltic Sea





Modelling of distribution of habitat forming species

- Charophytes
- Bladder wrack
- seagrasses
- Blue mussel



Modelled features:

- Coverage
- Biomass
- Abundance

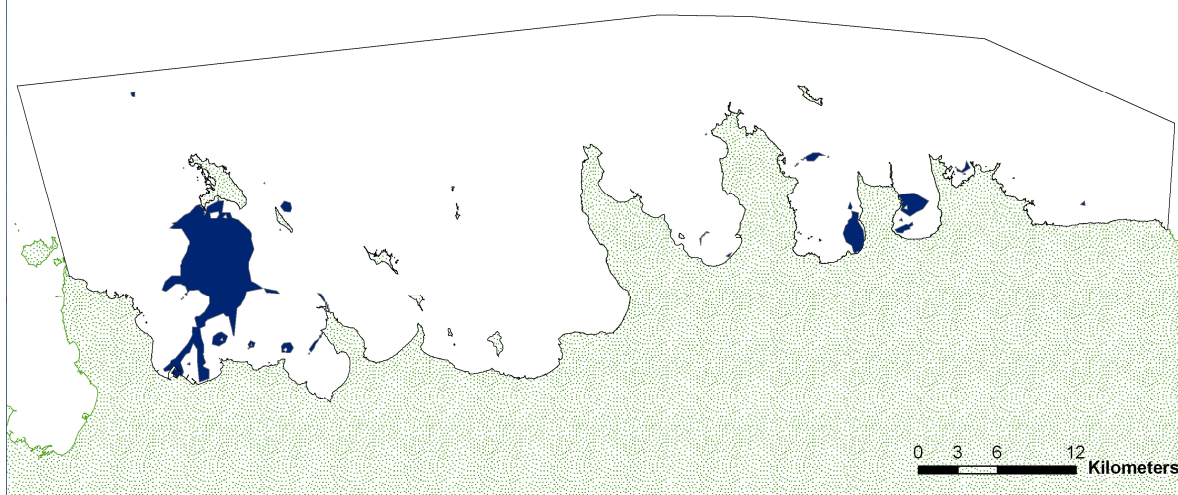


marine protected areas
in the Eastern Baltic Sea

Results of habitat inventories



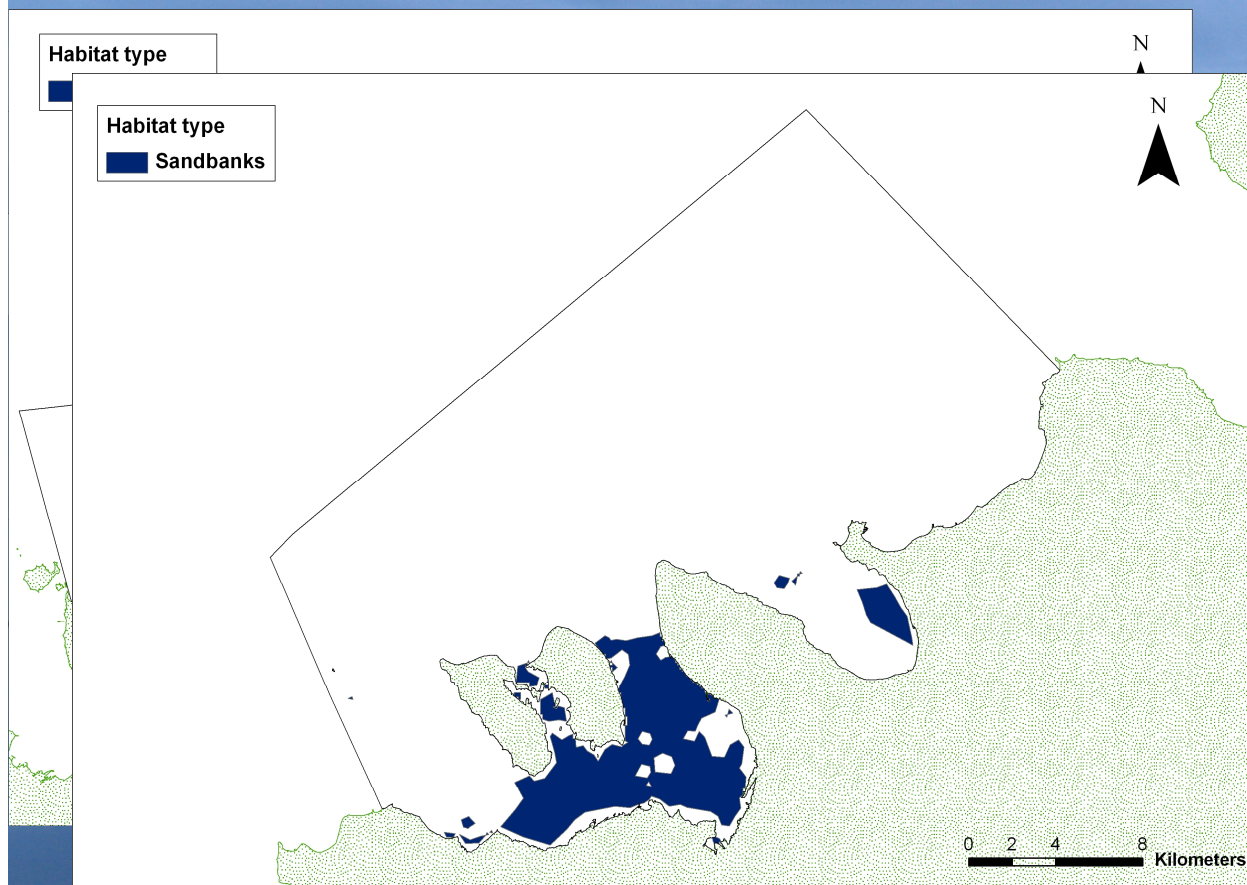
