

Ecosystem-based management and fisheries

- An overview and historical background



Sara Söderström, 2025-04-03, Baltic Coast Dialouge

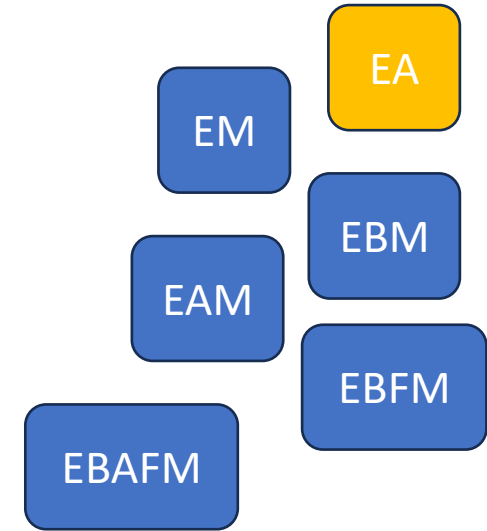
Origins of EBM

- The seed to the ecosystem approach was present already in the 1960s, in environmental ethics.
- Gained importance after the environmental conference in Rio 1992 (Earth summit).
- Working method to reach the goals in the Convention of Biological Diversity (CBD).
- Twelve guiding principles (the Malawi principles).
- Internationally strong, but with weak national implementation.



Ecosystem-based management - wordings

- Several descriptions are used, and mixed.
- Note: *ecosystem approach* is a political vision more than a practical tool, while *ecosystem management*, or *ecosystem-based management* are more concrete.
- Often a prefix to ecosystem-based management is used, such as ecosystem-based *fisheries* management.
- In the Common Fisheries Policy the wording is: ecosystem-based approach to fisheries management



Core characteristics of EBM

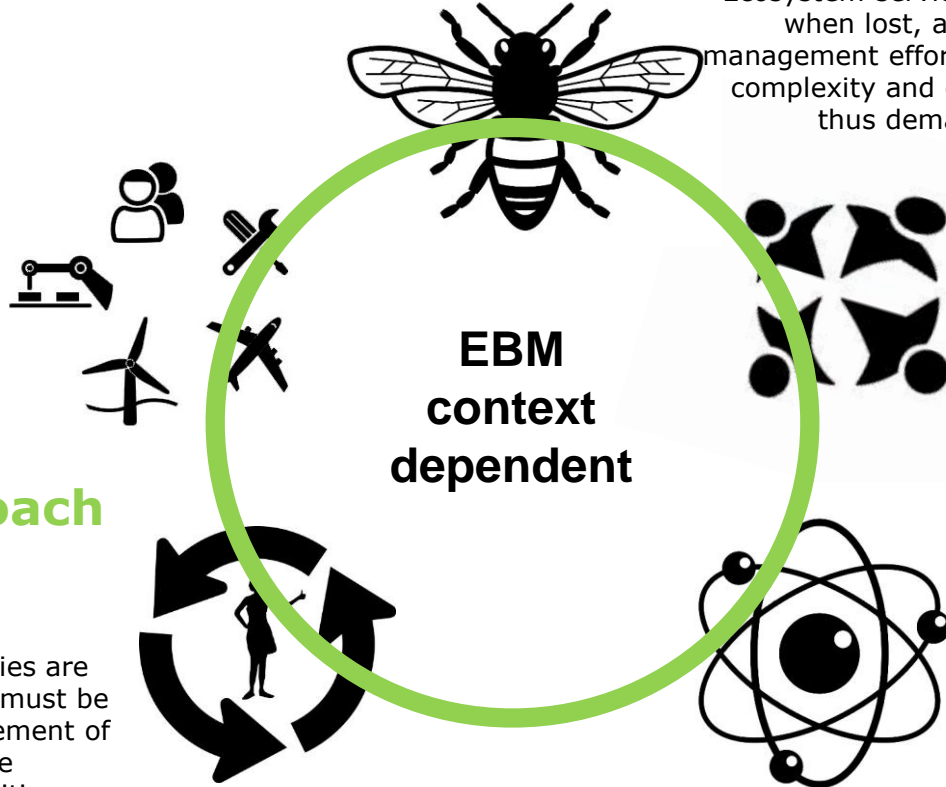
Deducted from research literature

Scale dependency and sector integration

Ecosystem boundaries central. Proper temporal and spatial scales necessary. Avoid silos.

Holistic approach with human inclusion

Humans and human activities are part of the ecosystem and must be accounted for. The management of natural resources cannot be separate from human activities.



