

Case study: The Sound Øresund, Öresund

Nordic IPBES-like Assessment,
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Setting the Scene

A succes story, by choice or by chance

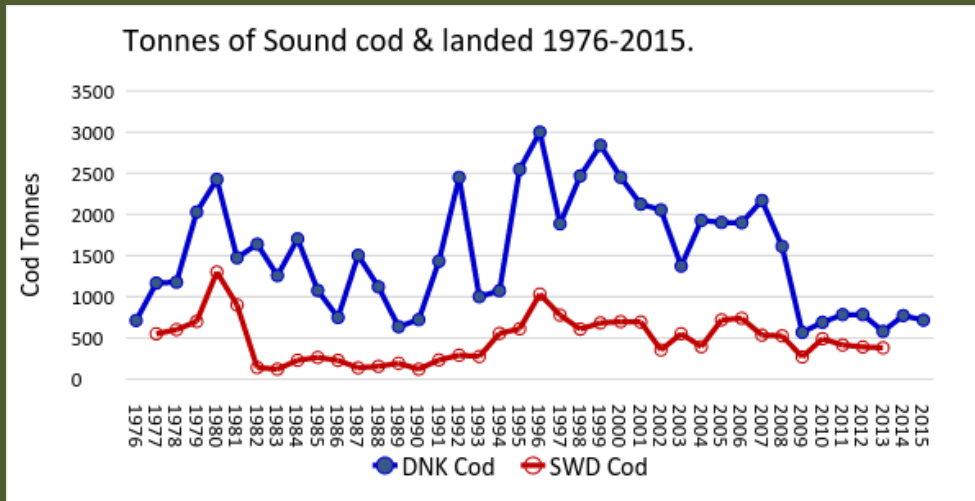


Wood cut illustrating the herring fishery in the Sound during the Middle Ages. From Olaus Magnus, 1555.

The Sound (“Øresund” , “Öresund”) is a strait located between Denmark and Sweden in Scandinavia.

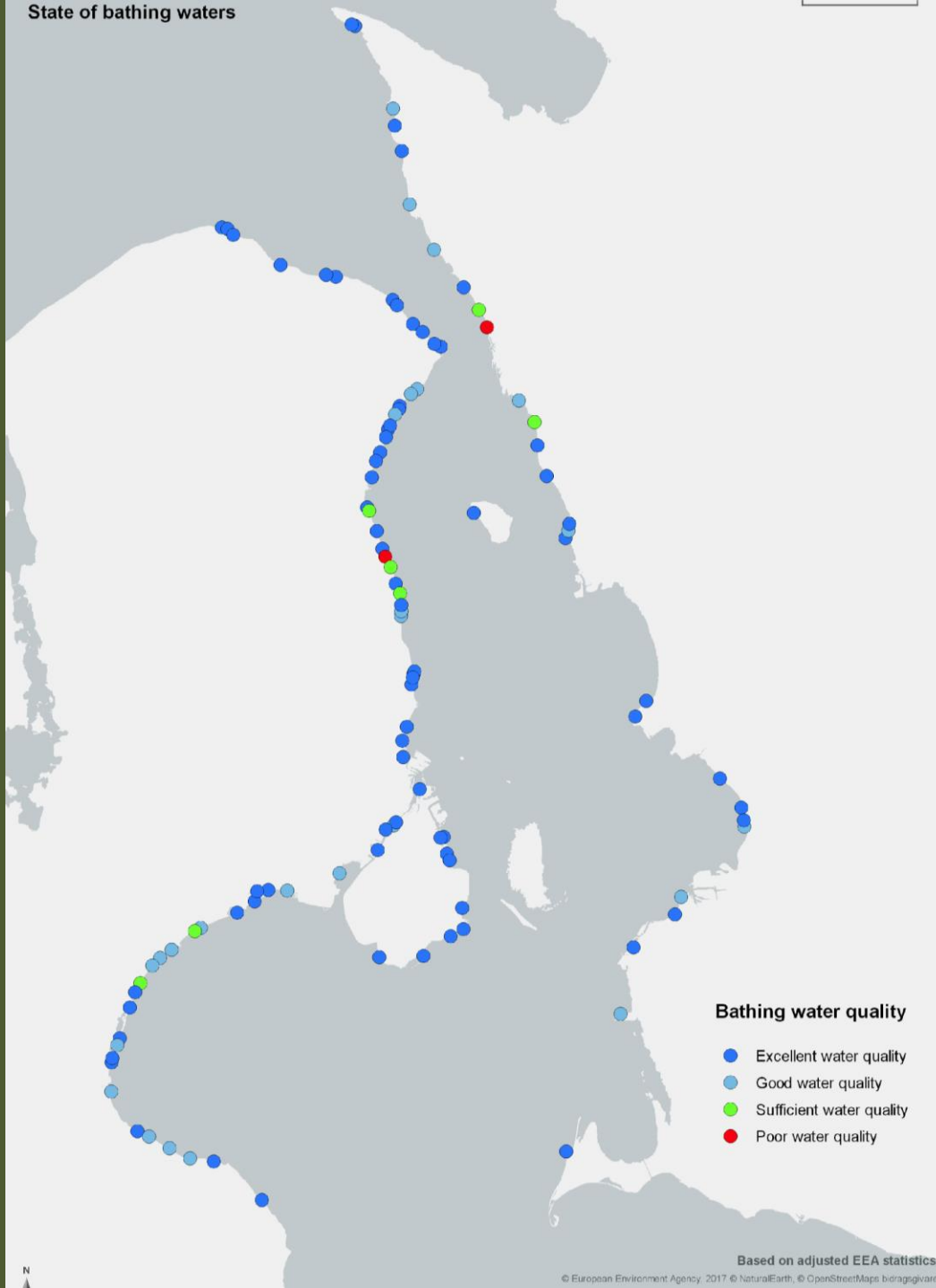
- ◆ No other areas in the Baltic Sea area have played an equally important role in geopolitics for more than a thousand years.
- ◆ The Sound has provided vital ecosystem services
- ◆ The Sound region is now the most densely populated area in Scandinavia with about 2 millions in the coastal municipalities.
- ◆ The Sound is still a reasonable well-functioning ecosystem with a relatively high biodiversity
- ◆ This may be explained by appropriate standards for environmental protection, and unintentional actions, which have helped to preserve ecosystem services.

