FROM SEA TO SHORE

EXPLORING CHANGES IN SJÆLAND'S FISHING ACTIVITY

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Introduction, context and relevance

Research questions

Main question:

- Which impact do shifts in fishing activities have on the local fishing communities?

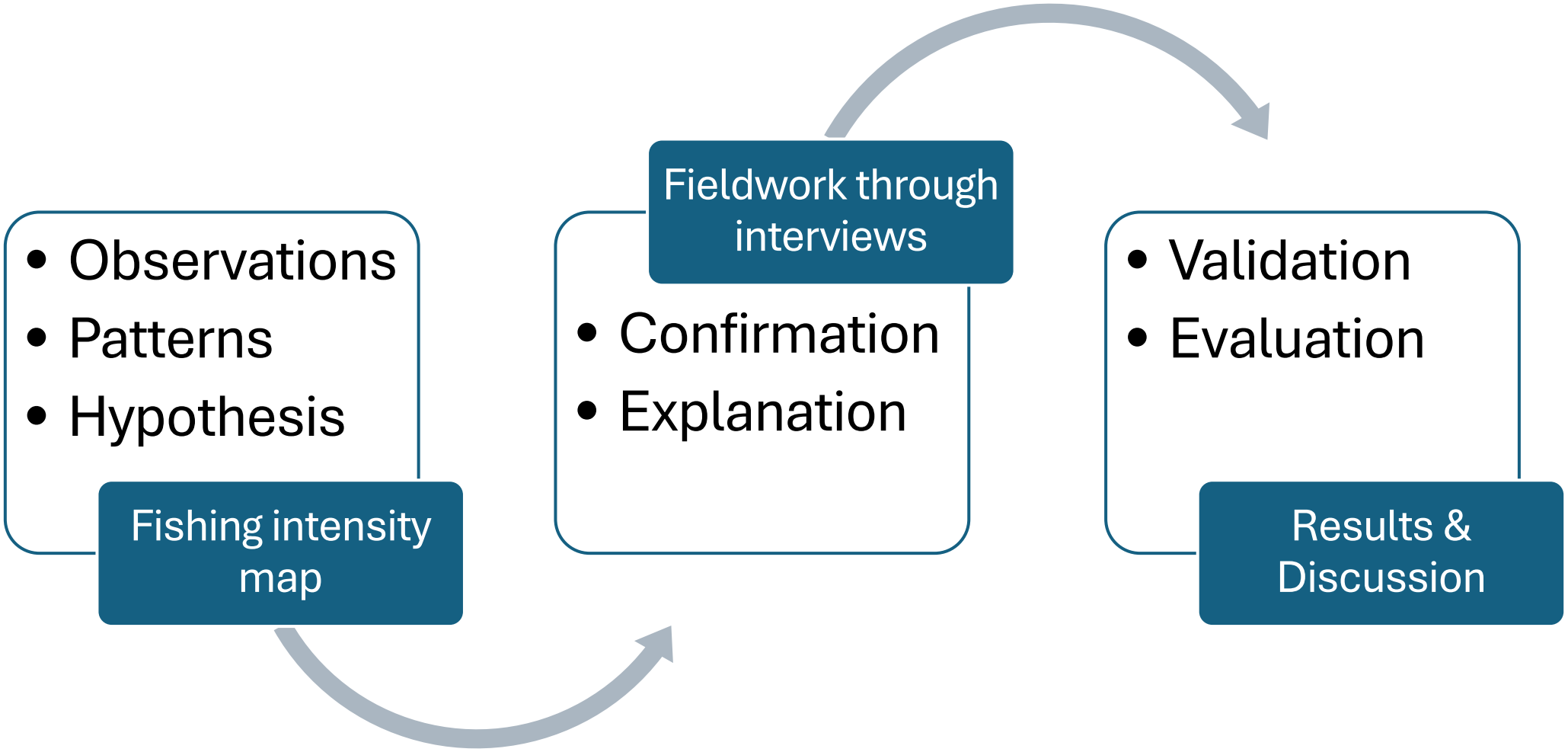
Sub-questions:

- What temporal and spatial changes have occurred in fishing activities?
- What factors lead to shifts in fishing activities?
- What are the prospects and challenges for the fishing industry?

