

SeaGIS 2.0

# Sustainable development of the marine environment



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# ***SeaGIS - Support for ecosystem based planning of the marine environment using GIS***

Cooperation between Swedish and Finnish  
authorities in the Northern Quark area

2015-2018



# Cross-border solutions for integrated maritime governance

## Activities

1. MSP data and participation
2. Regional goals for Blue Growth
3. State of the environment – Nature protection
4. Ecosystem services
5. Cooperation - Oil spill protection
6. Establishment of the map service



# Cross-border solutions for integrated maritime governance

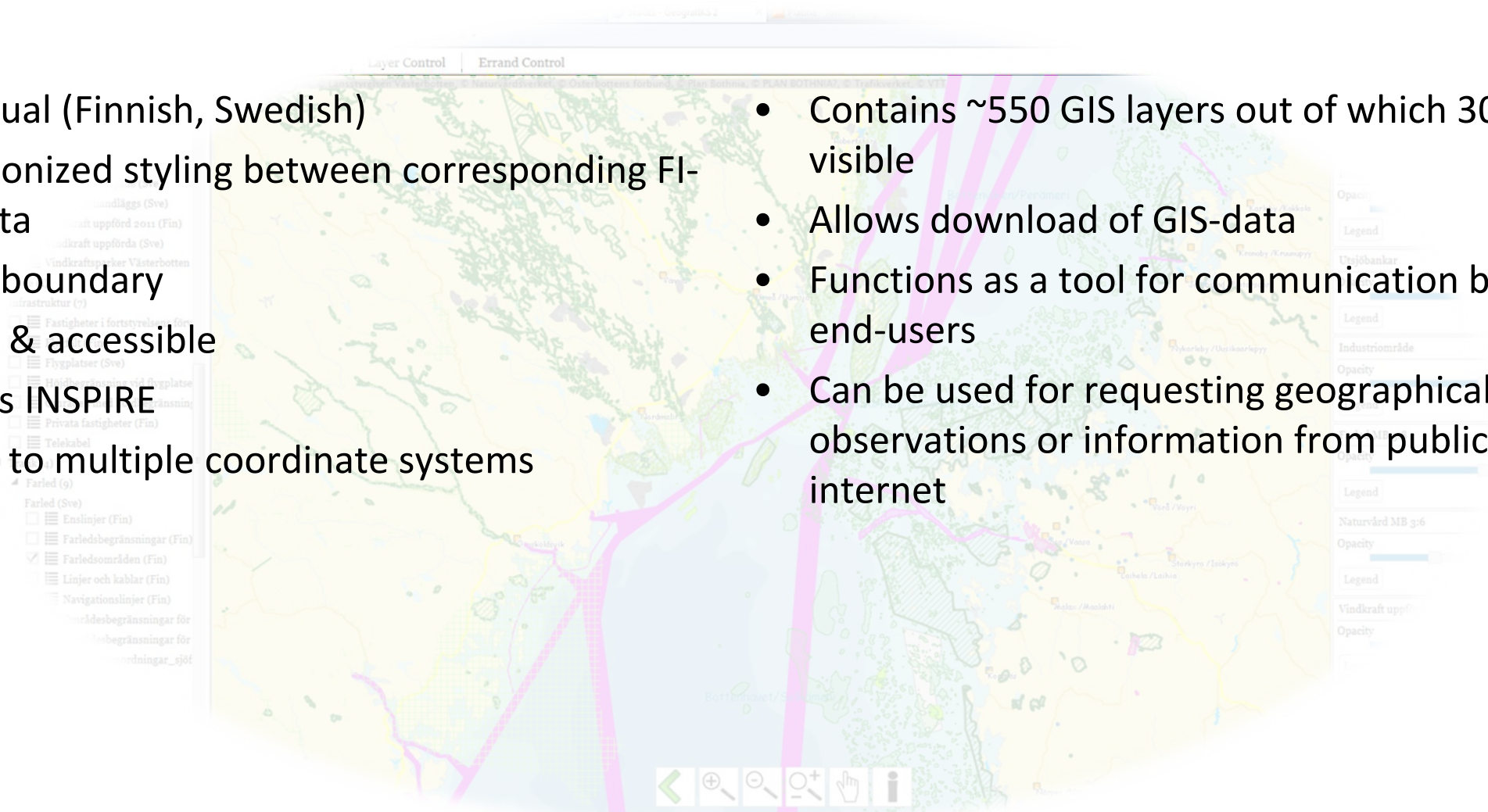
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# SeaGIS map service

- Bilingual (Finnish, Swedish)
- Harmonized styling between corresponding FI-SE data
- Transboundary
- Open & accessible
- Meets INSPIRE
- Open to multiple coordinate systems
- Contains ~550 GIS layers out of which 300 visible
- Allows download of GIS-data
- Functions as a tool for communication between end-users
- Can be used for requesting geographical observations or information from public over internet





Content

Select

-by point, line or area

Tools

-Coordinates

- Show

- Go to

- Check

-Map contrast

Copyright

©

Measure

-distances

-areas

Search

-point, line, area

-text

Layer control

The screenshot shows the SeaGIS web application interface. The browser address bar displays the URL <http://seagis.geografiks.se/?errand=36>. The application has a top navigation bar with tabs: Content, Measure, Select, Find, Misc. Tools, Layer Control, and Errand Control. The left sidebar contains a tree view of layers, including Vattendrag EPO (Fin), Miljöbedömning, Näringar och infrastruktur (4), Energi (6), Fiske (1), Infrastruktur (7), and Trafik (4). The main map area shows a geographical view of the Baltic Sea region, with various layers overlaid. The right sidebar contains a list of layers with opacity sliders and legends, including Rev (1170) (Sve), Rev (Fin), Utsjöbankar, Industriområde, Farled MB 3:8, Naturvård MB 3:6, Vindkraft uppförda (Sve), and Vindkraft uppförd 2011 (Fin). A yellow box labeled 'Themes:' is overlaid on the map, listing various themes: Planning and strategies, Cultural environment and recreation, Industry and infrastructure, Nature protection, Environmental status, Biology, and Landscape facts.