2. Key Ecosystem Services



Danish and Swedish landings of cod in the Sound. Data from (ICES 2015)

- ◆ Commercial fishing
- ◆ Recreational fishing
- ◆ Household fishing



Bathing water quality

- Excellent water quality
- Good water quality
- Sufficient water quality
- Poor water quality

Based on adjusted EEA statistics

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Bathing – see graphics

Marinas

48 marinas are located along the coast of the Sound

Diving clubs

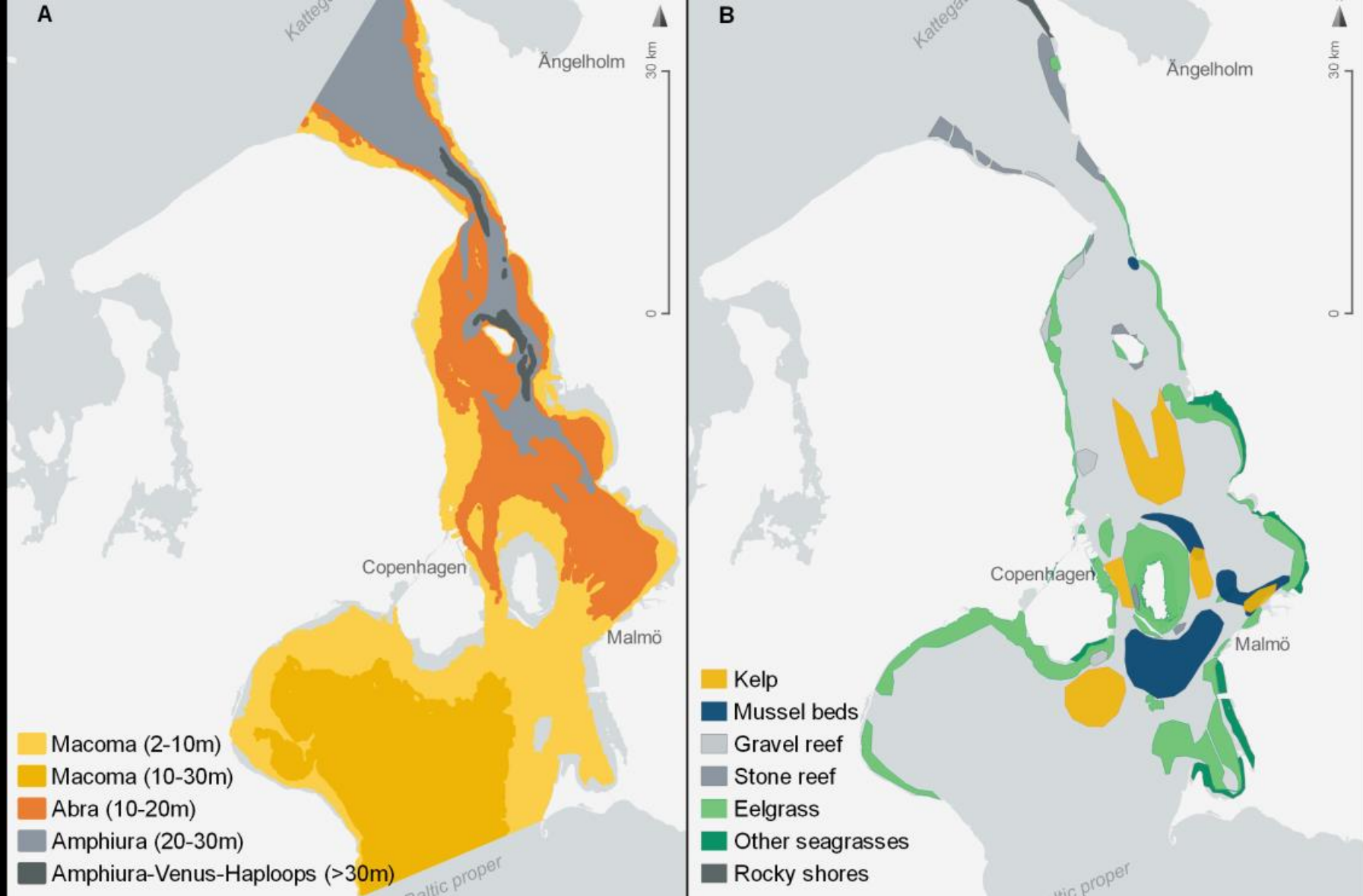
More than 50 Danish and 11 Swedish diving clubs near the Sound are registered