Study area

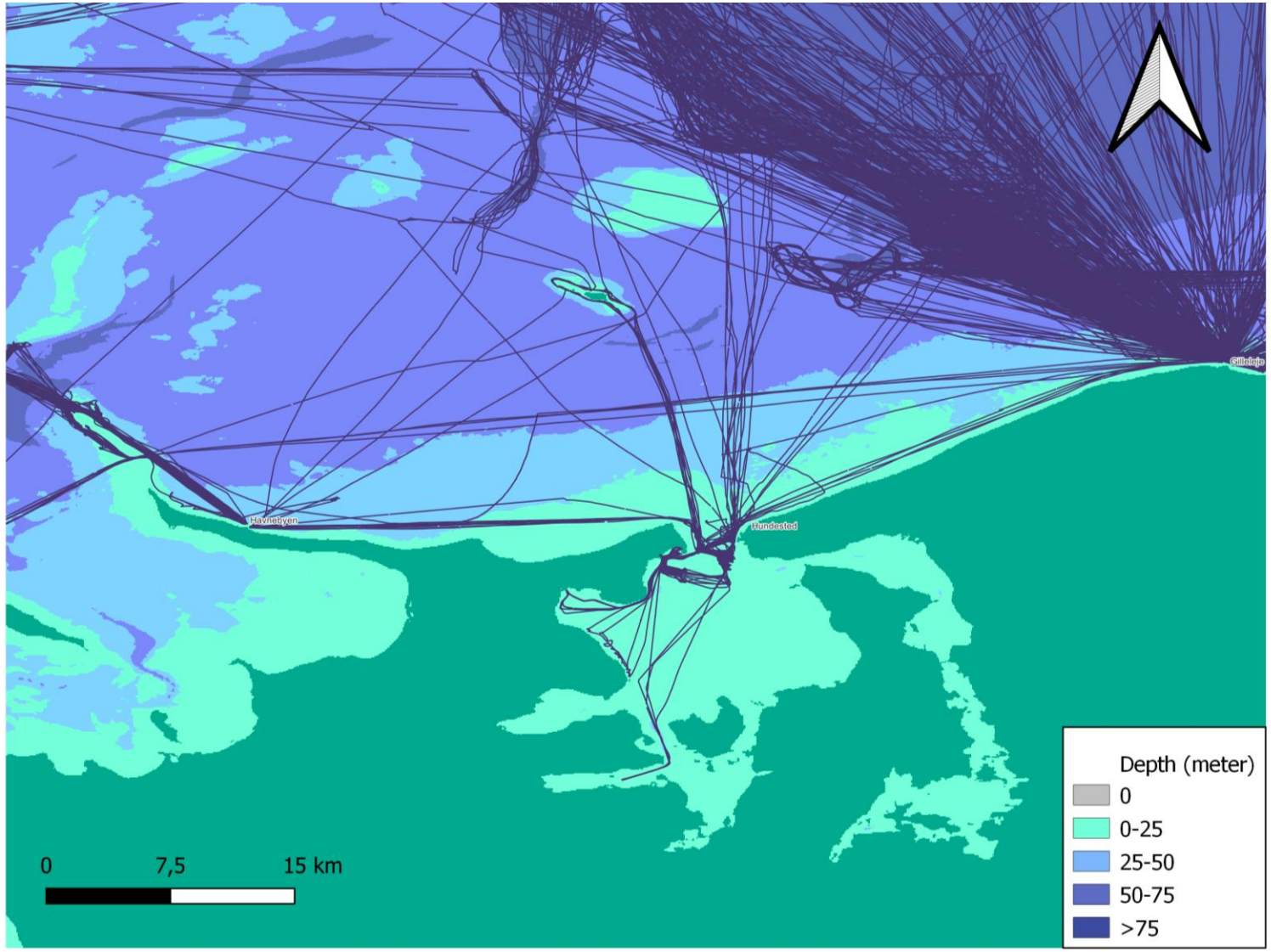

Gilleleje Havn
Hesselø Bugt
Gribskov
Helsingør
Halsnæs
Odden Havn
Hundested Havn
Lynæs Havn
Fredensborg
Hillerød
Sejerø Bugt
Hørsholm
Isefjord
Allerød
Visited ports
Municipalities
Sea
Odsherred
Egedal
Frederikssund
Norway
Sweden
Denmark
Germany
Poland
Holbæk
Kalundborg
Roskilde
Lejre
Roskilde Fjord
0
10
20 km