Habitat type
■ Sandbanks





marine protected areas
in the Eastern Baltic Sea

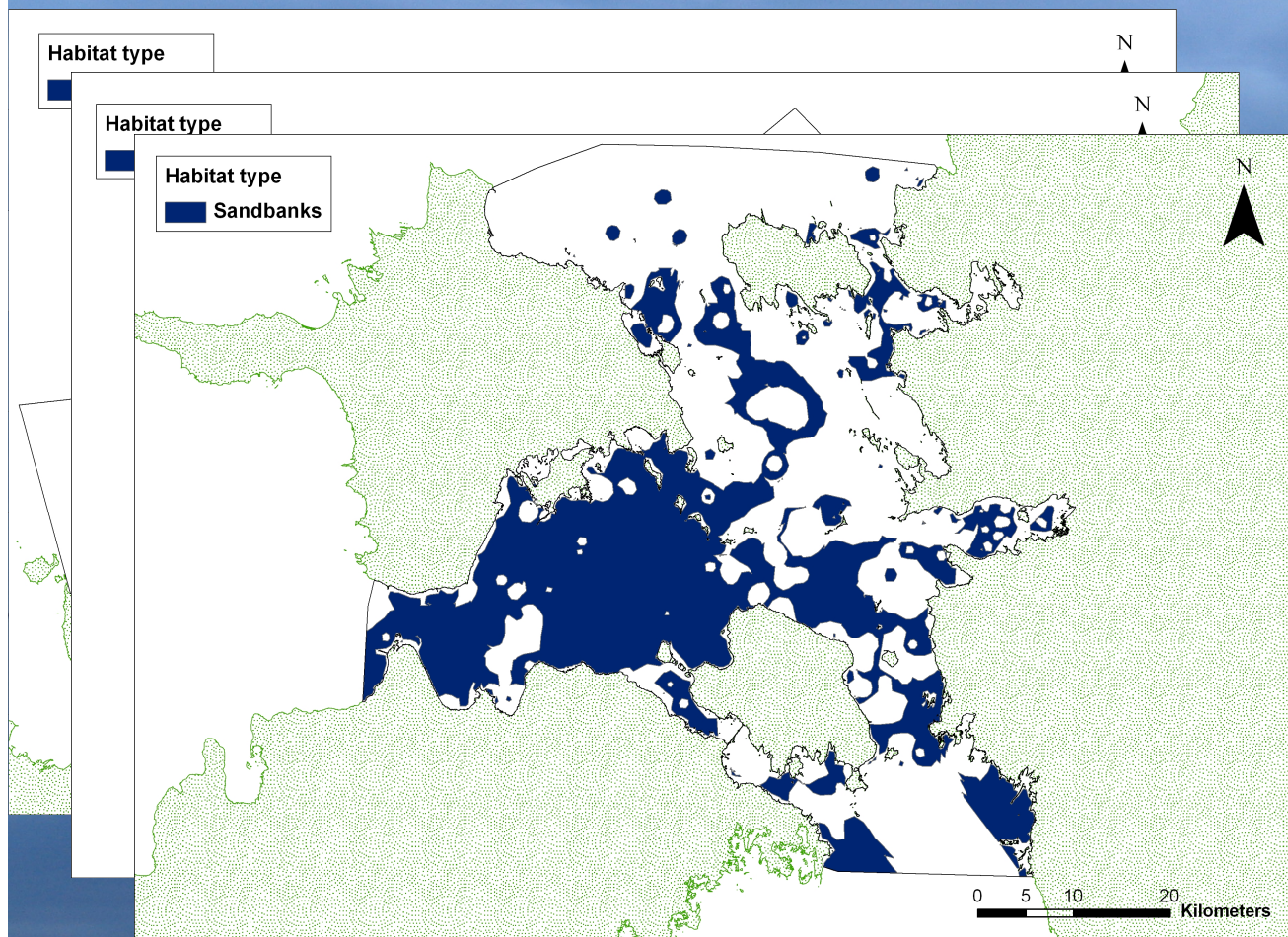
Results of habitat inventories





marine protected areas
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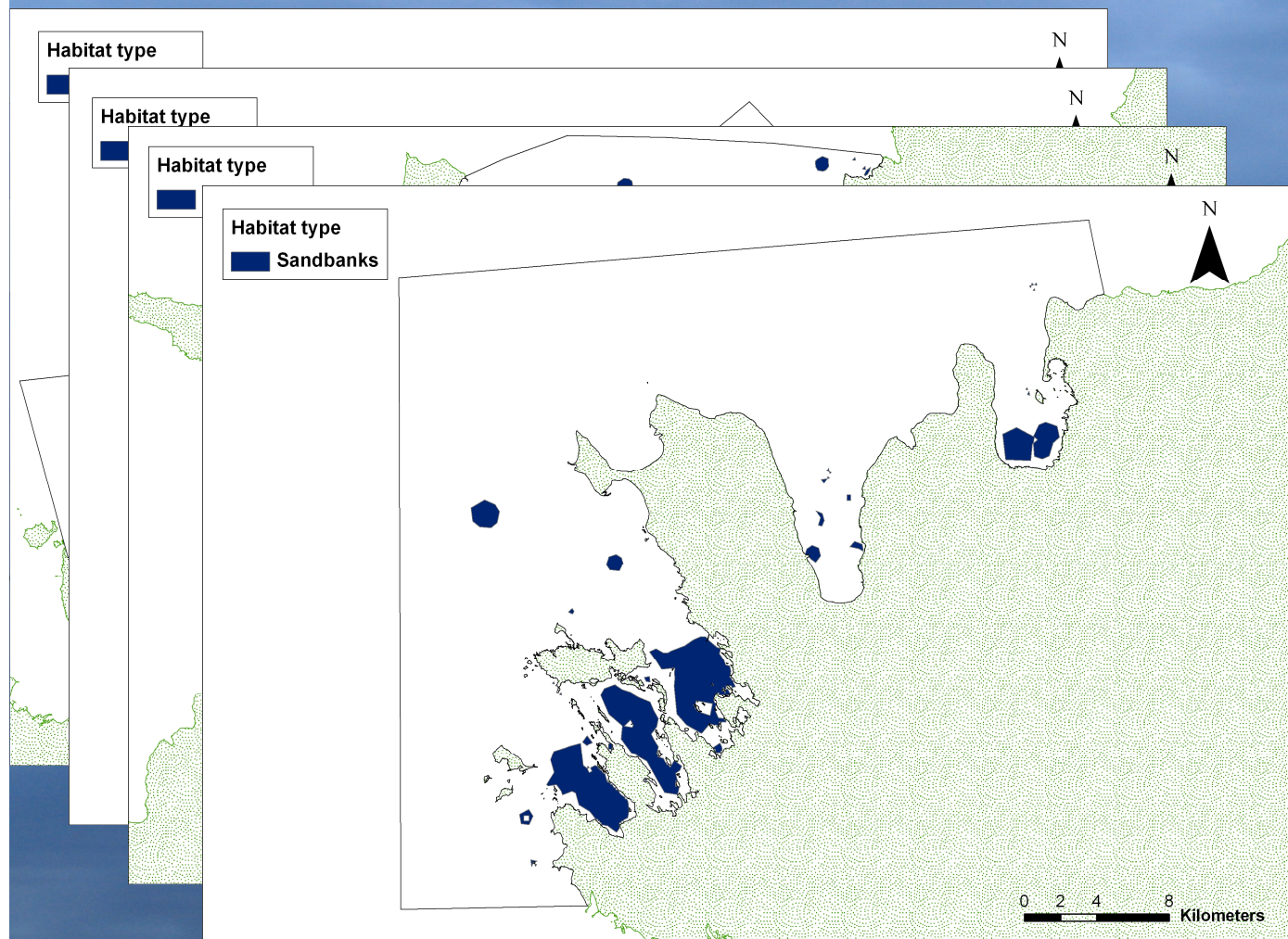
Results of habitat inventories