Adaptive capacity and ecosystem services

Ecosystem services are important and costly when lost, and need to be recognized in management efforts. Furthermore, ecosystem complexity and change must be considered, thus demanding adaptive and flexible management.

Participation

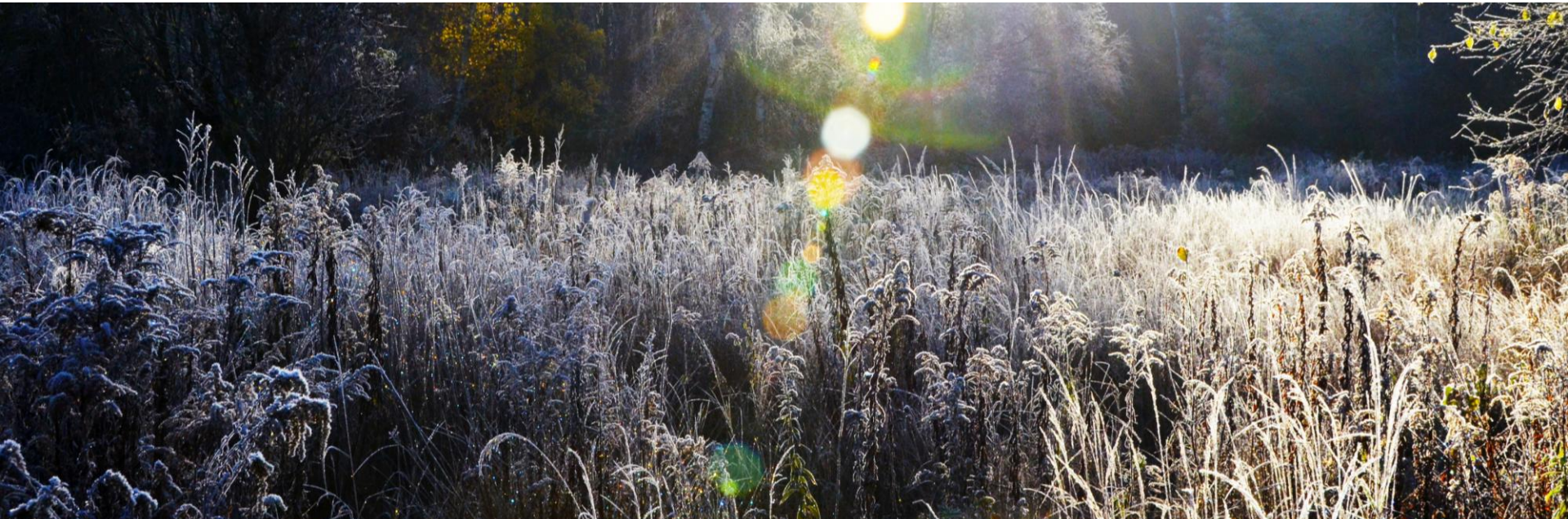
Citizen and stakeholder participation important in decision-making procedures.

Based on sound science

Knowledge about complex ecosystems, reliable data and robust mitigation is necessary. Without proper knowledge decision making become ambiguous.

EBM implementation deficits – some examples

- Ecosystem boundaries not the same as the administrative.
 - Countries outside EU/HELCOM.
 - But also borders between EU countries.
 - Diverging terminology.
 - Different interpretations of EBM.
- And where does an ecosystem start?
 - Belarus/Ukraine etc.
 - For example rivers crossing country borders.
 - Ecosystem approach to management (EAM), ecosystem approach (EA) ecosystem-based management (EBM), ecosystem management (EM) etc...



Ecosystem-based fisheries management

- Adding fish to the agenda

EBM + F

- Ecosystem-based **fisheries** management
- Added value?
- Introduced in the late 1990s

US National Oceanic and Atmospheric Administration, NOAA:

"A comprehensive **ecosystem- based fisheries management approach** would require managers to consider **all interactions** that a target fish stock has with predators, competitors and prey species; the effects of **weather and climate** on fisheries biology and ecology; the **complex interactions** between fishes and their habitats; and the **effects of fishing on fish stocks and their habitat**"

Source: NOAA (US National Oceanic and Atmospheric Administration) (1999). *Ecosystem-based fisheries management: A report to congress by the Ecosystem Principles Advisory Panel.*

REGULATION (EU) No 1380/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 11 December 2013
on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC

CFP Article 2.3

The CFP shall implement the **ecosystem-based approach to fisheries management** so as to ensure that **negative impacts of fishing activities on the marine ecosystem are minimised**, and shall endeavour to ensure that aquaculture and fisheries activities **avoid the degradation** of the marine environment.