General work flow



Fishing intensity map
Step 1: Data gathering and processing

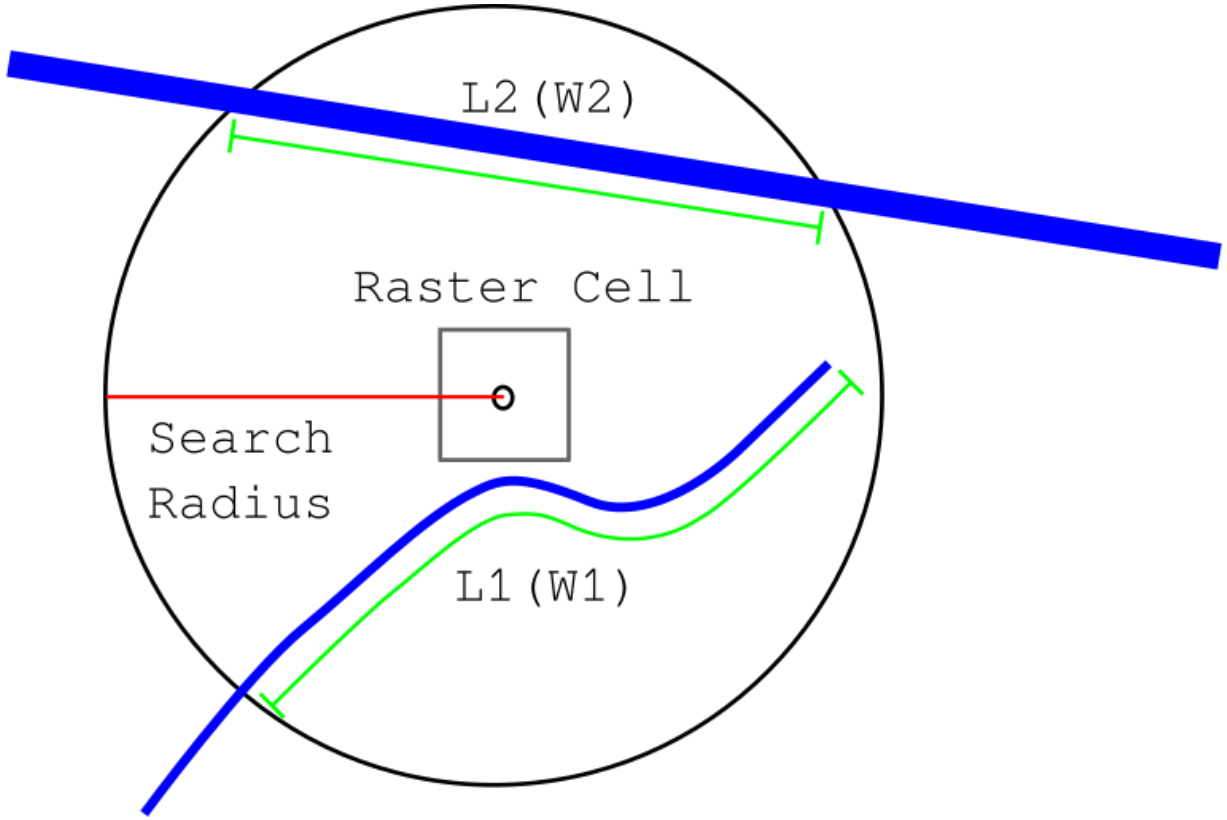
Step 2: Creating trajectories



- A new line for each hour of fishing

- No distinction bet ween travelling and fishing boats