marine protected areas
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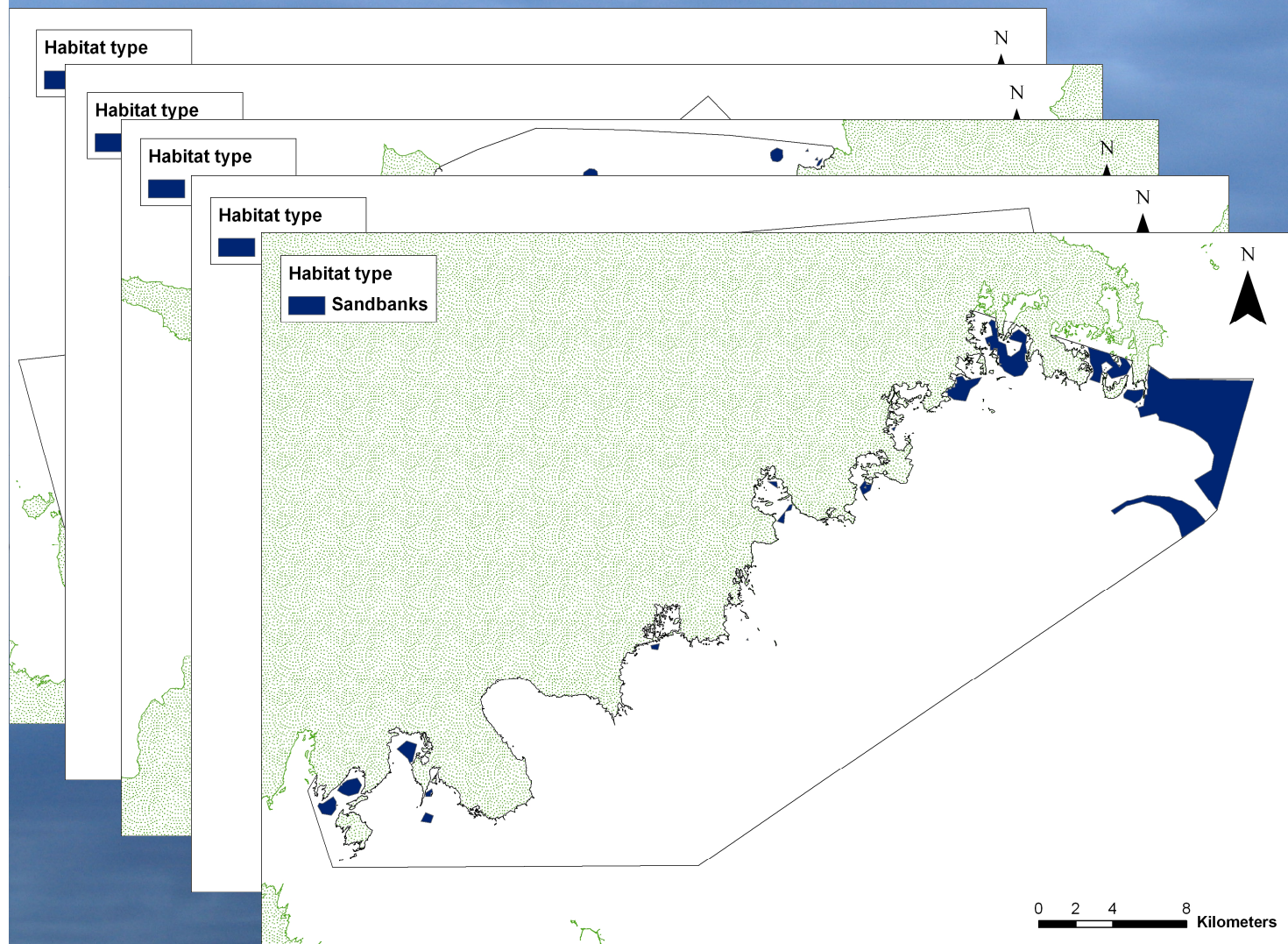
Results of habitat inventories





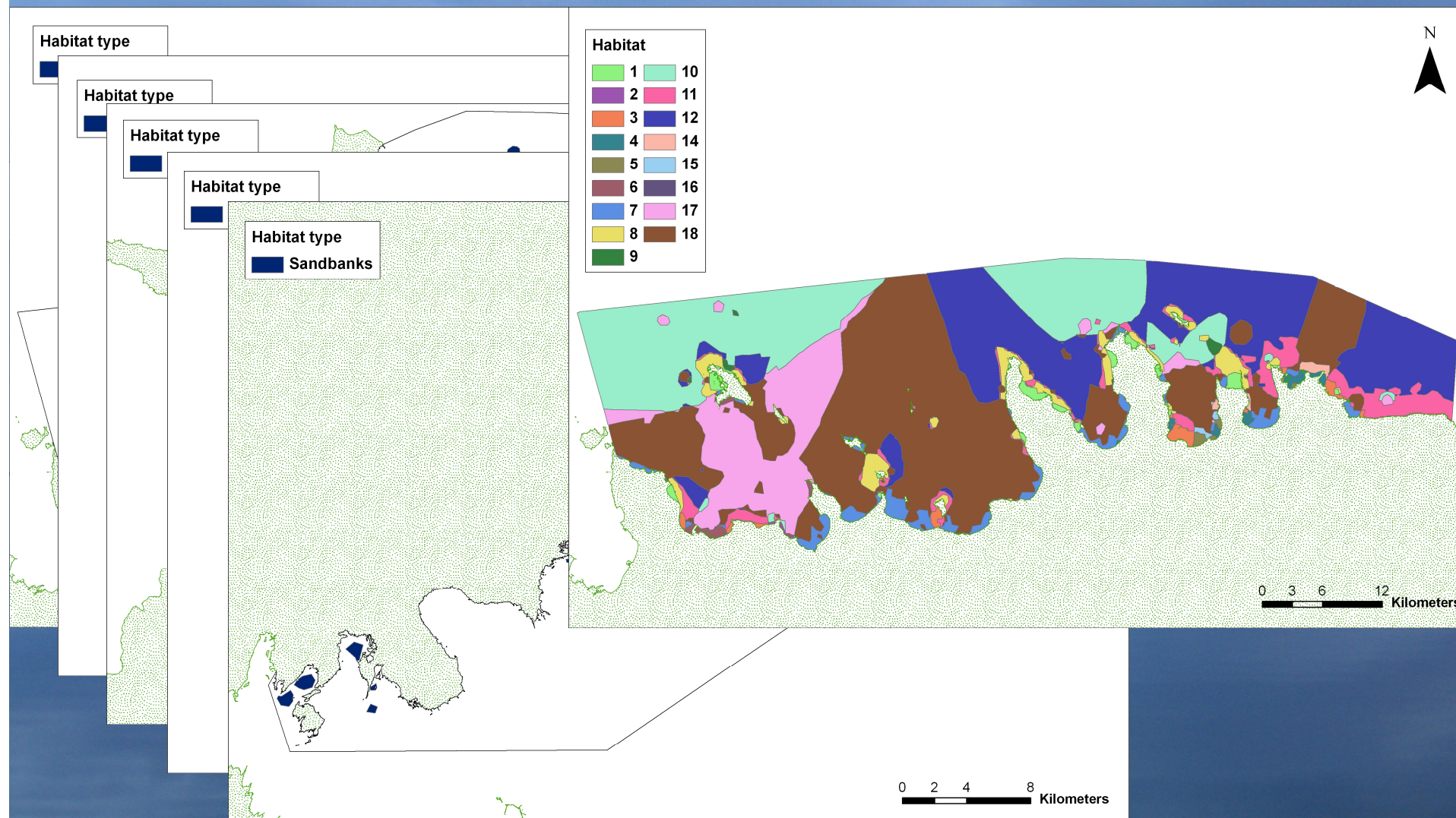
marine protected areas
in the Eastern Baltic Sea