Bird watching

**Falsterbo –
Artsportalen, Sweden**

Biodiversity and Ecosystem Characteristics

- ◆ The hydrographic conditions (distribution of salt, temperature and water movement) determines the structures the marine ecosystem in the Sound and divides it into different habitats.
- ◆ The Sound constitutes one of three major straits that connect the water masses of the Baltic Sea with the North Sea/Skagerrak. It is a very dynamic area characterized by strong currents.
- ◆ Although highly variable, it has a typical estuarine circulation pattern with a surface layer of outflowing (northward direction) brackish Baltic Sea water, and a deep counter-current of high saline bottom water into the Baltic.



Left: Distribution of benthic fauna communities named after the dominating macro-zoobenthic species.

Right: Distribution of dominating biogenic habitats. Distributions based on maps from “The Sound Water Cooperation”.

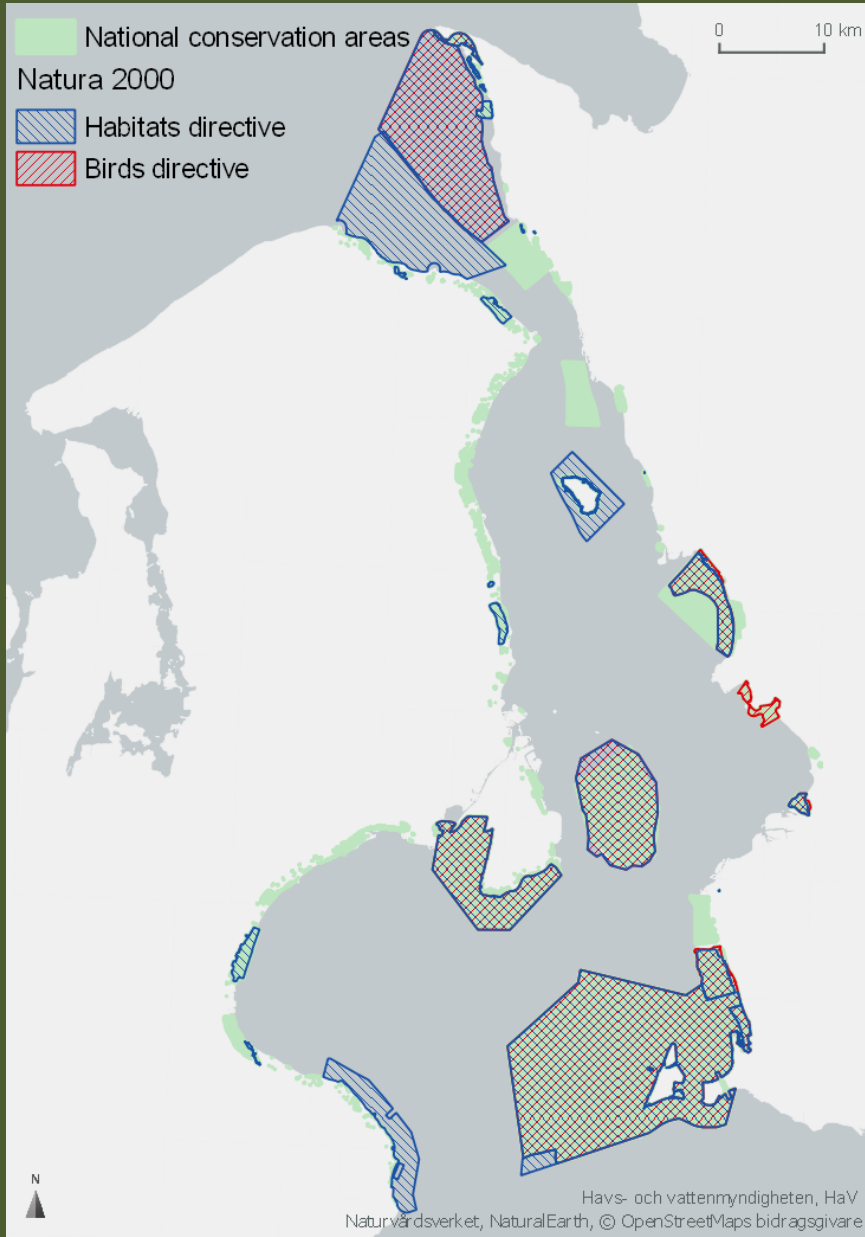
Drivers and Pressures

- ◆ Human activities affect the ecosystems in and around the Sound directly and indirectly.
- ◆ This includes losses, physical damages and changes of terrestrial and marine habitats due to areal use for infrastructure and offshore constructions.