Step 3: Creating a heatmap

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LineDensity = ((L1 * W1) + (L2 * W2)) / circleArea
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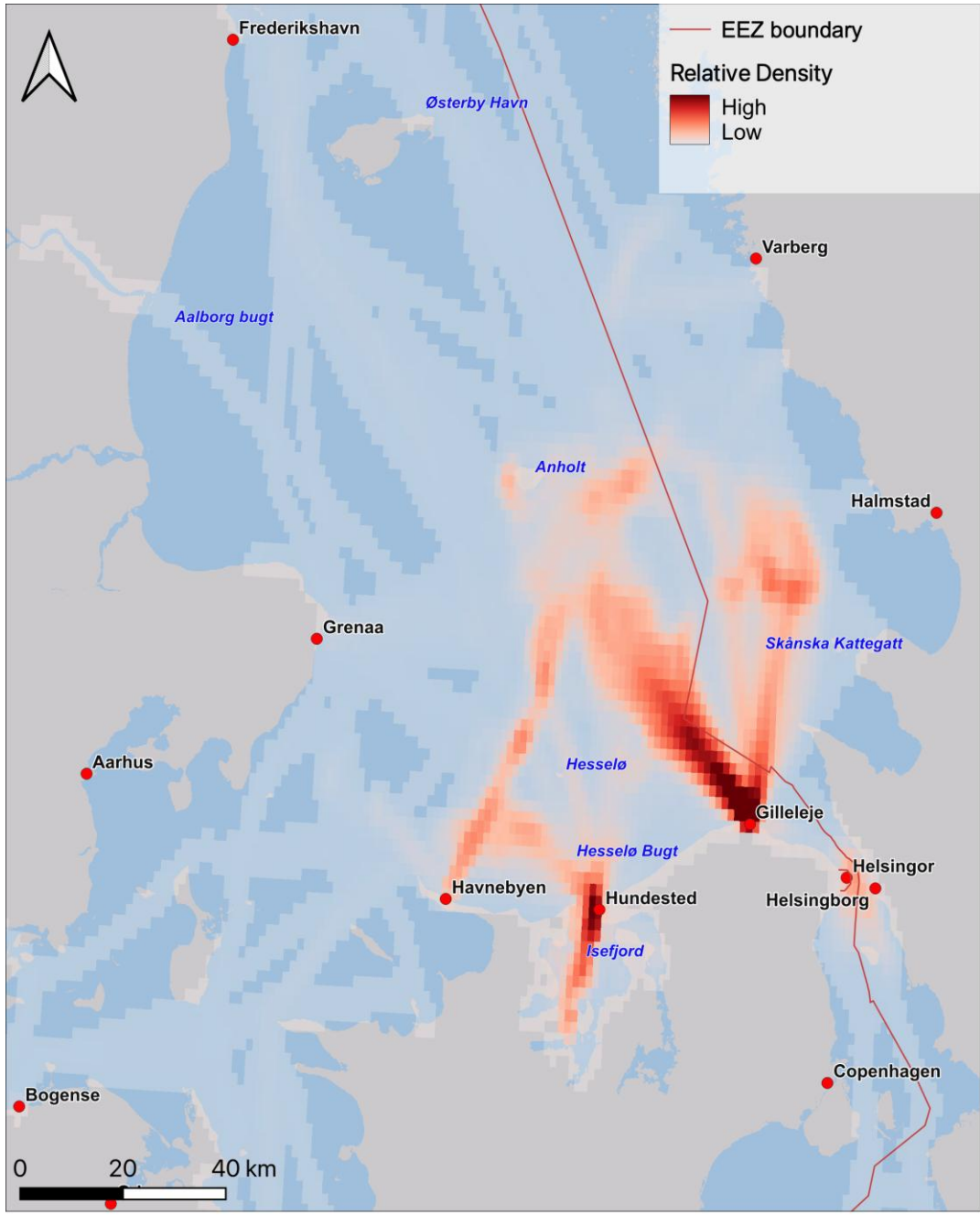
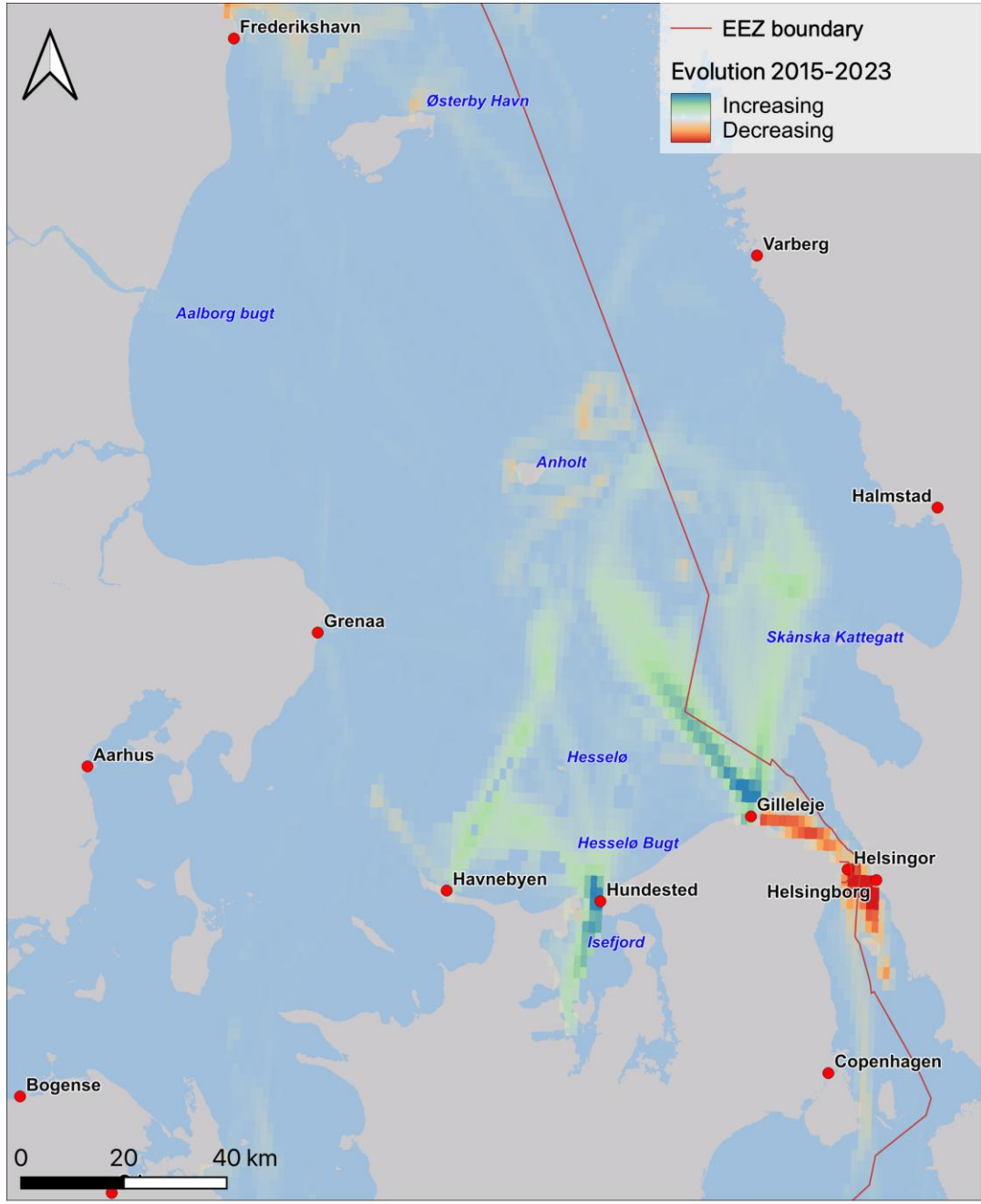