Results of habitat inventories



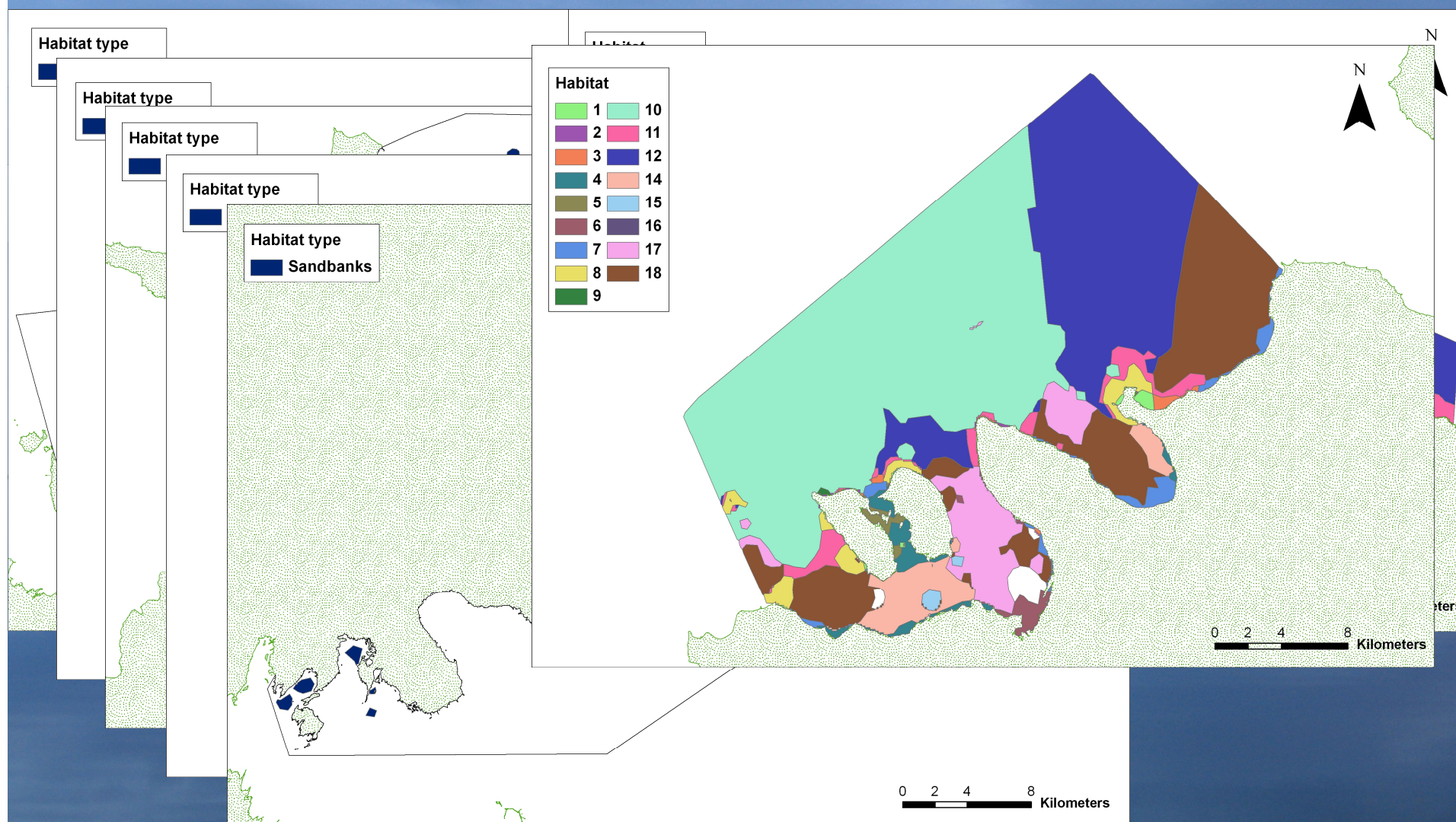


Results of habitat inventories



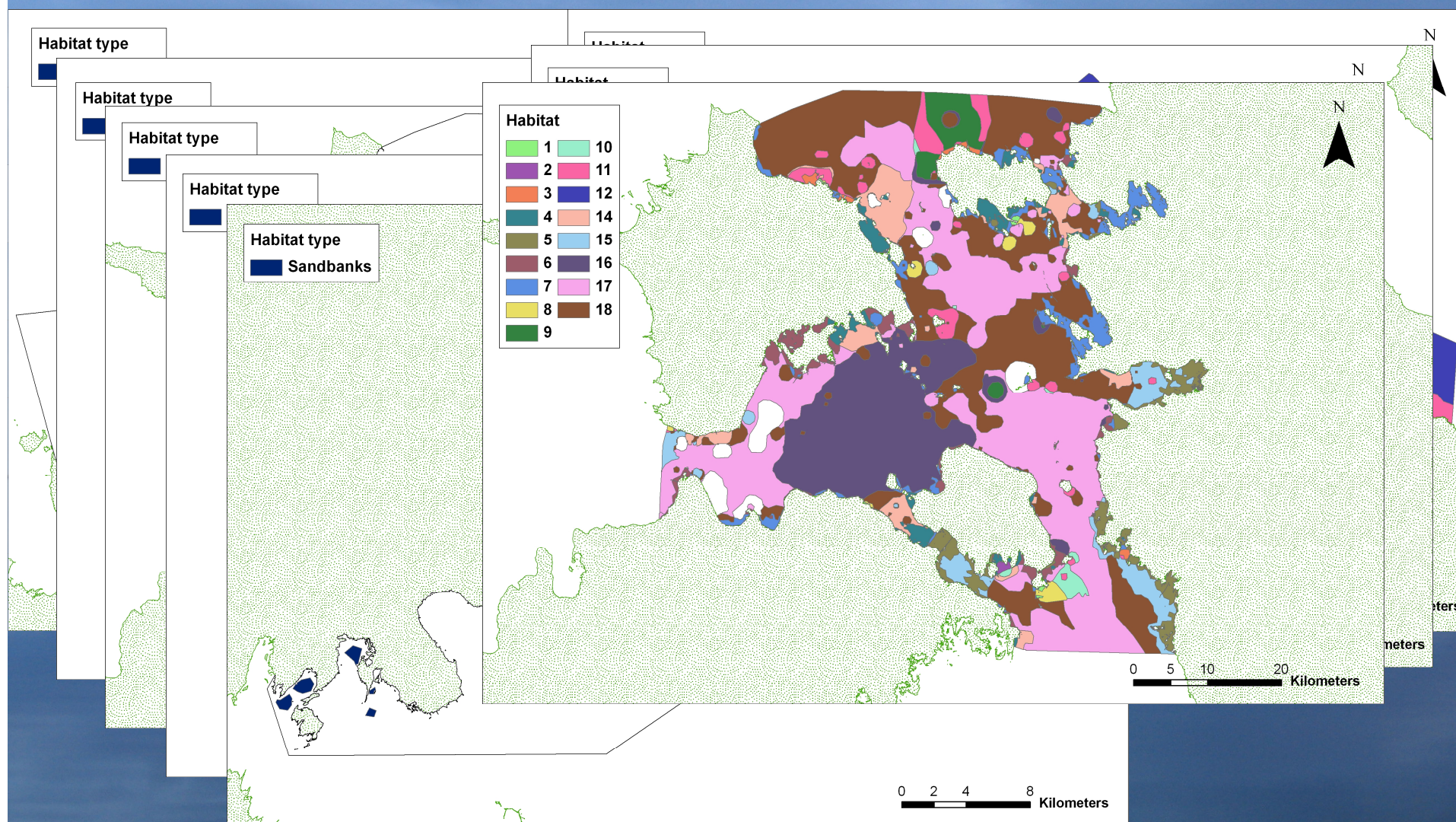