Themes:

- Planning and strategies
- Cultural environment and recreation
- Industry and infrastructure
- Nature protection
- Environmental status
- Biology
- Landscape facts

# Natura 2000

seagis.geografiks.se

Innehåll | Mätning | Välj | Sök | Ver

**Make whole layer visible**

Hotade och sällsynta naturtyper (4)

- Formellt skydd (11)
  - Biotopskyddsområden
    - ☐ Skydds och naturskyddsområde (Fin)
    - ☐ Naturreservat (Sve)
    - ☐ Naturminne punkt (Sve)
    - ☒ Natura 2000
      - View Entire
      - Export
      - Metadata
      - View Tables
      - Exit
  - Fågelskyddsområde (Sve)
- Internationellt utpekad (6)
- Strandskydd (3)
- Fiske (5)
- Miljötilstånd (6)
- Biologi (4)
- Gränser (4)
- Landskapsfakta (9)

**Koordinatsystem**  
ETRS89 / ETRS-LAE

**Fil format**  
ESRI ShapeFile

Ok Avbryt

**Koordinatsystem**  
ETRS89 / ETRS-LAE

**Fil format**  
ESRI ShapeFile

Layers L38\_NV\_riksintr\_N2000\_SPAR

L38\_NV\_riksintr\_N2000\_SPAR@SEAGIS  
Last changed - 2014-02-11 12:39

Key	Value
Copyright	Naturvårdsverket
Datum	2012 (laddades upp 2013 i karttjänsten SeaGIS)
Hyperlink	
Kart Namn	
Keywords	(riksintresse, planer, SPA, natura 2000, fågel, restriktioner)

L38\_NV\_riksintr\_N2000\_SPAR@SEAGIS Export Export All Visa i karta Sum Set tree Stäng

1 2 3 4 5 6

OBJECTID	SITECODE	NAMN	AREA_HA	SHAPE_area	SHAPE_len
1	SE0510101	Biskopstorp	758.04	7580404.38159	25129.4137243
2	SE0510049	Getteröns fågelreservat	350.398	3503978.3454	9030.12375547
3	SE0510176	Båtafjorden	255.053	2550531.74129	11897.2245798
4	SE0410041	Torhamn-Hästholmen	1809.969	18099690.1307	44285.2118406
5	SE0520037	Breviks kile-Toftenäs	774.819	7748190.4166	21145.904604
6	SE0410042	Tromtö-Almö	3358.444	33584445.3135	50223.1858735
7	SE0540163	Blängsmossen	447.248	4472480.49347	13207.3521532
8	SE0530030	Öjemossarna	381.215	3812152.65915	13978.3997815
9	SE0210284	Storskogen	139.076	1390755.04101	7784.07672936
10	SE0230291	Kvillingeförkastningen	189.676	1896761.08325	13001.0189665
11	SE0230363	Ågelsjön	264.387	2643870.57075	15930.9250167

# Errands and communication

between administrations, municipalities or with the public  
e.g. 'Propose new recreation areas'

The screenshot shows the SeaGIS 2.0 web application interface. The browser address bar displays 'seagis.geografiks.se/?errand=37'. The interface includes a top navigation bar with tabs: 'Innehåll', 'Mätning', 'Välj', 'Sök', and 'Ve'. On the left, a sidebar lists various data categories with expandable arrows and checkboxes, including 'Biologi (4)', 'Kulturmiljö och friluftsliv (2)', 'Landskapsfakta (9)', 'Miljötillstånd (6)', 'Näringsar och infrastruktur (5)', 'Naturskydd (5)', 'Planering och strategier (3)', 'Energi 42', 'Friluftsliv 36', 'Friluftslivsområde 37', 'Infrastruktur 45', 'Naturområde 44', 'Utvinning av material 43', 'Vattenbruk 47', and 'Yrkesfiske 46'. The main area is a map showing a coastal region with various colored overlays representing different data layers. On the right, there is an 'Errand Control' panel with a list of recreation areas and checkboxes: 'Friluftslivsområde', 'Samlingsområde', 'Vattenskoterområde', 'Dyktintressant område', 'Paddlingsområde', 'Besöksvärt område', 'Fritidsfiske', and 'Annat'. At the bottom right, there is a 'Palauta oletusarvot' button. Six yellow callout boxes with black text provide additional information: 'Mark your proposed area - point, line, polygon' points to a blue polygon on the map; 'Description of your errand or question' points to the 'Errand Control' panel; 'Explain your proposal (e.g. sailing area, jet-ski area, scuba-diving, canoeing, scenic view, sport-fishing, other, etc.)' points to the map area; 'All data in platform available for support' points to the left sidebar; 'Possible to pre-mark important data sheets relevant to question at hand' points to the map area; and 'Save and it is available to others in the errand to have a look at' points to the 'Palauta oletusarvot' button.

