

Raising quality of marine protection – the next step in preserving common assets

Preserving biodiversity and securing a sustainable exploitation of natural assets will require a new way of setting up marine protection – with a much sharper focus on quality, not just quantity.

The EU should protect 10 percent of its coastal and marine areas by 2020. So far only about 6 percent is protected.

In creating the next generation of Marine Protection Areas (MPAs) there are important lessons to be learned from the Baltic Sea region. There, the areal goal is already reached. But the real target of marine protection is still at risk of being missed.

Despite the fact that 12 percent of the coastal and marine areas in the Baltic Sea are protected, many habitats and species are still threatened. The latest evaluation of the marine Natura 2000 habitat types shows that *24 years after the introduction of Natura 2000, none of the seven marine priority habitat types in the Baltic Sea have reached favourable conservation status.*

Habitats that have the worst conservation status include estuaries and coastal lagoons. Places where we humans like to swim, fish and moor our boats. In some areas these habitats are so severely affected by human activities that their function as habitats for marine species has been dramatically impaired, leading to decline or loss of important species.

Protecting 10 percent of the marine environment does not mean that the qualitative requirements and goals set in the Nature Directives, Marine Directive, the Biodiversity Strategy and UN Sus-



Photo: Jerker Lokrantz/Azote

The sea's most critical habitats are often located where we humans like to swim, fish and moor our boats.

POLICY RECOMMENDATIONS FOR MARINE PROTECTED AREAS

To deliver sufficient protection for habitats and species, there is a need for proper designation and management.

- Right design at the right place**
 Effective marine protection must be tailor made for the natural habitat types and species it aims to protect and in relation to the activities constituting a threat in the area. It is important to set up a connected and ecologically representative network of MPAs.
- Reinforce restrictions on commercial and recreational fishing where needed**
 When appropriate, fishing restrictions in protected areas can favour both environmental protection and fisheries management. Healthy underwater habitats are a precondition for long-term sustainability of fisheries.
- Set up structures for monitoring and evaluation**
 Evaluating the effects of MPA management is the only way to establish which measures are successful and which need to be adapted. It demands better mapping and knowledge of the marine ecosystem as well as the distribution of species, habitats and areas of biological significance.
- Establish reference areas free from human activities**
 MPAs completely free from human activities are needed as reference areas for assessments of marine protection.



Photo: Hans Kautsky/Azote

Meadows of seagrass provide important benefits not only for coastal communities but for the region at large.

tainable Development Goals are automatically fulfilled. Nor does it guarantee the actual objective of marine protection: preserved biodiversity and continued sustainable exploitation of marine resources.

Marine protection for sustainable tourism

Many coastal communities are dependent on a healthy sea to secure their income, for instance from tourism and commercial and recreational fishing. At the same time some of the coastal habitats are particularly vulnerable to eutrophication, maritime and recreational boat traffic, fishing and dredging for piers and ports. When important habitats change or disappear it has direct repercussions on biodiversity and our possibility to sustainably exploit marine resources.

Over the past 50 years, 30 percent of marine habitats in the Baltic Sea have decreased either in distribution or quality and many species have decimated. The coastal habitats belong to the most affected - and where the majority of MPAs are currently found.

Protecting marine and coastal habitats – not only by size but also making sure that the level of protection is adequate and fulfils its purpose – can add substantial socio-economic values beyond biodiversity conservation.

Seagrass mitigating the effects of climate change

Besides economic values, the loss of sensitive habitats can also lead to the loss of important ecosystem services. One good example of this is the coastal meadows of seagrass and other plants which have declined markedly in many coastal regions during the

last century. These habitats contribute with several important ecosystem services:

- they bind organic carbon which is accumulated on the seafloor and thus act like natural carbon sinks;
- they stabilise the seafloor sediment so that less sediment is stirred up, contributing to increased water transparency and decreased release of nutrients;
- they prevent coastal erosion due to for instance sea level rise;
- they constitute an essential habitat for many species, including fish species targeted by commercial and recreational fisheries.

Many of these ecosystem services are closely connected to economic values, like for instance tourism and fisheries. As a part of green infrastructure, meadows of seagrass and other plants hence provide important benefits not only for coastal communities but for the region at large.

Towards a network of MPAs

If MPAs are to provide real protection they have to be properly designed. Research shows two important design principles:

- an MPA must be big enough to protect mobile species;
- MPAs should not be isolated, so that species can find their way into or from the area.

It is therefore preferable to create a connected network of MPAs based on the knowledge of how species move in the seascape. Further, it is important that the network is representative, which means that it covers all habitat types found in a sea area.