Observed patterns

- Fishers are shifting away from traditional fishing areas towards mollusc and oyster fishing areas.
- Fish-oriented ports are in steep decline
- Due to climate change fish are moving to the north



Method during fieldwork

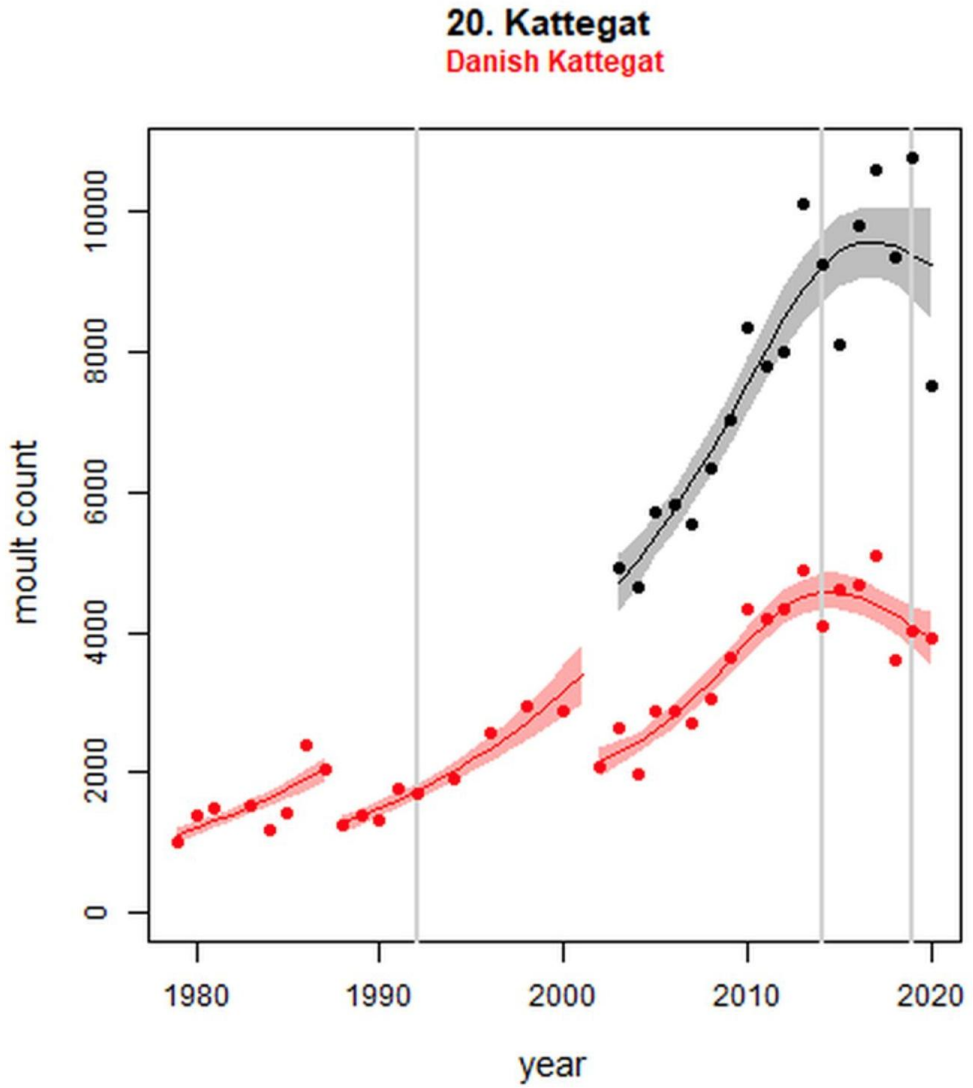
- **Observations of four harbours**

- **Informal interviews for better engagement**
  - 3 fishermen in **Odden Havn**
  - 4 fishermen + 1 fish shop worker in **Gilleleje**
  - 2 recreational fishers in **Odsherred**

Insights from the interviews

- Increasing amount of seals
- Liverparsites
- Crabs
- Cormorants
- Nitrogen Pollution
- Denmark's maritime spatial plan