Results of habitat inventories





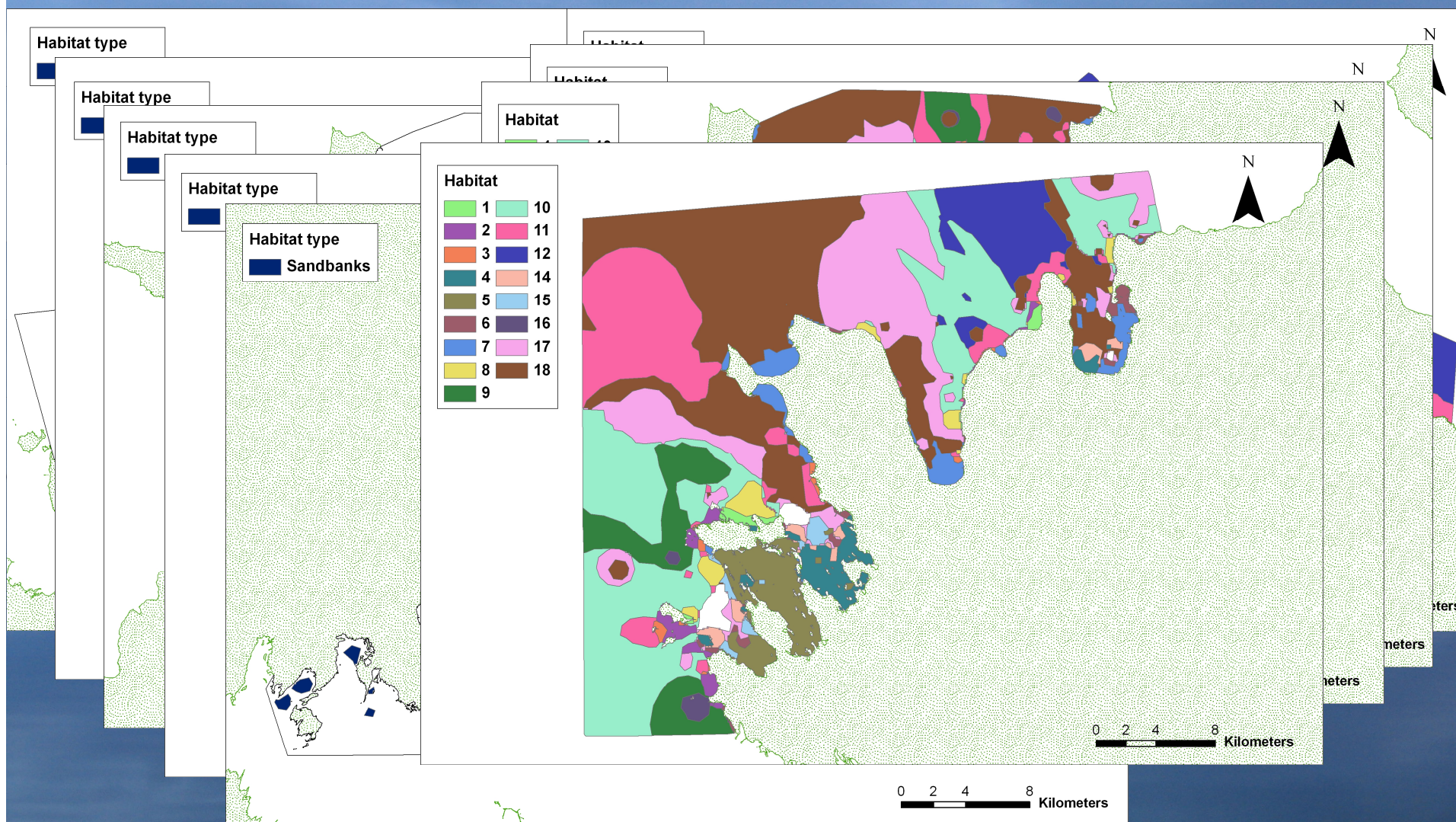
Results of habitat inventories





marine protected areas
in the Eastern Baltic Sea