Mark your proposed area  
- point, line, polygon

Description of your errand  
or question

Explain your  
proposal (e.g. sailing  
area, jet-ski area,  
scuba-diving,  
canoeing, scenic  
view, sport-fishing,  
other, etc.)

All data in platform  
available for support

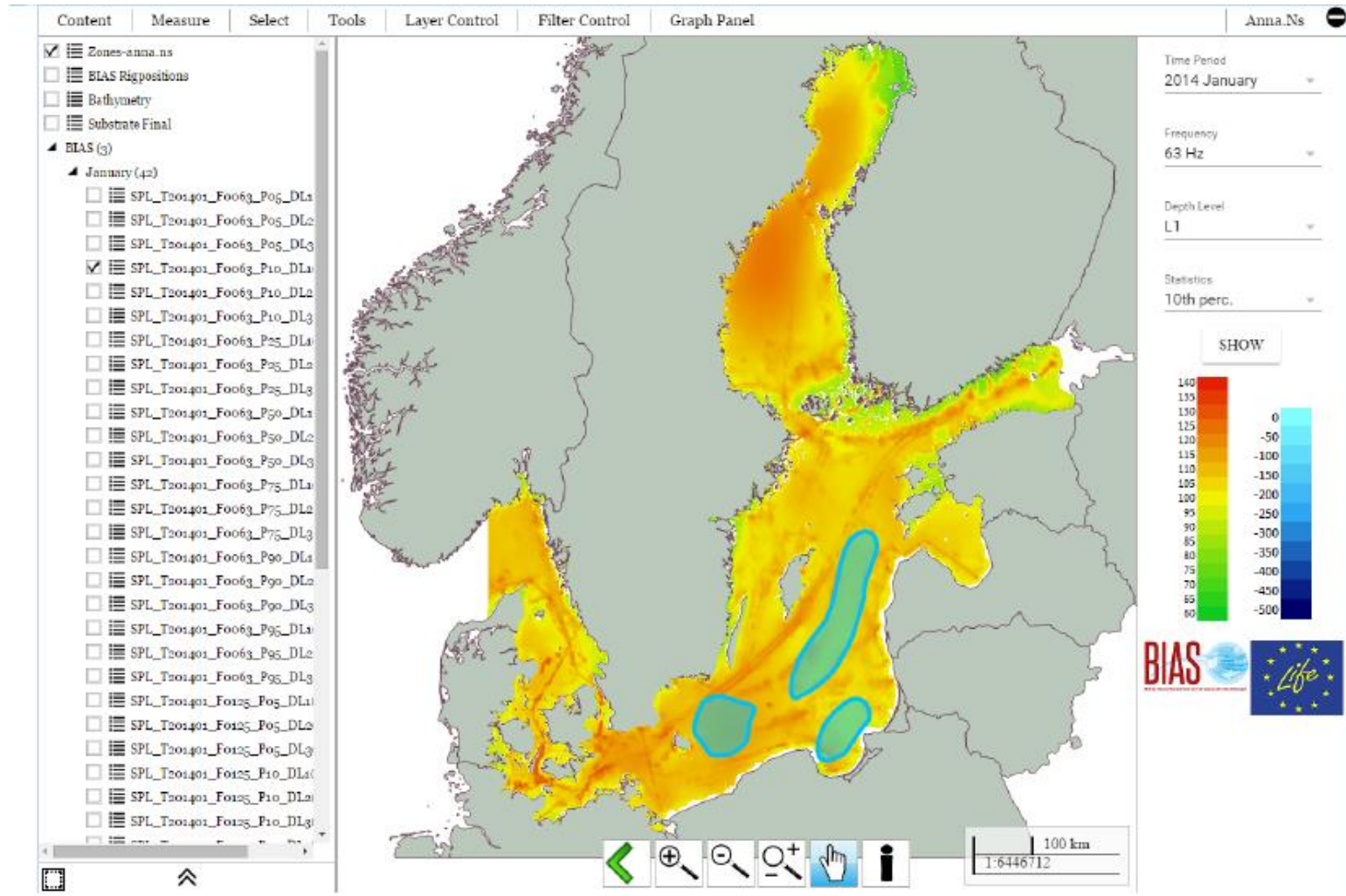
Possible to pre-mark  
important data sheets relevant  
to question at hand