- ◆ Other drivers include fishery, which potential effects on ecosystem structure and biodiversity, and potentially abrasion of the seafloor by fishing gear.
- ◆ Beside pollution coming from the intense maritime traffic, the Sound is particularly vulnerable to eutrophication due to its stratified water column, and climate warming may further amplify this sensitivity to eutrophication effects.
- ◆ Each of these drivers are to a varying extent manageable on a local or regional scale, but for climate change, where local and regional reduction schemes, although ambitious, certainly are of miniscule effect.

Governance of ecosystem services and influencing Policies

- ◆ International treaties, agendas, and codes of conduct, EU-directives
- ◆ National laws and bylaws,
- ◆ Tradition for stakeholder involvement, trust and democratic debate
- ◆ So, what is different in the Sound governance: The intensity; In Denmark all open land over 0.25 ha are subject to protection – all in all 690 km² (30%) of sea and 90 km² (23% / 1 km inland) of land are managed in the coastal zone
- ◆ Øresundssamarbejdet – the Sound Water Cooperation

Areal planning



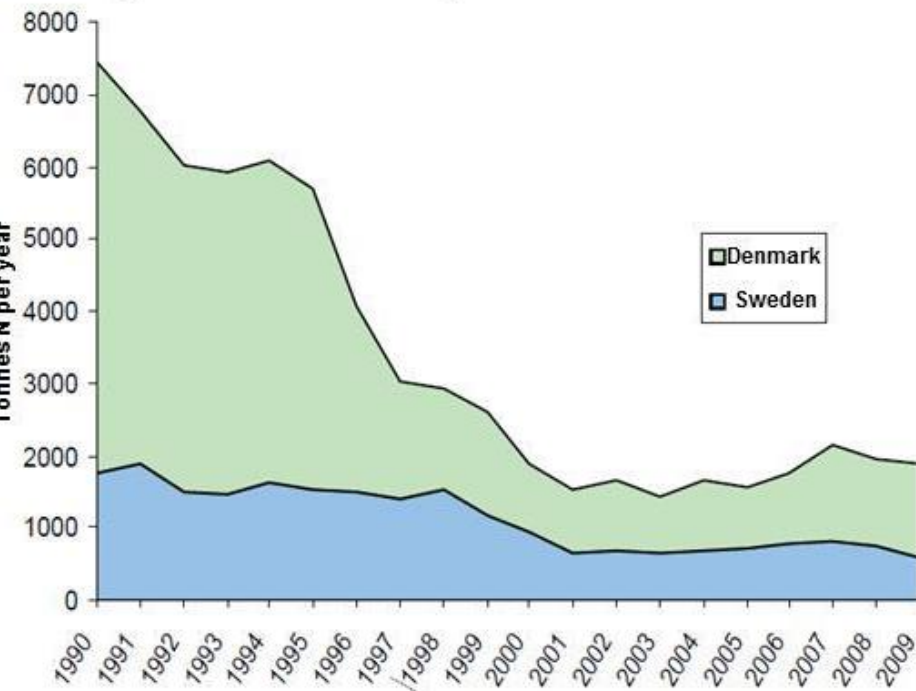
The entire Swedish part of the Sound is managed under WFD, whereas the Danish part is managed under both WFD and MSFD.