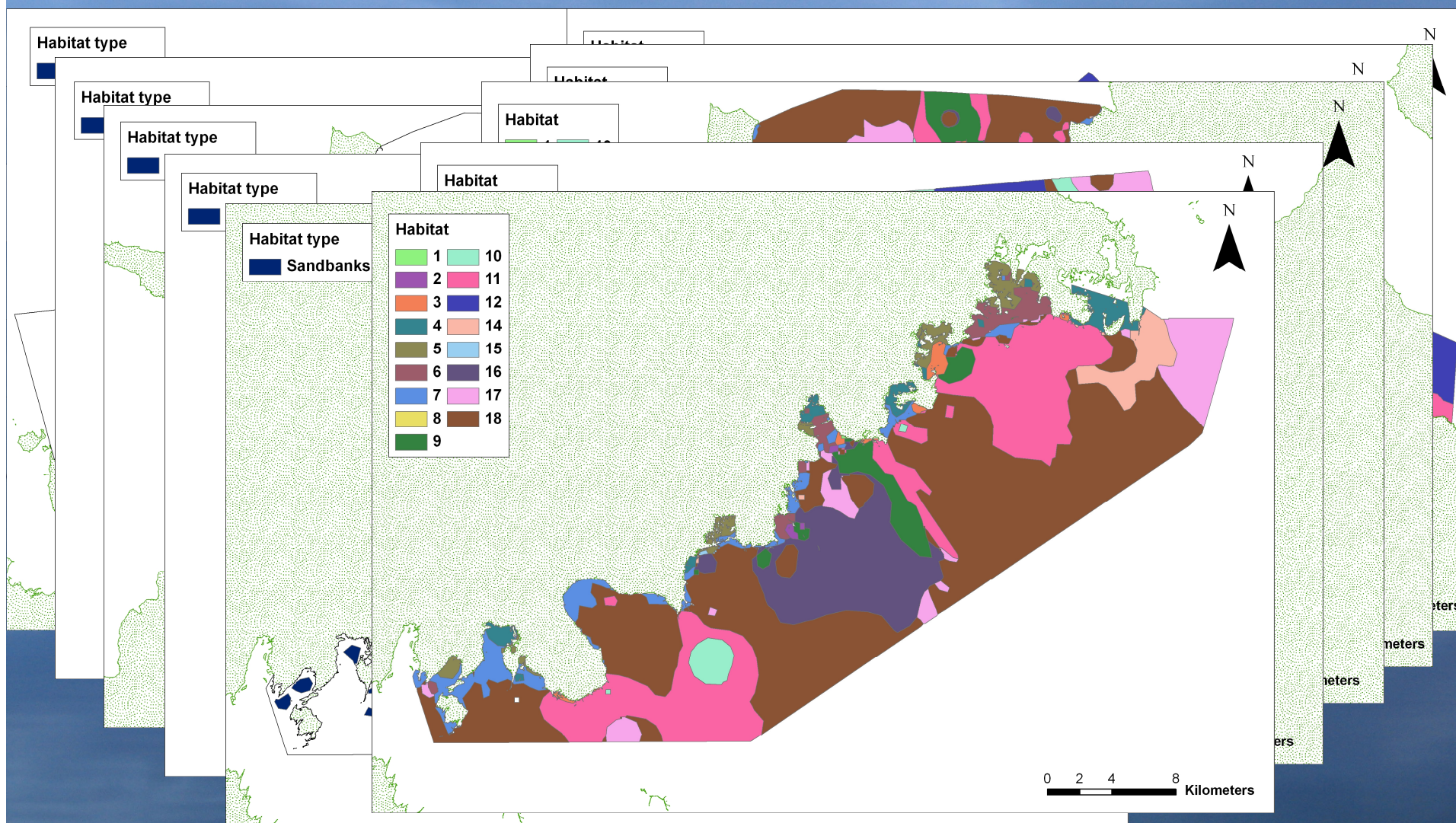
Results of habitat inventories





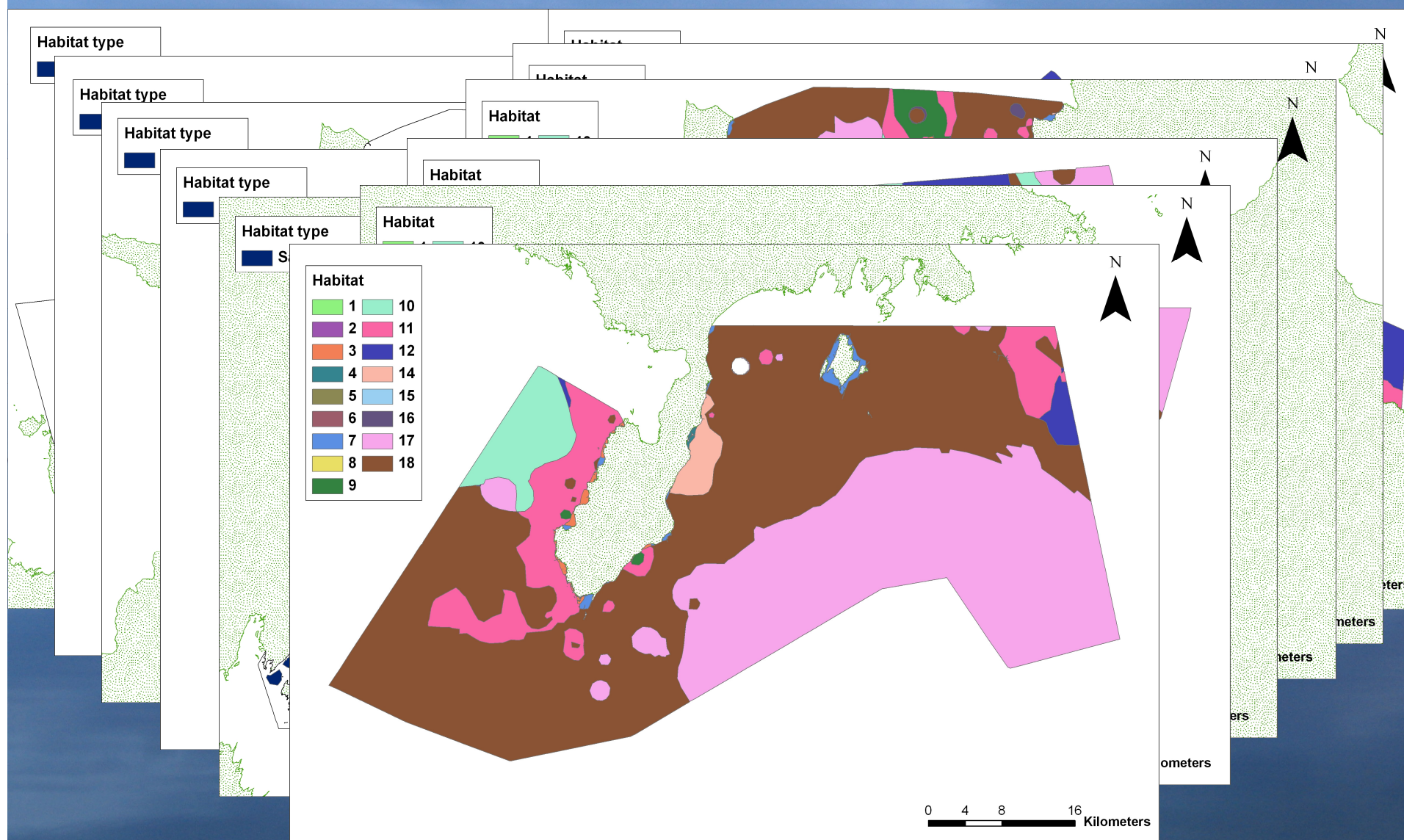
marine protected areas
in the Eastern Baltic Sea