Save and it is  
available to others  
in the errand to  
have a look at



# Update on the BIAS GIS-based planning tool

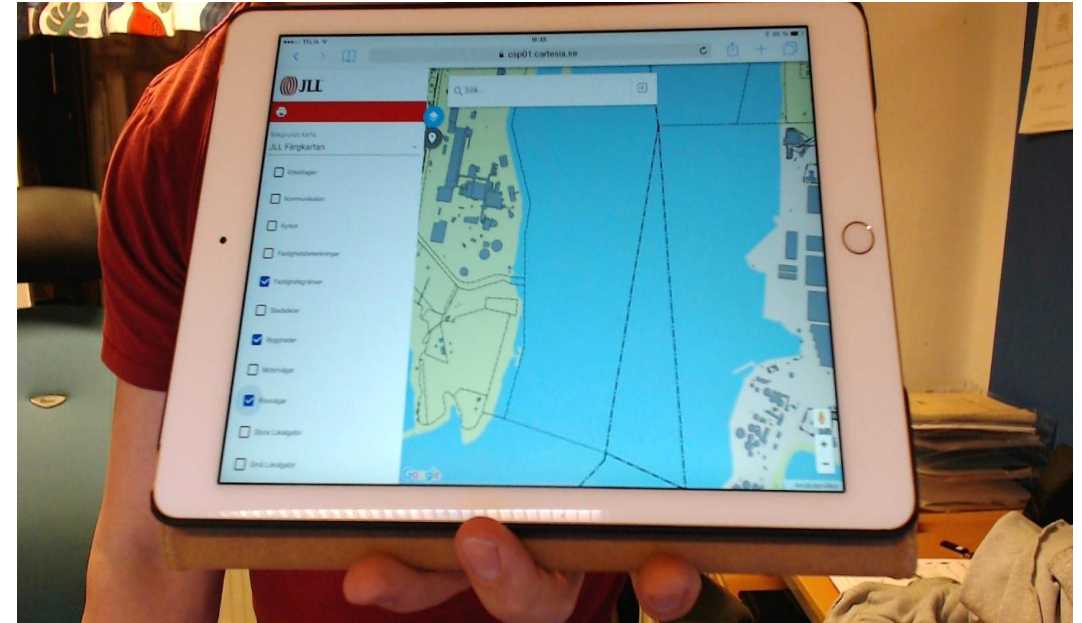
for ambient underwater noise in the Baltic Sea



# Establishment of the Map Service

## Developing SeaGIS 2.0

- WMS and WFS consumption
- Tile-cache download
- Increased geographical coverage
- Use of orthophoto or satellite images
- Adapting to mobile devices





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# State of the Environment – Nature Protection

Expected results by the end of 2016

- A. GIS – data on **marine Natura 2000 habitats and species** gathered and improved
  - A. Protection level of marine Natura 2000 habitats and species are evaluated
  - B. Human pressures are assessed for selected Natura 2000 habitats and species
- B. Consistent set of **environmental variables** is created throughout the project area
- C. Selected **HUB – biotopes** are modeled throughout the project area  
Models of the most common HUB –biotopes are combined to form a map that covers the bottom of the whole study area
  - A. Protection level of selected HUB -biotopes is evaluated
  - B. Human pressures are assessed for selected HUB –biotopes

