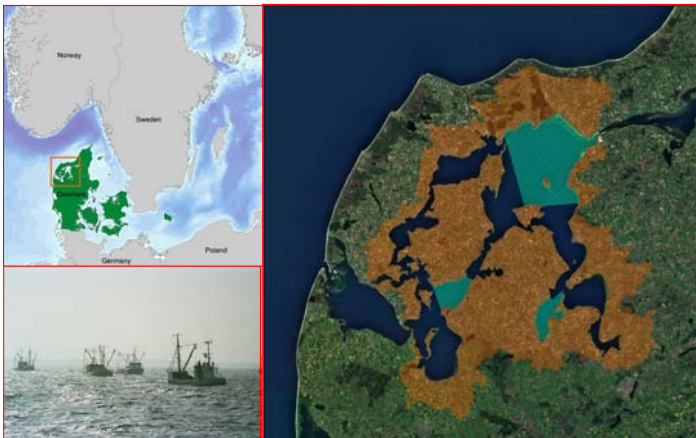


The Limfjord, Denmark (SSA 5)

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POLICY ISSUE "Interaction between eutrophication and mussel production"

The policy issue was decided on by the SSA team, based upon the stakeholder foci of "no fish" and "hypoxia" as well as on data availability. Today, mussel fishery is the most important harvest yield in the fjord.

Background: The Limfjord is situated in Northern Jutland, Denmark. With a coastline of 1000 km and a surface area of 1500 km², the Limfjord is the largest former fjord in Denmark. Today, it has a western inlet from the North Sea and eastern channel connecting with the Kattegat. The catchment area of the fjords is 7528 km², of which 62% of the land is occupied by agriculture.

ECOSYSTEM GOODS AND SERVICES

Provisioning: Food provision. **Regulation:** Disturbance prevention; Bioremediation of waste. **Cultural:** Cultural heritage & identity; Cognitive benefits; Feel-good. **Option-use value:** Future unknown & speculative benefits. **Supporting:** Primary production; Habitat provision; Nutrient cycling; Soil formation & retention; Resilience & resistance (ref: Wiethüchter A. 2007 Assessment of ecosystem goods and services provided by the coastal zone system Limfjord, 65 pp).

SYSTEM BOUNDARIES

Both geographically and virtually, the SSA 5 area includes the central part of the Limfjord with associated catchment areas (orange area). Empirical modelling will be carried out on the three subareas: Kås Bredning, Løgstør Bredning, and Skive Fjord (turquoise areas).

CATWOE

Customers, beneficiaries/victims: Mussel fishery & farming staff, farmers sustainable production, agriculture/farm workers.
Actors: Fish boat owners, fish farmers, mussel industry, boat & fish gear suppliers, agriculture/farm owners.
Transformation: Demand for water clarity, demand for mussels.
Worldview: Mussel production is an important income source in the area.
Owners: The EU, Ministry of Environment, Ministry of Food, Agriculture & Fisheries (incl. regional departments), municipals.
Environment: Agriculture technology, regulating laws, upland assimilation, marshland/wetlands, mussel dredging impacts, mussel harvest & culture technology.

DPSIR

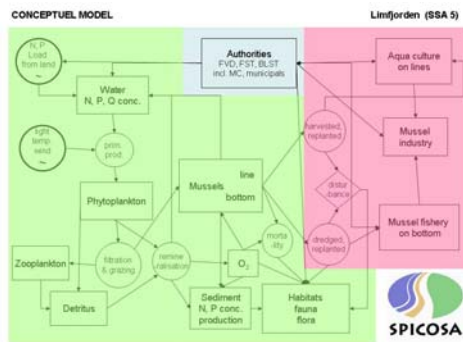
Driver: Increase in N & P (multiple causes).
Pressure: Nutrient load.
State: Change from fish to mussels, change of macro vegetation to phytoplankton (regime shifts).
Impact: Hypoxia, water quality/clarity.
Response: Water Framework Directive targets of reducing nutrient loads to the fjord system.



STAKEHOLDER MEETING Nykøbing Mors 4 October 2007

The stakeholder partners are: Central Society of the Limfjord Fishermen, Danish Society of Nature Conservation, Danish Society of Recreational Fisheries, Virksund & Omegn Fishery Society, Danish Shellfish Center, Danish Directorate of Fisheries Nykøbing Mors, Danish Society of Shellfish Aqua-culture, Society of Mussel Fisheries, Vesthimmer-land & Han Herred Recreational Fisher-men, Holstebro Municipal, Holstebro-Struer Harbour, Thyborøn Harbour, Tourist Office VisitNordjylland, University of Aarhus, and the regional sections of the Ministry of Environment, MC AAL, and MC RIN.

CONCEPTUAL MODEL



KEY INDICATORS

Ecological: e.g. water clarity, chlorophyll concentration, frequency and distribution of hypoxia, mussel biomass, filtration capacity.
Economic: N and P loading, mussel harvest, production from aquaculture.
Social: Profits (mussel harvest), values of externalities.