Core characteristics of EBFM

Deducted from research literature

Outtake of biomass shall not exceed the productivity of the ecosystem

Fisheries must avoid negative impacts on marine ecosystem. Reverse burden of proof.

Precautionary principle

Adjust the fishing pressure to the scientific uncertainties and ecosystem changes.

Consider ecosystem components and processes

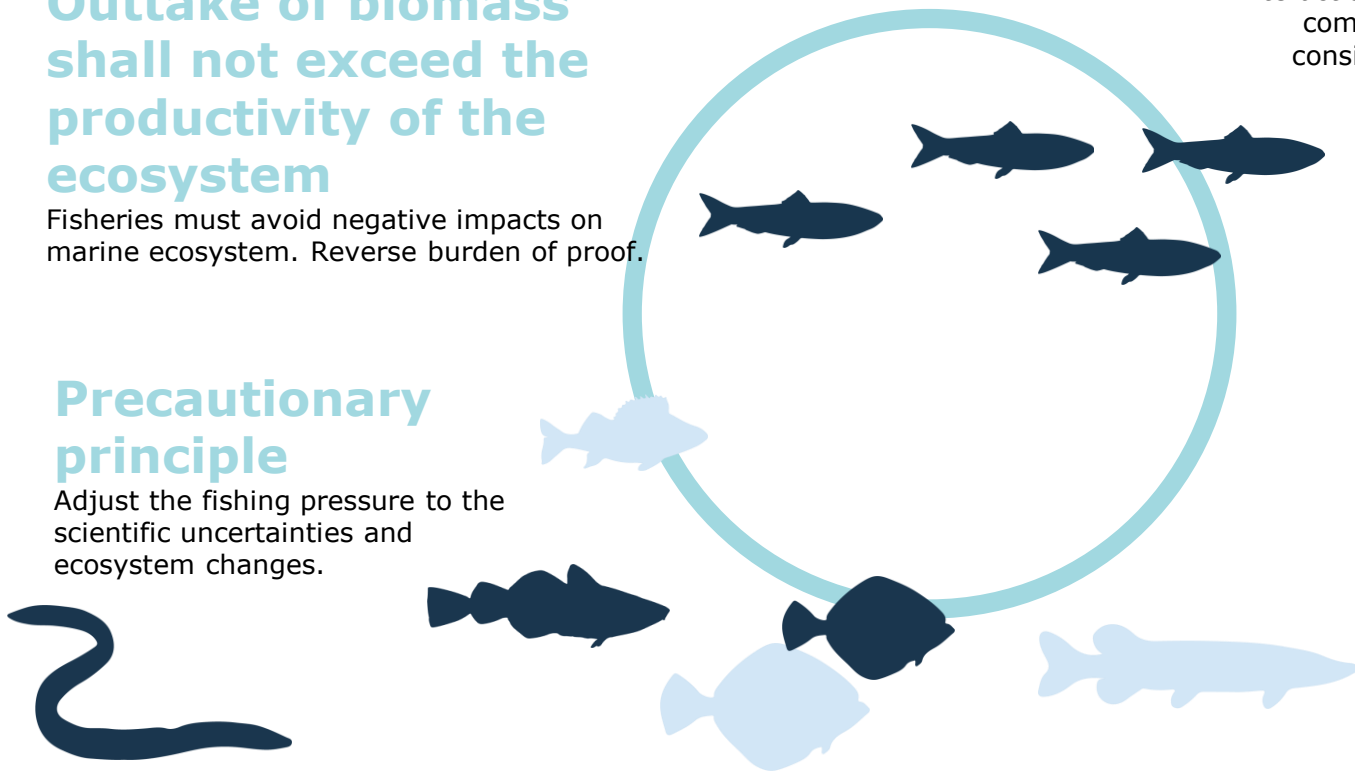
Interactions between species, ecosystem components and processes must be considered in fisheries management.

Multi-species management

Single-species scientific advice is not sufficient to account for species interactions and foodwebs.