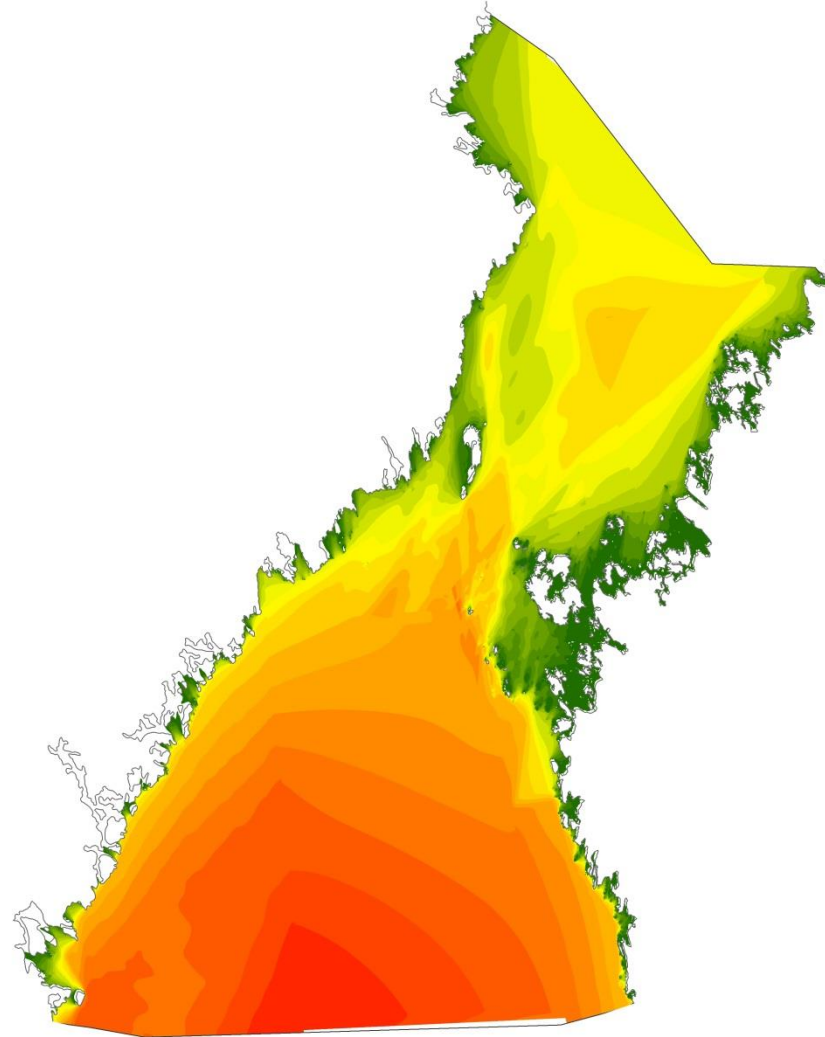


# Natura 2000 habitats in the Gulf of Bothnia region

Natura code	Habitat	Fin	Sve	Included
1110	Sublitoral sandbanks	<i>no data</i>	<i>no data</i>	-
1130	Estuaries	<i>in progress</i>	<i>ok -</i>	<i>check</i>
1140	Intertidal mudflats and sandflats	<i>not occurring</i>	<i>ok</i>	-
1150	Coastal lagoons	<i>ok -</i>	<i>ok</i>	<i>check</i>
1160	Large inlets and bays	<i>no data</i>	<i>ok -</i>	<i>check</i>
1170	Reefs	<i>ok -</i>	<i>ok -</i>	<i>check</i>