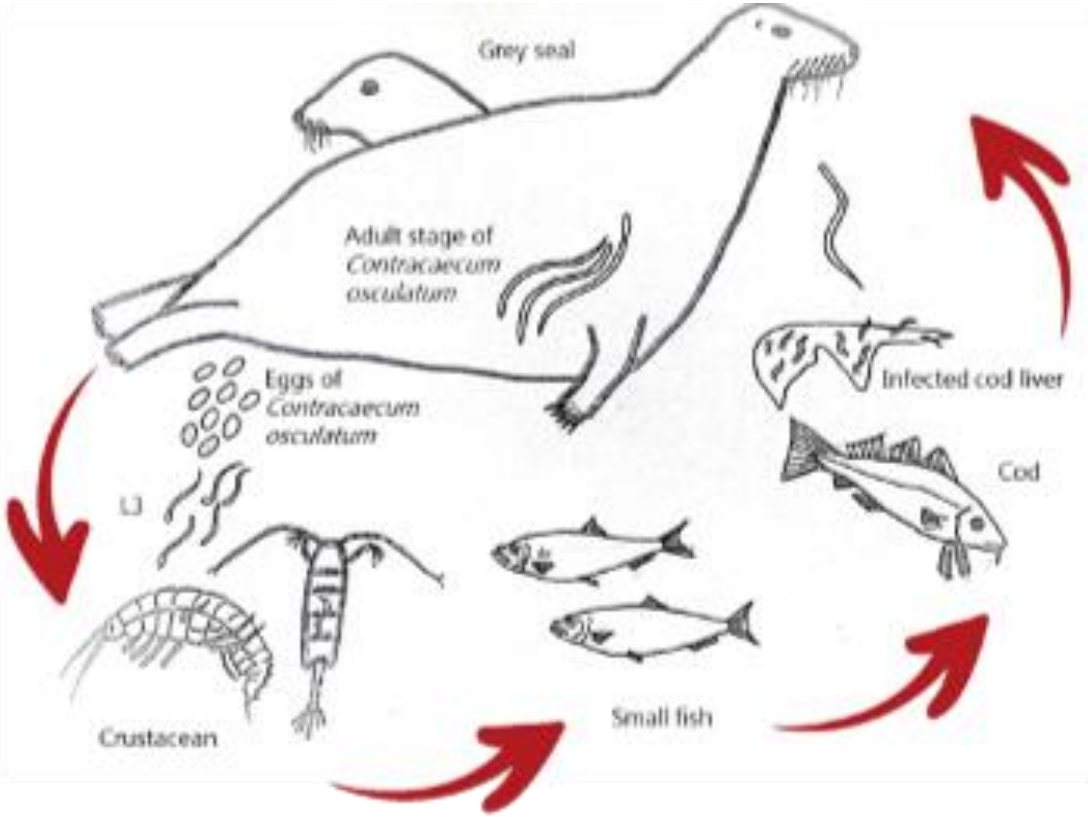
Seals taking fish in the nets



Infected fish with liver parasites

- Liverparasites
- Mainly cod
- Liver

  - Regulating metabolic functions
  - Energy reserve



Cormorants and crabs

Cormorants stealing the fish out of the nets

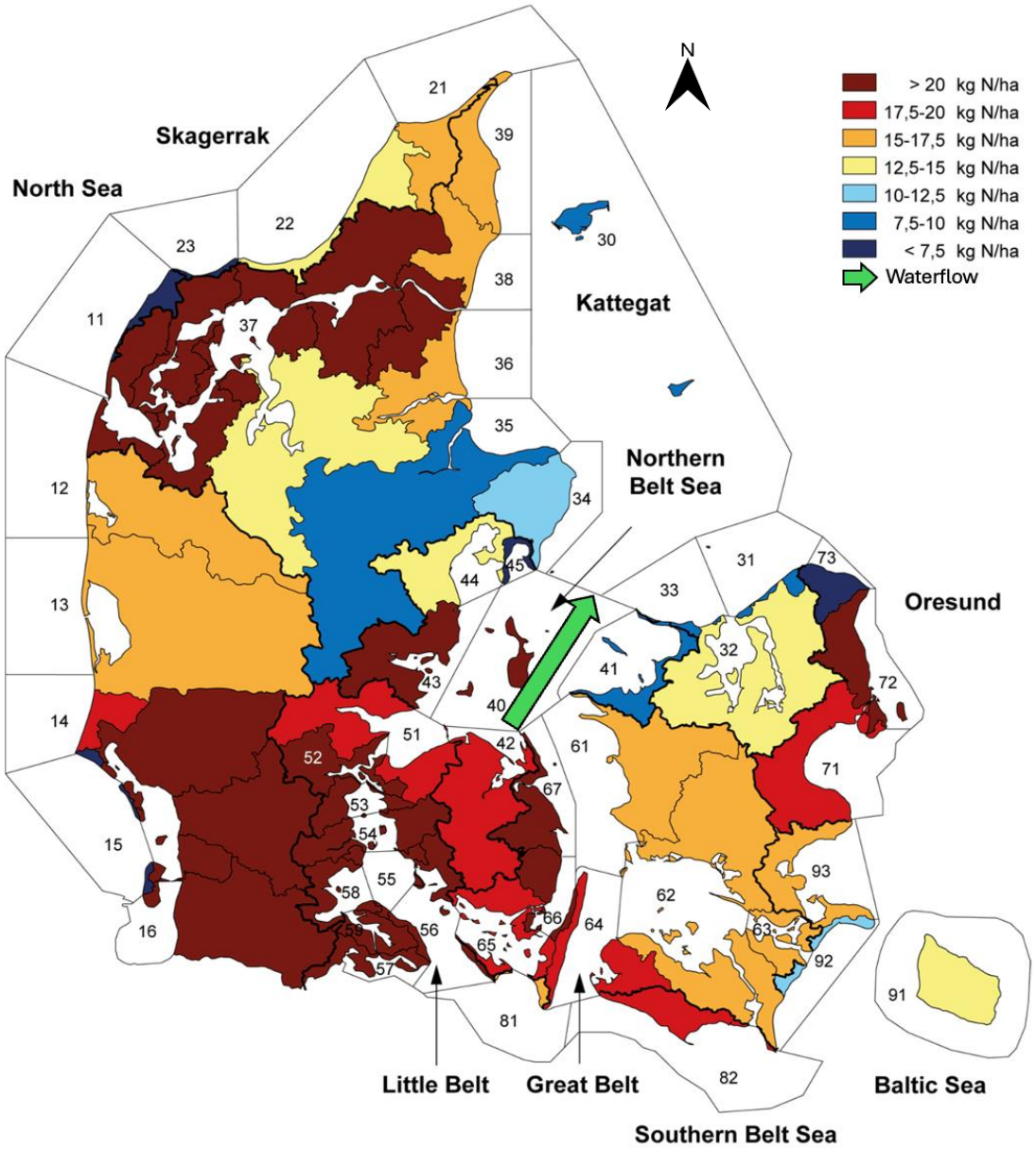
Crabs destroying the fish + eating the eggs

Nitrogen polution

- Disruption of aquatic ecosystems
- Eutrofication
- Excessive algal growth
- Oxygen reduction
- Mainly caused by agriculture