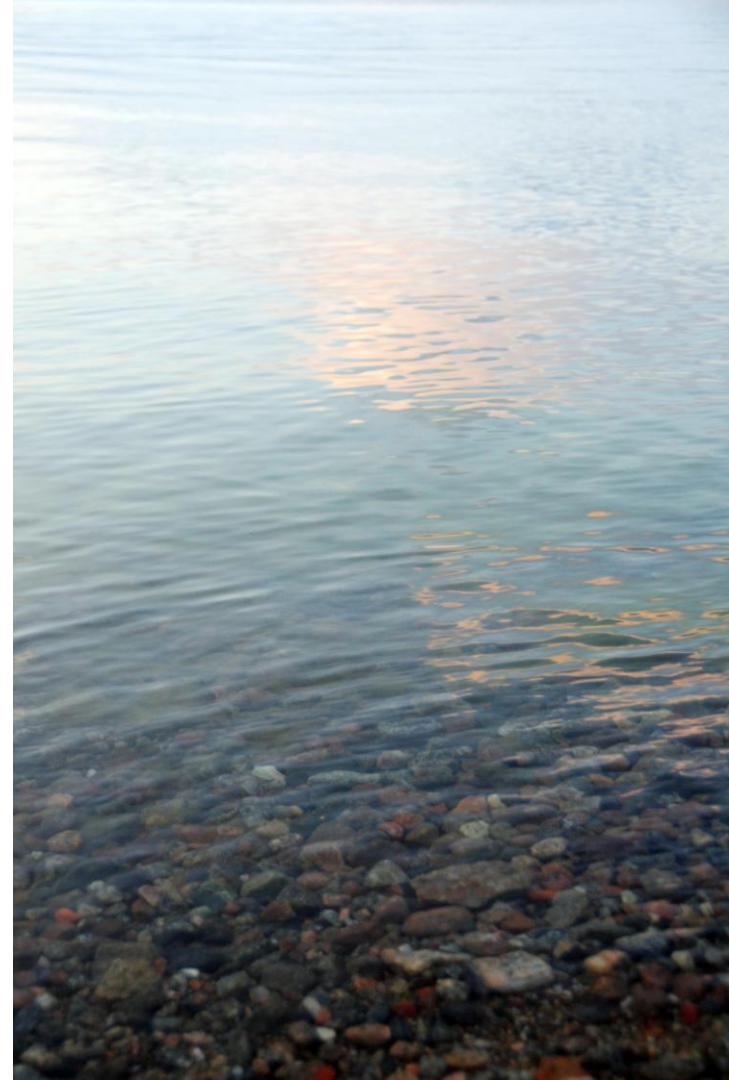
Socio-economic conditions and long-term sustainability

Obtain and maintain long-term socioeconomic benefits without compromising the ecosystem.



In sum, EBFM in the CFP

- **The CFP shall implement the ecosystem approach to fisheries management.**
- **Precautionary approach emphasized.**
- **Problems with mixed fisheries highlighted.**
- **Clear focus to ensure that fisheries impact on the environment and ecosystem functions are minimized.**
- **Low impact fisheries promoted.**
- **Connections between the CFP and MSFD.**



Stock developments since 2016

Stock Year	Western cod	Eastern cod	Western herring	Central herring	Botnian herring	Riga herring	Sprat
2017	≤3 541	≤ 26 071	≤ 34 618	267 745	≤ 95 566	24 919	291 715
2024	≤ 24	0	0	125 344	74 515	39 233	164 947*

- Green = Productive (above Btrigger)
- Yellow = Risk zone (between Btrigger and Blim)
- Red = Crisis (below Blim)

*Bad future prospect; weak recruitment several years in a row

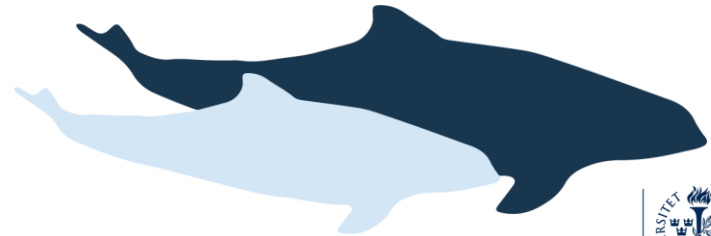
The numbers: ICES headline advice (Fupper when applicable) on fishing opportunities

Baltic Sea Centre



Take home messages

- **Ecosystem-based (fisheries) management important in European environmental and fisheries policies.**
- **The CFP includes characteristics of EBFM, but stock developments poor.**
- **Implementation gap between policy and practice.**



Thank you for listening!



Contact

su.se/ostersjocentrum/english

Contact: Sara Söderström

E-mail: sara.soderstrom@su.se

Phone: +46 (0)8 30 15 18



Baltic Sea Centre | **Stockholm University**