1620	Small islands and skerries	<i>in progress</i>	<i>ok</i>	<i>check</i>
1630	Baltic coastal meadows	<i>in progress</i>	<i>in progress</i>	<i>check</i>
1640	Sandy beaches with perenn vegetation	<i>in progress</i>	<i>in progress</i>	<i>check</i>
9030	Natural forests on land-upheavel coasts	<i>in progress</i>	<i>in progress</i>	<i>check</i>

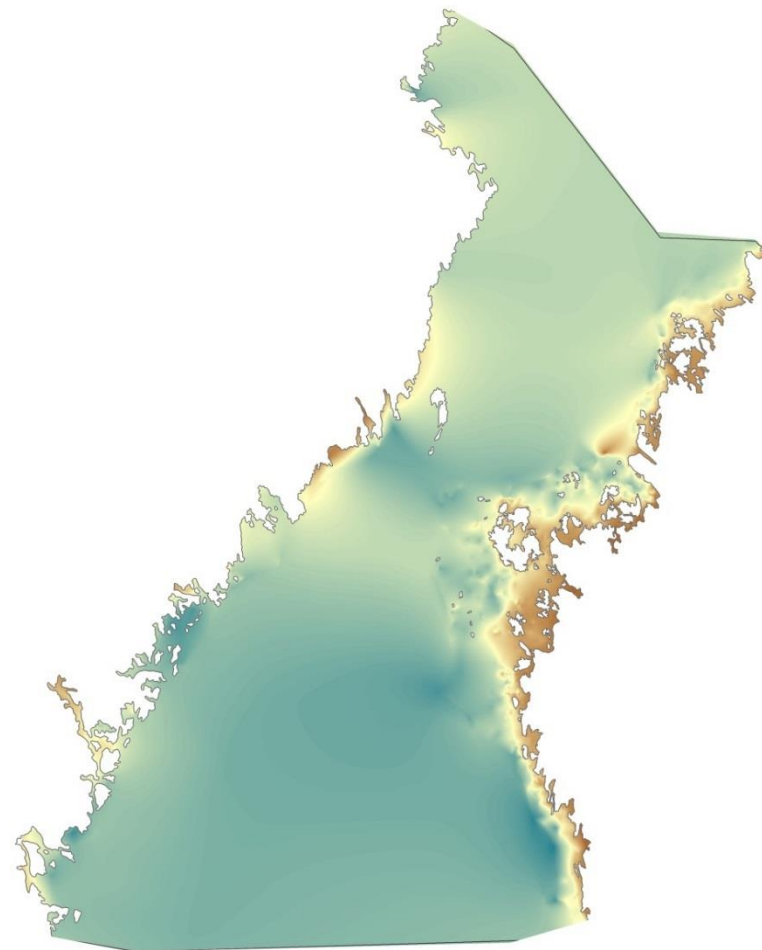
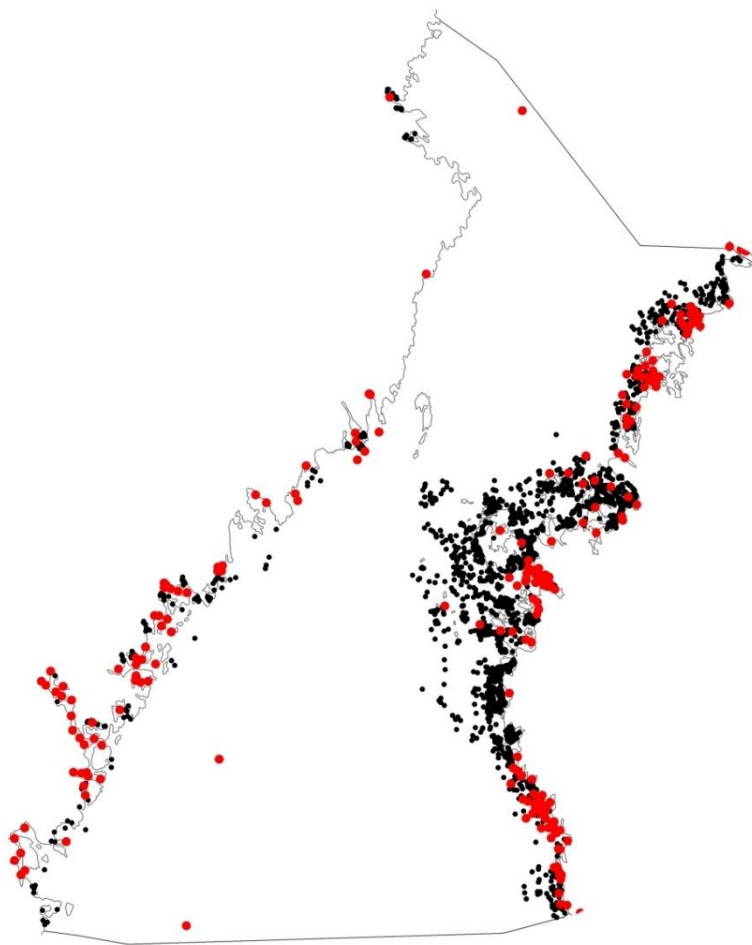
# Environmental variables

