

The Baltic Sea environment would be improved by sustainable fishery management.

The Baltic Sea Ecosystem has been strongly impacted by discharges of toxic substances, nutrients and intensive fisheries.

Wise political decisions taken three decades ago about reducing the toxic loads resulted in drastically decreased concentrations of some substances. The response in the environment to this is clear –previously endangered populations of seals and white tailed eagles are now increasing.

Excessive discharges of nutrients is however a continuing problem. Heavy algal blooms covering large areas of the Baltic Sea, dense mats of filamentous algae on rocky shores and oxygen depleted deep waters and coastal bays are just a few examples of the negative effects of eutrophication. The Baltic Sea Action Plan of the Helsinki Commission (HELCOM), signed by all riparian countries in Cracow two years ago, contains very concrete nutrient reduction goals for all countries. These measures, when implemented not later than 2021, will result in a vastly improved environment. Already now we can see reduced nutrient loads thanks to new sewage treatment plants in Poland and Russia, and from many measures to reduce nutrient leakage from modern industrialised agriculture in the western countries. However it will take many decades before we can expect significant effects of these measures on the entire Baltic, since the Baltic already contains large amounts of nutrients that have accumulated during previous decades of excessive loads. The Baltic Sea has a long memory and will not easily forget our past ‘sins’!

Another major environmental problem for the Baltic Sea is overexploitation of fish stocks. Unfortunately, fisheries management has traditionally been considered an issue to optimise utilisation of living resources. Catch quotas and other regulations have, based on advice from the International Council for the Exploration of the Seas (ICES), been decided by EU and Russia. HELCOM, the international agency responsible for the environmental status of the Baltic has not dealt with fisheries. During recent years, it has become more and more evident that these issues cannot be handled separately and successful management actions must be based on an integrated ecosystem approach. This is in line with the HELCOM Baltic Sea action plan and the EU Strategy for the Baltic Sea Region and requires closer cooperation between HELCOM, ICES and all countries bordering the Baltic. Many scientific studies have shown that eutrophication may affect fish stocks but there is now also evidence that a recovery of the Baltic fish stocks could contribute to reduce some effects of eutrophication.

On the initiative of the private foundation Baltic Sea 2020, a group of 16 Baltic Sea ecologists met in Stockholm and discussed the ecological role of fish in the Baltic Sea ecosystem. The group reached the consensus that a wise, precautionary and ecosystem-based fisheries management can contribute to a healthier sea and also reduce some of the negative effects of eutrophication.

Fish are important components in the Baltic Sea ecosystem, dominating much of the food web. A prerequisite for a "healthy" Baltic Sea ecosystem are "healthy" fish populations. A larger cod population would reduce its major fish prey – sprat and herring. Since these small fish can control zooplankton through their feeding, a larger cod stock would indirectly favor the zooplankton. Eventually this could reduce phytoplankton biomass and hence result in clearer water. In short, we can expect that a larger cod population could contribute to an improved water quality. In addition, cod of course will not eat all the herring and sprat in the Baltic Sea and the ones that survive will be able to grow better and become fatter. This should also benefit herring and sprat fisheries. Even if the cod stock now shows signs of increasing, it is still below a level where it would produce optimal sustainable catches and at the same time contribute to reduce some of the eutrophication effects.

Recently, some progress has been made by the EU and its Baltic member states in reducing fishing pressure of cod, through compliance with the scientific advice of ICES. The current cod management advice requires low exploitation, even if the stock recovers. If this plan is followed and there are good hydrographic-climatic conditions for survival of cod eggs and larvae, we could expect a substantial increase of the cod biomass within the next 5 years. Decided measures against eutrophication, which are still necessary, will have an effect on a decadal time scale only. Thus, the ecosystem effects of an increased cod stock will have the potential to positively change the ecosystem faster.

Our conclusion is that an ecosystem-based approach to management of the Baltic Sea could have many benefits and synergies. Low exploitation of cod, also after the population recovers to a higher level, will still allow for a sustainable fishery with substantially larger catches than today. At the same time, this management will help to achieve much wider ecosystem objectives, including several of those in the Baltic Sea Action Plan. However, a larger cod stock is unlikely to be the solution to the problems with cyanobacteria algal blooms, primarily driven by the excess of and imbalance between nutrients.

Our current scientific understanding of the Baltic Sea ecosystem does not only show that we can improve the conditions of the open Baltic Sea for the better by implementing a wiser fisheries management, but also that we can improve conditions in coastal areas as well. Restored populations of top predators like pike, perch and pikeperch are likely to reduce some effects of local coastal eutrophication, such as massive growth of filamentous algae.

It is imperative that these ecosystem properties are considered now when EU is revising its common fishery policy (to be decided in 2012) and HELCOM its action plan (to be finalized in 2013). Such considerations would also facilitate progress towards the recently adopted ecosystem-based management plan of the EU Marine Strategy Framework Directive (*MSFD*). We citizens from around the Baltic Sea have the right to insist that our politicians already now fulfill the promises of existing international agreements, like the Johannesburg declaration of 2002 which states that fish stocks should be rebuilt to give sustainable yields. The rebuilding of the cod stock as well as those of sprat and herring to these levels is what we are asking for. The Baltic Sea is not only an economic resource but also a natural resource and environment of concern for us all.

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