Results of habitat inventories





Results of habitat inventories



Estonian marine monitoring programme 2006-2008

Designed to fulfill requirements of:

- EU Water Framework Directive
- HELCOM COMBINE

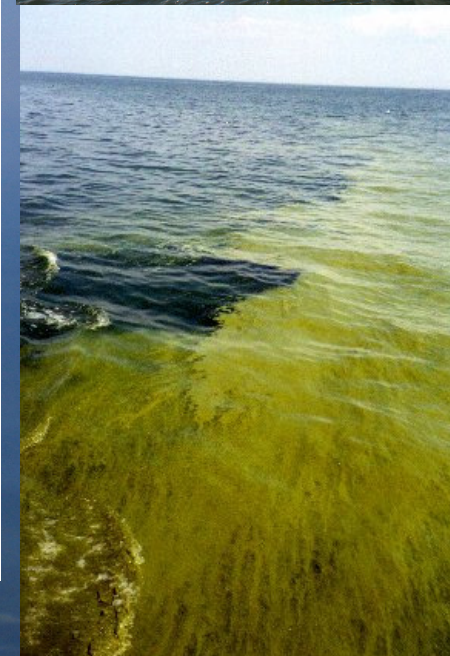
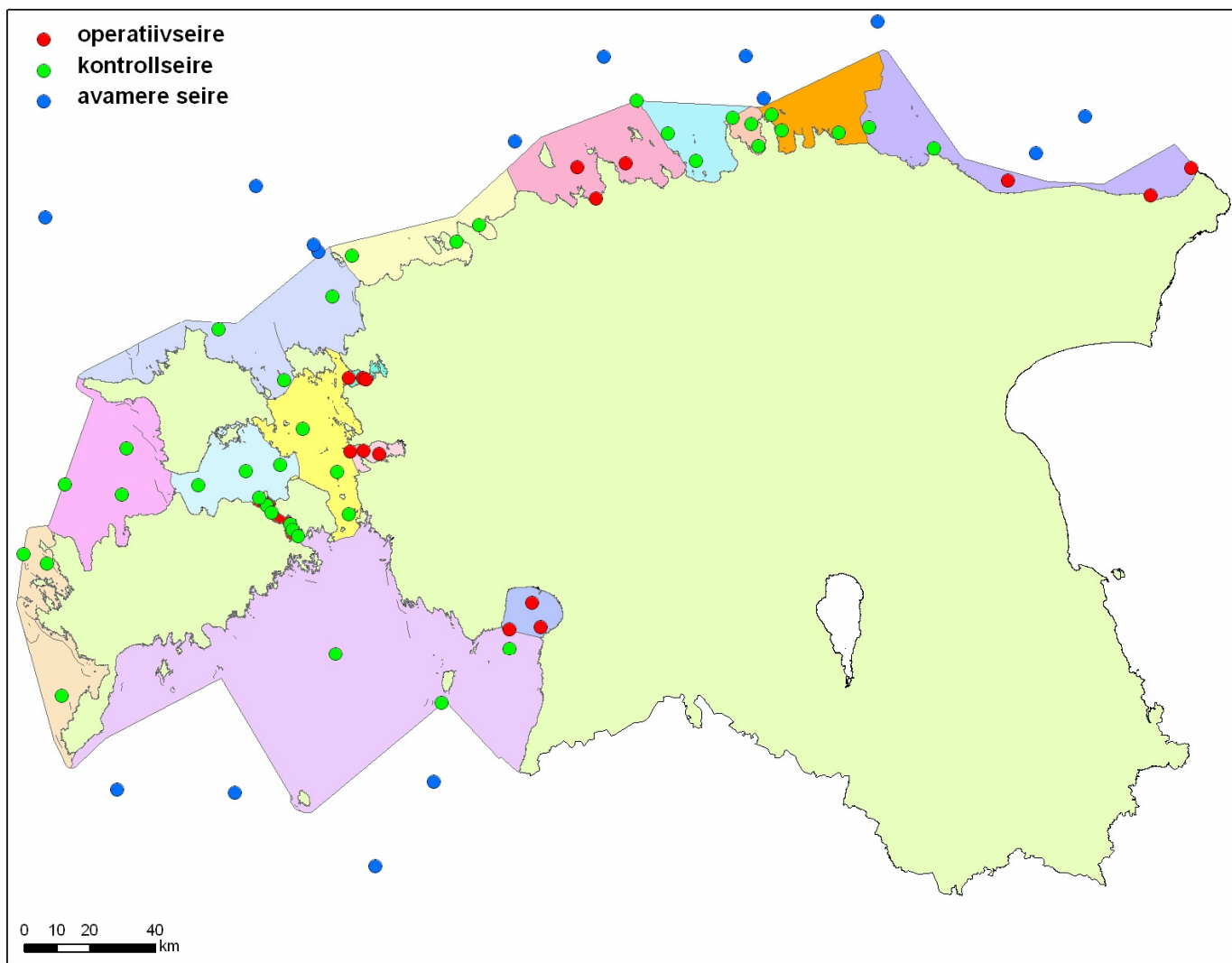
Coastal sea (1 nm from the baseline), 16 waterbodies

- Operational monitoring (5 waterbodies) annual measurements
- Surveillance monitoring (11 waterbodies) measurements covering one full year cycle once per assessment period (once per 3 years)

Open sea monitoring

- 17 stations measured 2 times per year
- SOOP measurements

Estonian marine monitoring, pelagic stations



Open sea monitoring: SOOP measurements

Equipment onboard:

- flow through fluorometer
- thermosalinograph

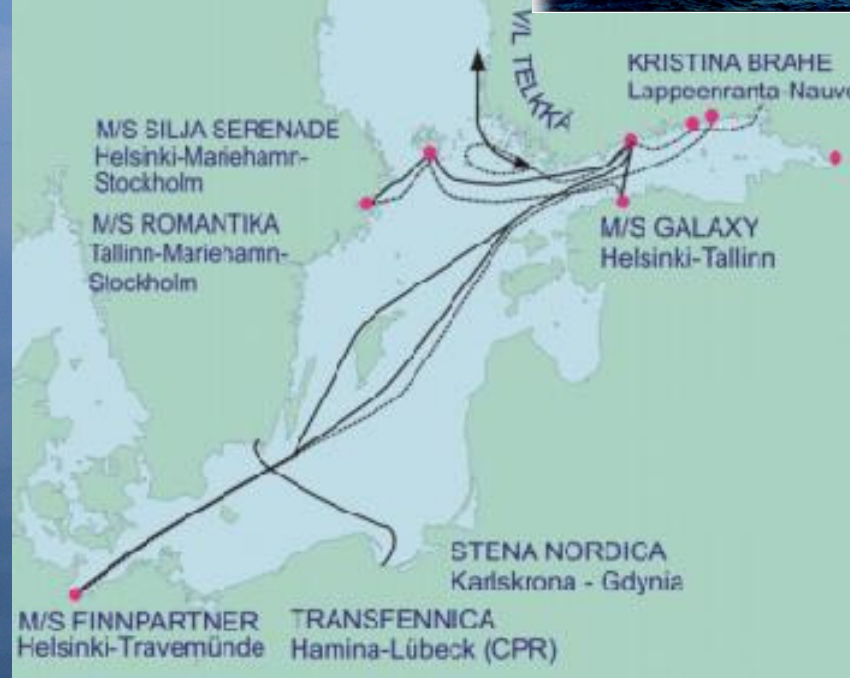
Parameters onboard:

- latitude, longitude, date, time
- in vivo chlorophyll a fluorescence
- temperature, salinity

On laboratory:

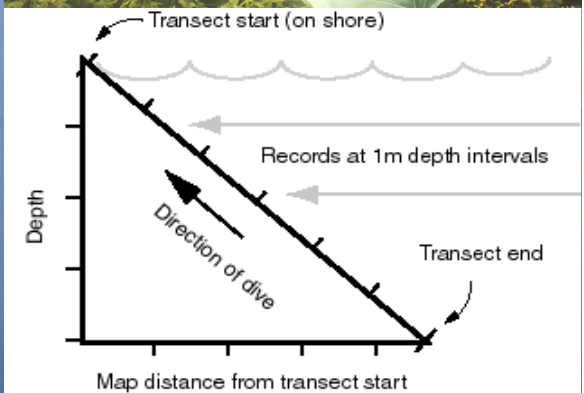
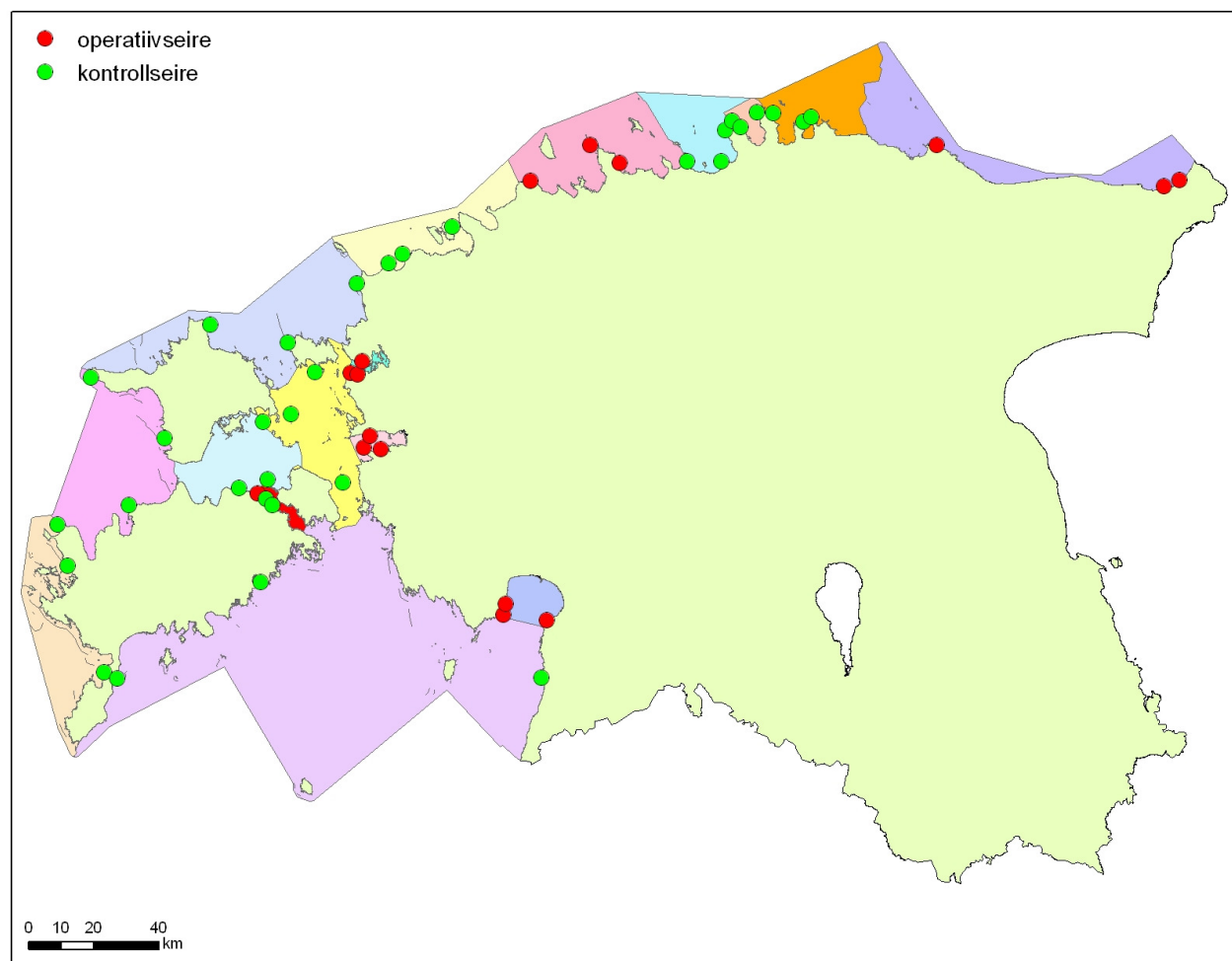
- chlorophyll a
phytoplankton species composition,
abundances
- phosphate and total phosphorus
- ammonium, nitrate and total nitrogen
- silicate
- partly turbidity

ALG@LINE
2006



EST partner institutions: EMI & MSI

Estonian marine monitoring, benthic vegetation



Conclusions

- Amount of spatial information on the quality and distribution of nature values in the coastal sea areas of Estonia is continuously growing but further coordinated inventory programmes are needed
- Present environmental monitoring programme fulfills the aim of describing the ecological state of coastal waterbodies (1 nm zone from baseline)
- The environmental monitoring programme aiming at assessing the ecological status of open sea areas should be established (EU Marine Strategy Directive adopted June 2008).