- Depth
- Surface exposure
- Ice sum and Ice on the bottom
- Secchi
- Light on bottom
- Nitrogen
- Phosphorus
- PH
- Salinity on surface
- Bottom temperature
- Turbidity

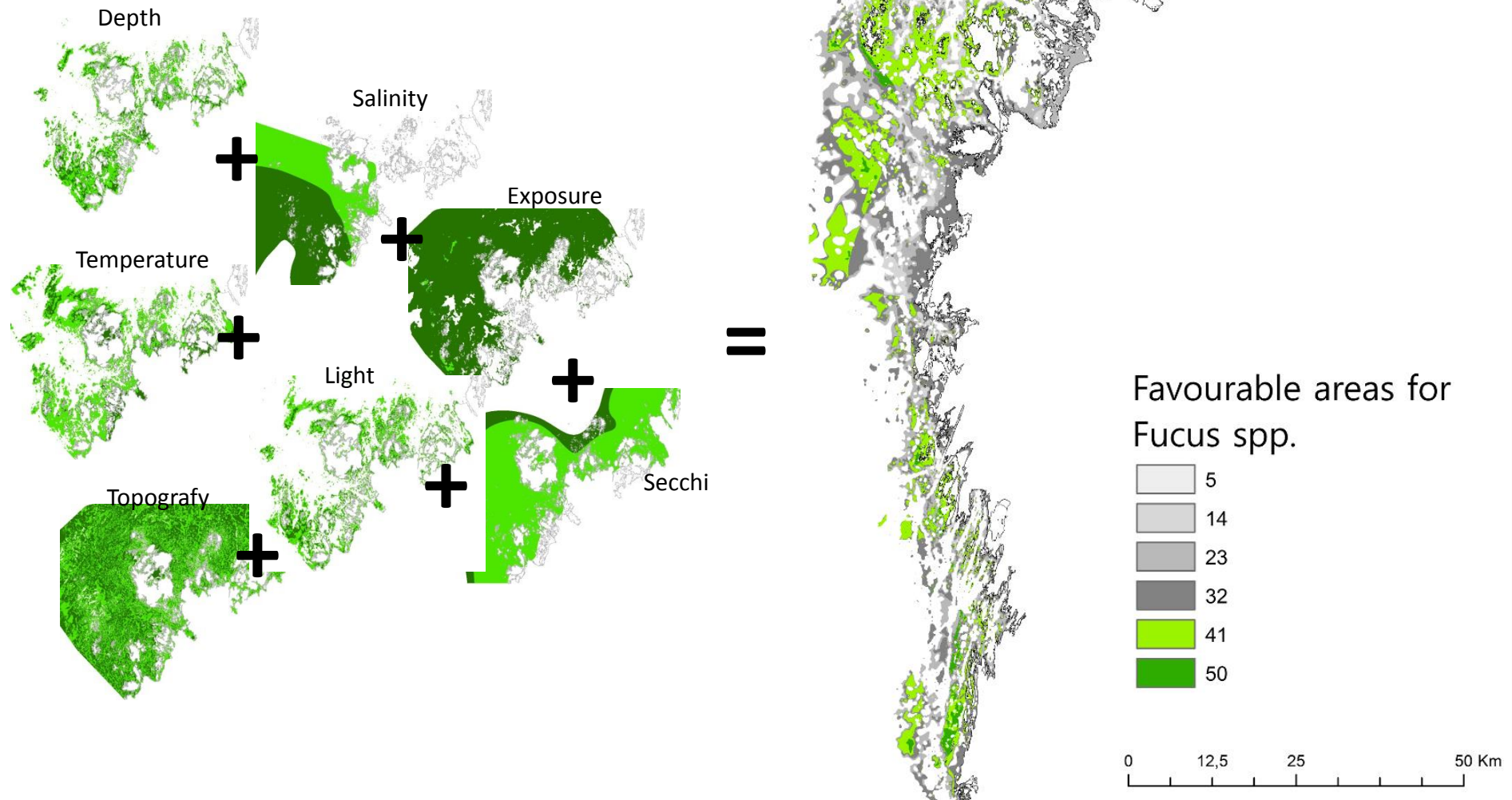




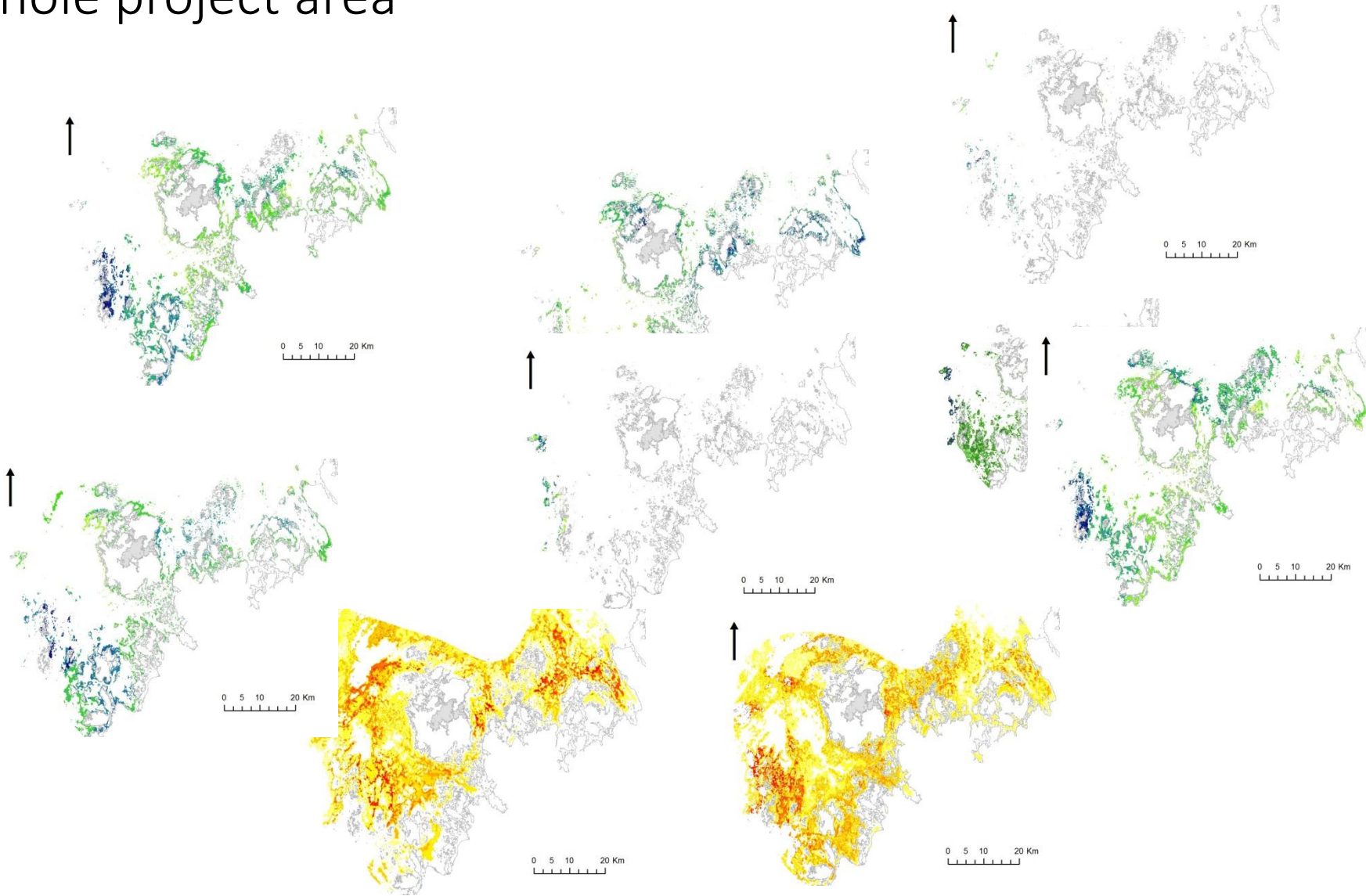
Collecting available data for creating environmental gradients.  
Secchi will be used with depth to calculate light availability in the bottom



Suitable areas determined with each environmental variable are combined to show most favorable areas for the HUB



Most important and most common HUB biotopes will be modeled for the whole project area