In principle, the directives are ambitious and calls for strict regulations to achieve defined targets.

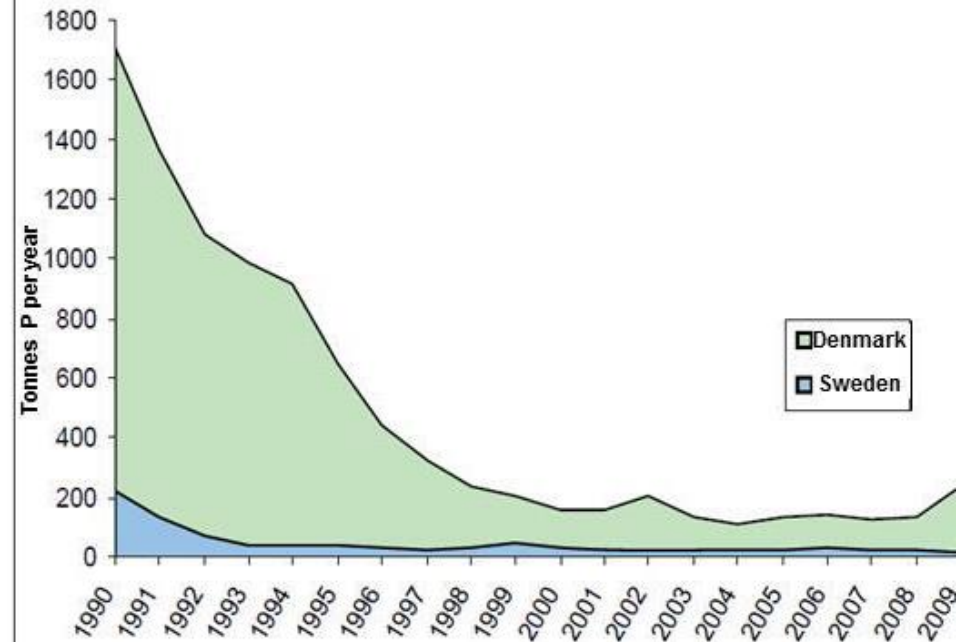
However, area specific management plans are in place only for WFD, whereas the final interpretation and implementation of the MSFD is still pending.

Pollution, nutrients

Nitrogen. Contribution of point sources in the Sound



Phosphorus. Contribution of point sources in the Sound



*.Loads of nitrogen (left) and phosphorous (right) to the Sound from point sources on the Danish (green) and Swedish (blue) side from 1990 to 2009. (Data compiled by The Sound Water Cooperation
<http://www.oresundsvand.dk/english/html/reports.html>)*

Fisheries management

- ◆ The Sound commercial fishery is managed under the EU Common Fisheries Policy within the ICES sub-division 22-24 AND national management rules and practices
- ◆ A trawl ban from 1932 has further protected the stock
- ◆ Trawl restrictions in the Northern part (from 2009) contribute to conserve the spawning stock of cod
- ◆ The recreational fishery is managed in sportsfishing with rod and line and household fishery with a restricted number of standing tackle. Marketing of fish from the recreational fishery is not allowed.

Special ILK Aspects

Local knowledge and dependency of the resource base

Urbanisation has made people less dependent on the local resources

Traditional household fishermen are suffering from the general development and management practises

New organisational development might give voice to these smaller groups of people, 2006, Öresundsfiskarna

Key findings and future challenges

- ◆ The pressure on land for development of the urban areas is reinforced by continuous migration from land to city. The increasing population and changes in lifestyle increase the demand for better housing and recreational outdoor facilities. This leads to an increased pressure on existing natural areas and crowding effects.
- ◆ “The Sound Water Cooperation” has recommended the establishment of a marine protected area covering the entire Sound, potentially under UNESCO’s Biosphere Programme.
- ◆ The ecological status of the benthic biodiversity in the Sound is likely to have benefitted from a trawling ban, which was implemented in 1932 for navigation safety reasons. However, changing the status of the trawling ban into a nature conservation regulation could support the long term maintenance of the good ecological conditions

Source:

The Sound:

Biodiversity and ecosystem services in a densely populated and heavily exploited area

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