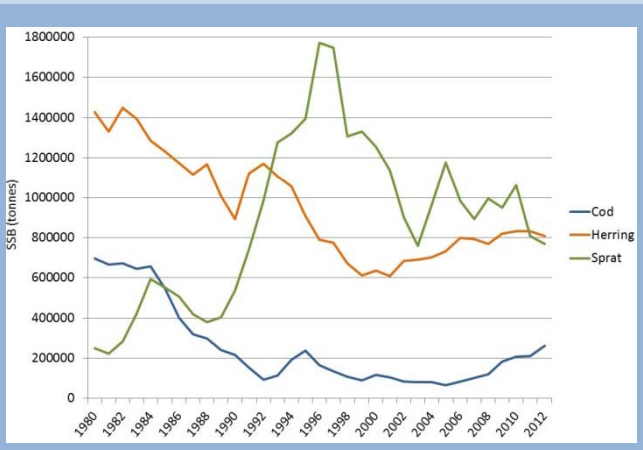
Policy Brief #5

HERRING
Towards a sustainable management of coastal spawning grounds

The size of herring populations as well as the size of individual herrings has decreased during the past decades in several places in the south Baltic Sea. The herring plays not only a crucial role in the marine ecosystem but also has a long tradition as a food scource around the entire Baltic Sea.

Coastal areas where the herring spawn has a large economic impact on the coastal development but these areas are put under increasing pressure due to more and more human activities. In order to manage these areas in a sustainable way a holistic approach is needed, taking into account all potential pressures and their accumulated effects on the marine ecosystem.



Biomass of cod (blue), Herring (orange) and Sprat (green) In the Baltic Sea 1980-2012

The purpose of the HERRING project is to increase the understanding of the importance of coastal spawning areas for herring in the south Baltic Sea. The project focuses on three different areas in the south Baltic Sea which all are important spawning areas for herring; Hanö bay in Sweden, Greifswalder Bodden in Germany and Vistula lagoon in Poland/Russia. Within these areas sampling is carried out in order to identify the location and characteristique of herring spawning. The project also works with assessment and analysis of management structures for protection of coastal spawning areas.

Human activities and coastal spawning areas in the Hanö bay

Shallow coastal areas along the Hanö bay serve as important spawning areas for herring, in particular in the Blekinge archipelago with its numerous shallow bays and inlets. Coastal areas are also attractive places for human activities such as tourism, recreation and as a place for residing. Moreover, there are also large economic interests in coastal areas which require geographical space for its activities and which may also have a negative effect on the marine environment. Along the coast of Hanö bay there are a few large industries and ports and during the summer months the area is also visited by a large amount of tourists. Fishery is no longer as intense as it once was, particularly the small scale coastal fisheries, although Simrishamn continues to be one of the largest fishing ports on the Swedish east coast. The effects of human activities on the marine environment and the degrading state of Hanö bay has been analyzed in an investigation carried out by the Swedish Agency for Marine and Water Management. The investigation conlucdes that it is not possible to point out one single factor as the source behind the deteriorating environmental condition of the bay but that it probably is a coctail effect of several different sources.

This is the 5th of 5 policy briefs which have beenproduced within the HERRING project

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Management of spawning areas

Coastal spawning areas are affected by a number of factors and the responsibility for these is often shared by several different authorities. Water quality, fisheries and physical disturbances are all examples of factors that affect the spawning grounds but that are governed by different authorities. Authorities on local, regional and national level manage and monitor most of these factors but also other organisations like cross sectoral associations play an important role in the management of these areas. The environmental protection agency has the overall responsibility for implementation of the environmental policy in Sweden and is also the authority that ensures that the environmental code is followed. The Swedish Agency for Marine and Water Management (Swam) has the overall responsibility for management of fresh water as well as marine waters. The basis for Swam's work is to preserve, restore and foster sustainable use of lakes and the sea. One sub-programme at Swam focuses on integrated monitoring of coastal fish which serves to document the composition of permanent coastal fish populations as well as the reproduction capacity of two species; Eelpout (*Zoarces viviparus*) and Pike (*Esox lucius*) as indicators of levels of toxins. Herring is however not specifically addressed in this porgramme.

SWOT analysis of herring spawning areas in the Hanö bay

Strengths	Weaknesses
• Monitoring programmes in place since 1990 • Historical environmental data is publicly available. • Protected areas like nature reserves, Natura 2000 and Biosphere areas are already in place.	• Eutrophication. A large number of rivers and creeks flow into the Hanö bay bringing nutrients from the adjacent agricultural areas. • Current monitoring programmes have not yet been able to explain the reasons behind the deteriorating environmental state of Hanö bay.
Opportunities	**Threats**
• Current monitoring programmes could be expanded and also include monitoring of herring spawning grounds. • Phase out of all private sewers is planned. These will instead be connected to the municipal sewage system. • Construction of wetlands and ponds to limit the input of nutrients form rivers and creeks into Hanö bay.	• Climate change. Large scale changes in the ecosystem can have critical effects on trophic levels and changes in the composition of species.. • Physical disturbances and destruction of herring spawning areas. • Monitoring and protection of herring spawninga areas has low priority.

Recommendations

The exact location of herring spawninga areas along the coast of Hanö bay is not fully known. A first step to improve the management of spawning grounds would be to map these areas so that protective measures can be established if needed.

Current national monitoring programmes do not include managment of herring spawning areas or reproduction of larvae. Inclusion of these factors in the monitoring of coastal fish could help to improve management of the stock.

Increase the understanding of the link between a well managed natural resource and its effects on the socioeconomic development of coastal areas.

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