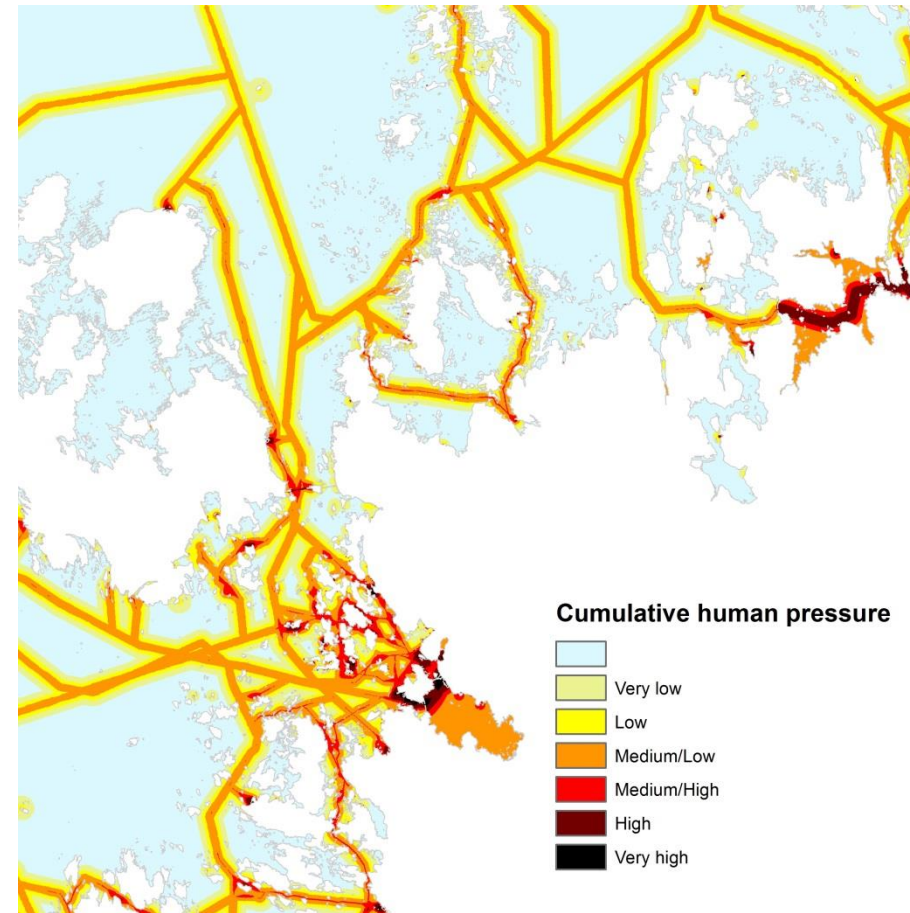




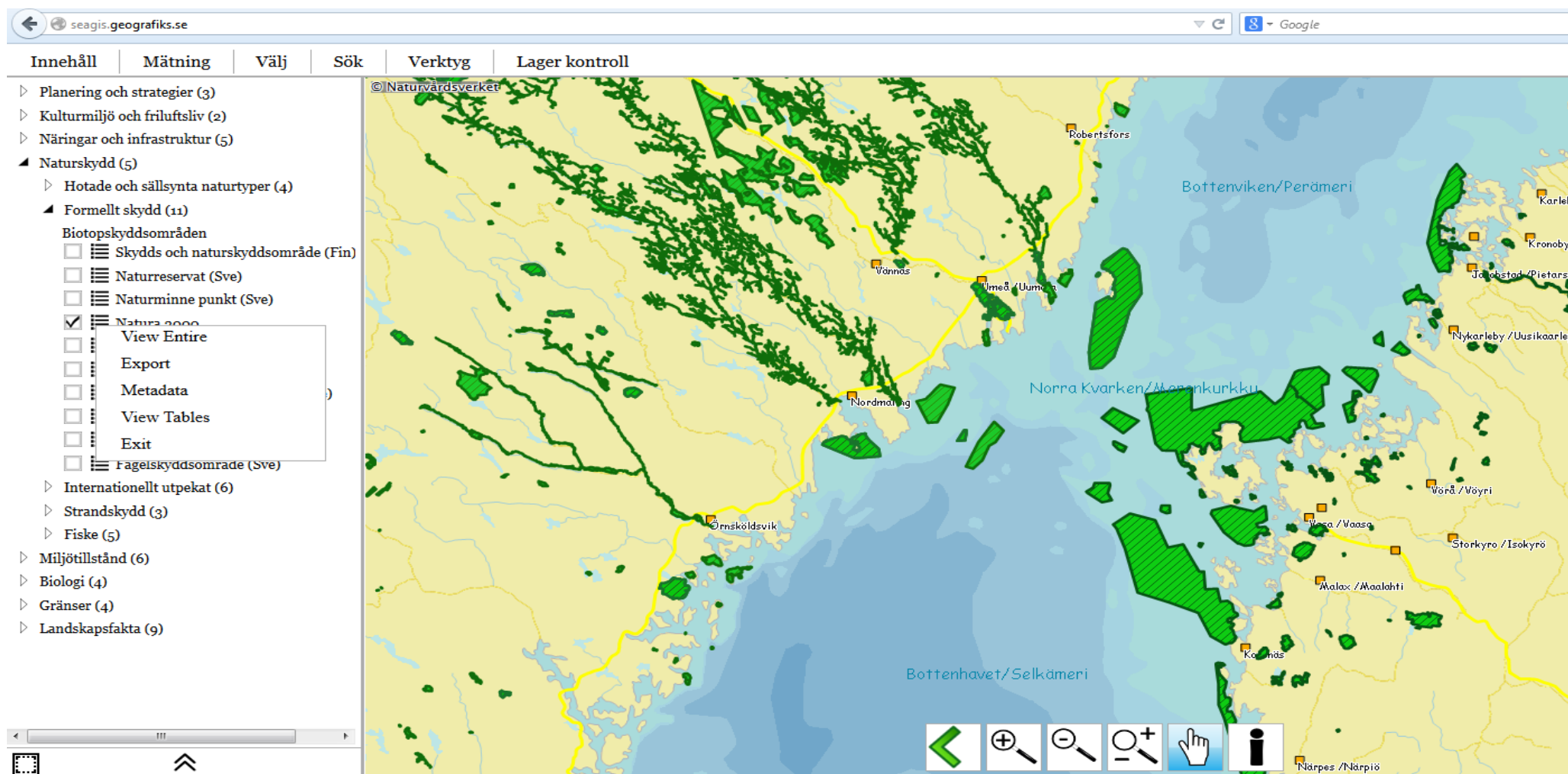
# Human pressure modeling

With cumulative human pressure modeling we will evaluate potential impacts on HUB – biotopes, N2000 habitats and protected areas.

We aim for detailed pressure modeling taking distance from the sources and depth into account.



# Protection level of selected N2000 habitats and HUB -biotopes is evaluated





[www.seagis.org](http://www.seagis.org)

Thank you for listening!

**Johnny Berglund**

**Project manager SeaGIS 2.0**

**County Administrative Board of Västerbotten**