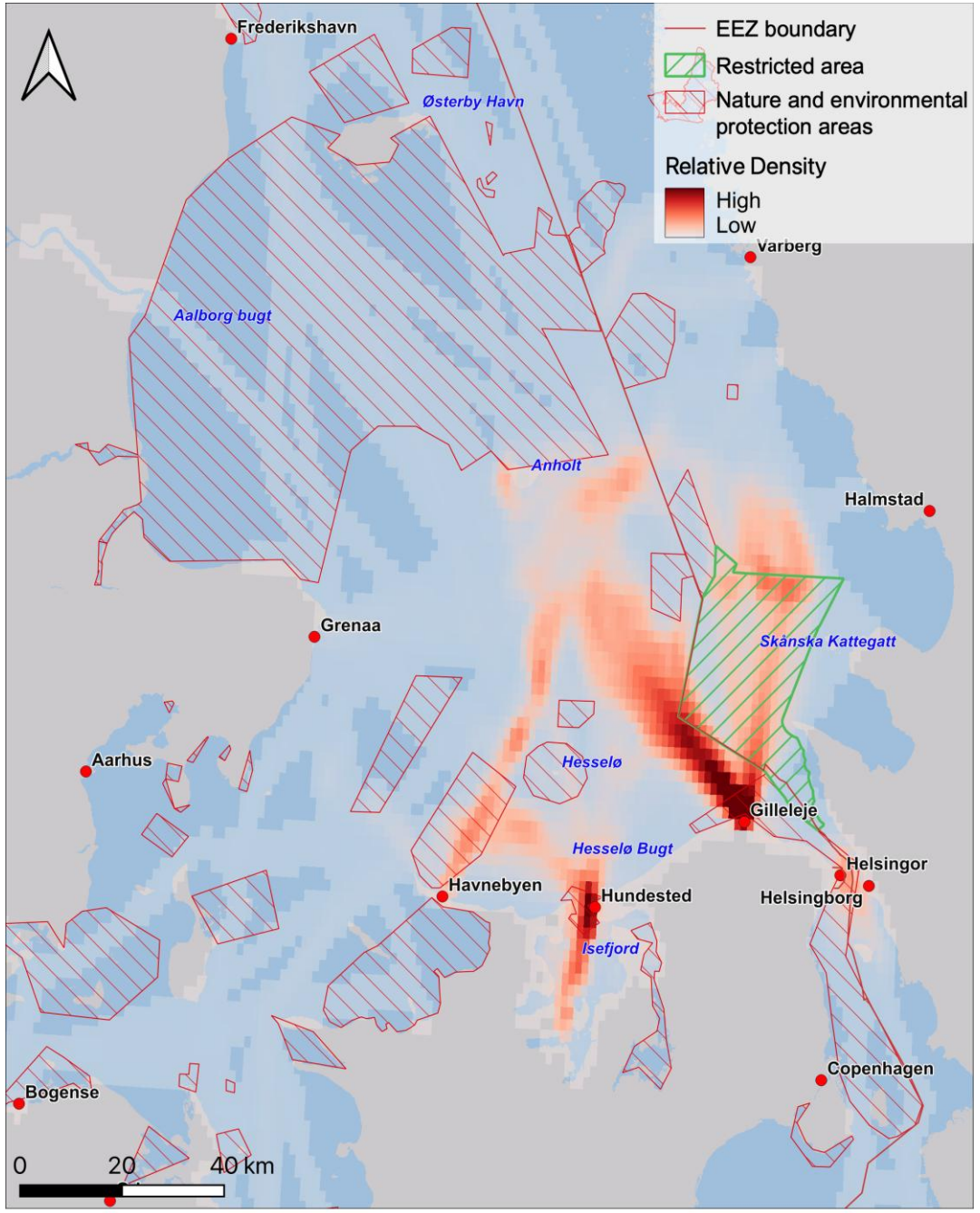
Dying fish

Total Nitrogen loads (kg ha−1) from Danish catchments to coastal waters in 2015.



Maritime spatial plan

- Little complaints
- No industrial fishing in Kattegat
- "A Swedish-German alliance"
- Complaints about the cod fishing ban at Øresund and Østersøen



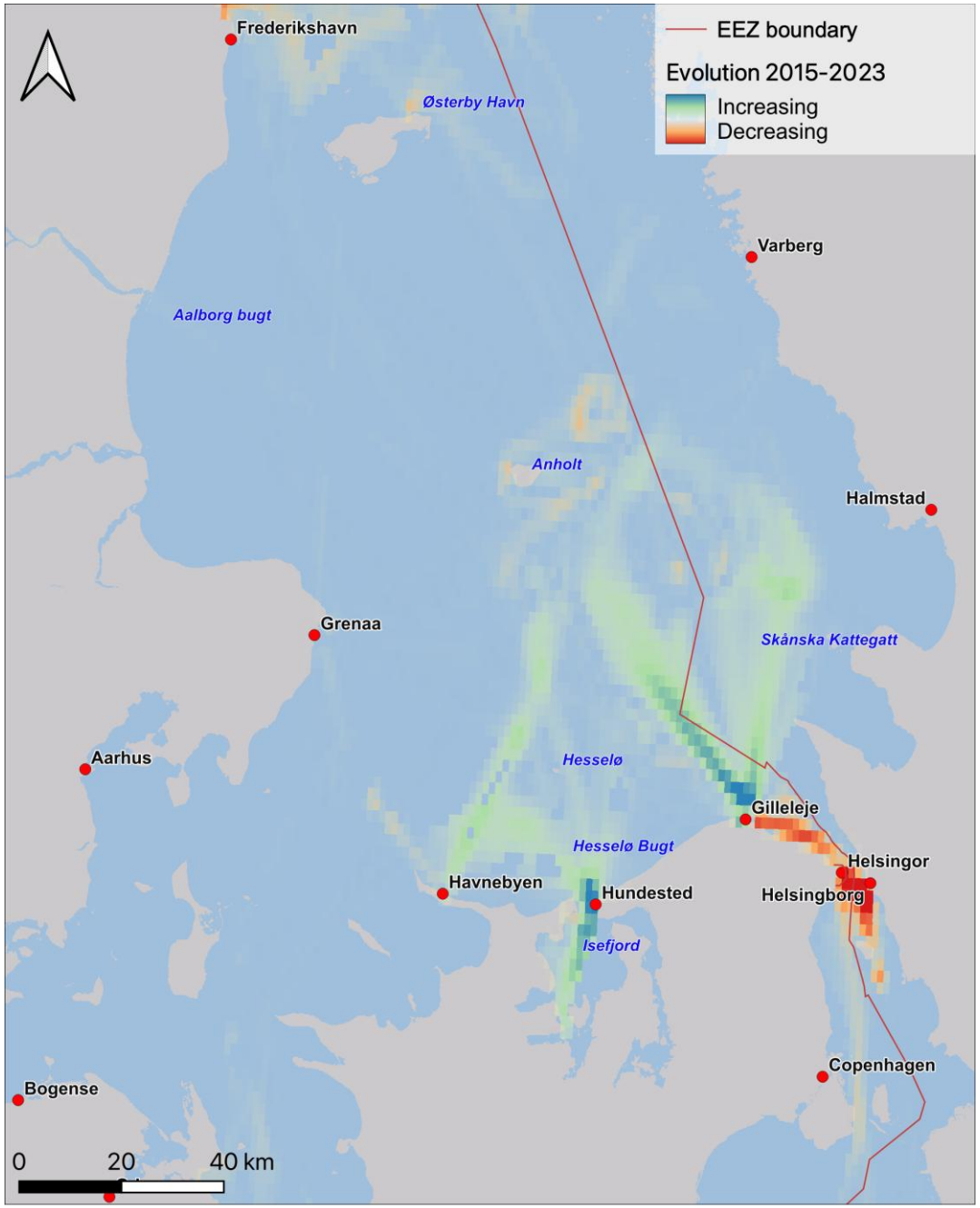
How is fishing evolving?

What factors lead to shifts in fishing activities?

- predators
- ocean warming

What are the prospects and challenges for the fishing industry?

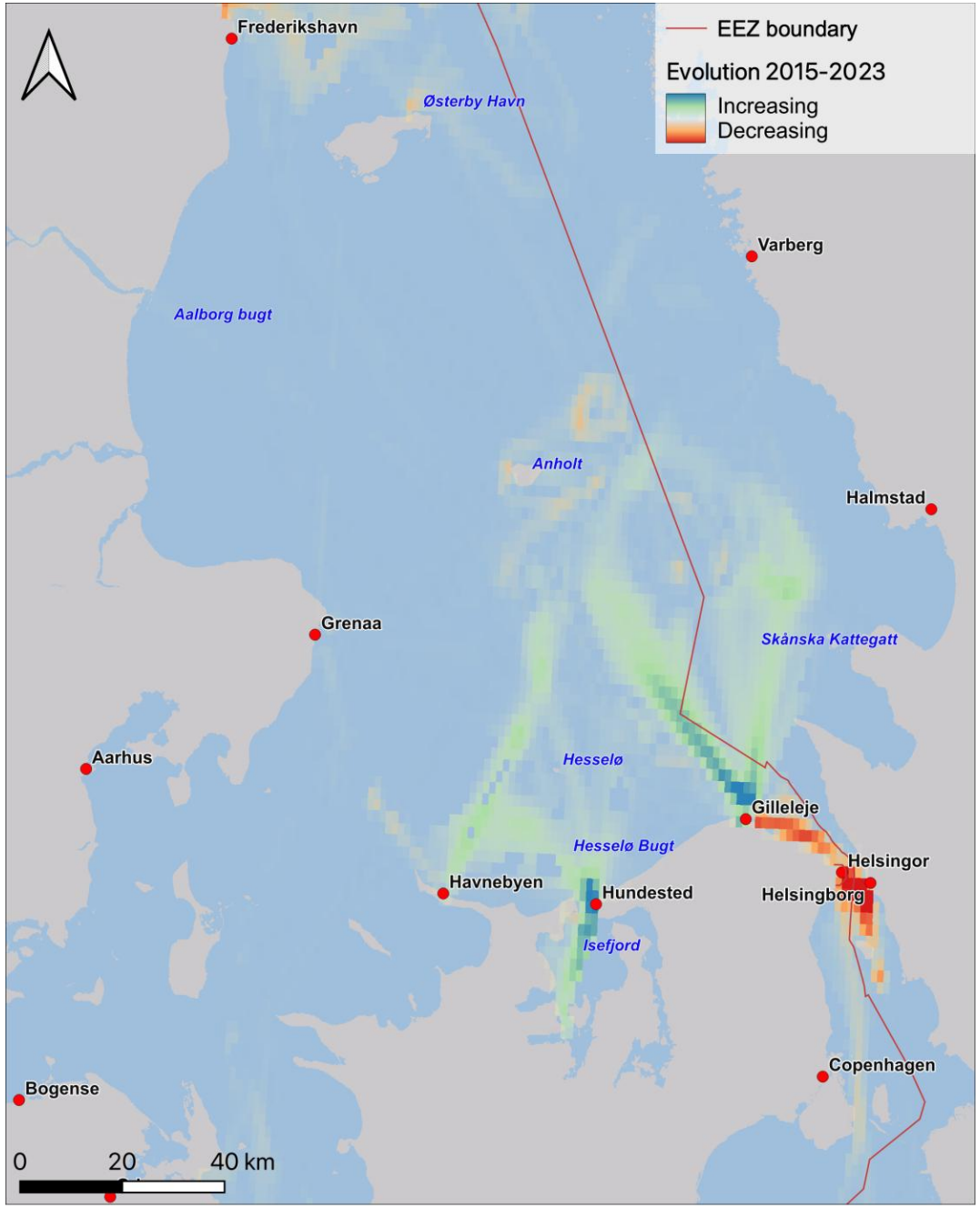
- new mollusc fishing industry
- increases in lobster population
- further decrease in fish populations



How is fishing evolving?

What temporal and spatial changes have occurred in fishing activities?

- Cod fishing is +/- over
- Flatfish hunting is not profitable



Methodological strengths and weaknesses

Weaknesses

- No inclusive interviews fishers
- History of maritime plan
- No differentiation in trajectories

Strenghts

- Broad perspective
- Field-research
- comprehensive maps