A coherent and ecologically representative network of protected areas is one of the goals under the Marine Directive. HELCOM recently published an evaluation of the network of MPAs in the Baltic Sea, showing that many MPAs are too small and are not designed to allow migration and movement of species between areas. This makes the MPAs less effective in protecting the biodiversity and our common values.

Improving the MPA network and enhancing the connectedness of MPAs is imperative in designing future marine protection, and will need a joint effort from all Baltic Sea countries.

The level of protection is important

The HELCOM evaluation also points out weaknesses in the level of protection provided by Baltic Sea MPAs. The level of protection can differ strongly between MPAs, from a high level of protection where all or most human activities are prohibited, to areas where only certain species or habitats are protected or where many activities are not restricted. In the Baltic Sea, very few MPAs have a high level of protection. Activities such as fishing and shipping are most often allowed and occur in a large proportion of Baltic Sea MPAs.

The Baltic Sea Centre's recent analysis of all Swedish marine Natura2000 areas show that human activities like commercial fishing, dredging, constructions and/or boat traffic occur in more than 80 percent of the areas.

A qualitative and effective protection of marine habitats and species does not necessarily mean that all human activities must be banned. Science shows that a network of MPAs can be important for conservation of biodiversity also when all MPAs do not have the highest level of protection. But the high degree of human presence in Baltic Sea MPAs makes it important to analyse each specific area and determine if – and how – the current use is a threat to the habitats and species that are supposed to be protected.

Few MPAs without fishing

Fishing has a large effect on vulnerable species and habitats. Despite that, fishing is rarely restricted in Baltic Sea MPAs. Fishing is restricted in a number of MPAs during some parts of the year to benefit the fish stocks, and some also regulate what fishing gear may be used. But currently, there are no MPAs that are no-take zones, where fishing is totally prohibited.

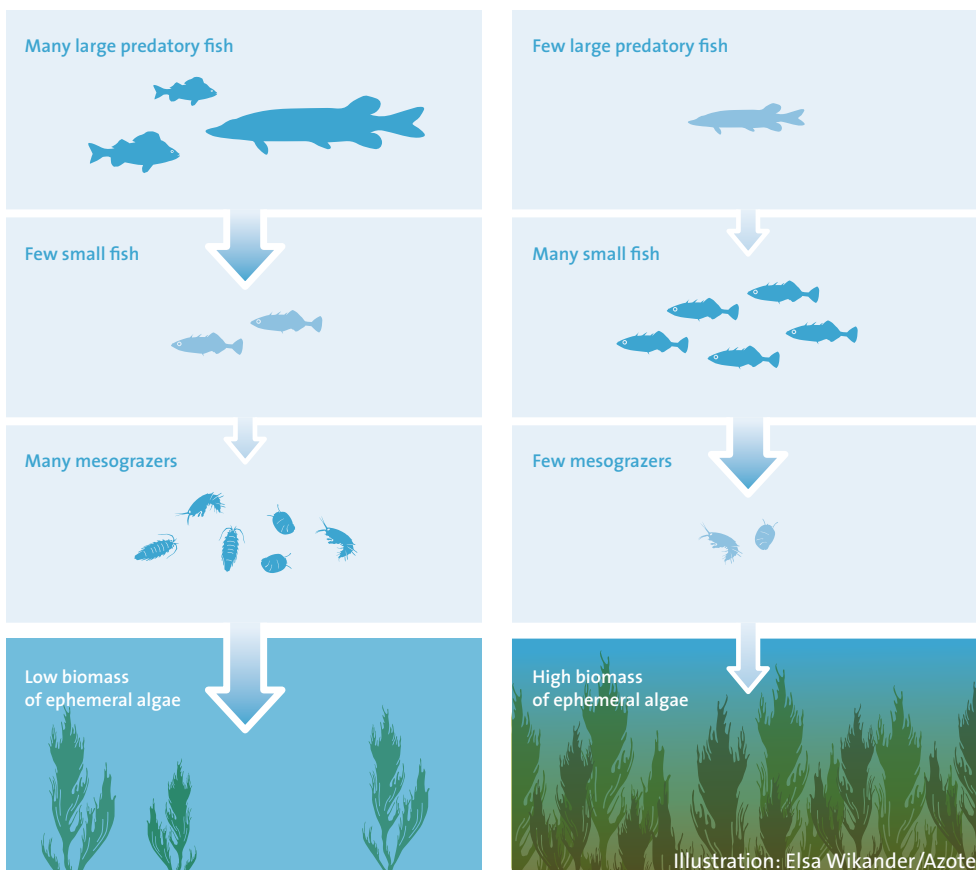
The recent HELCOM evaluation shows that intensive commercial fishing occurs in 40% of the Baltic Sea MPAs, in particular in the southern and western Baltic Sea. At the same time, recreational fishing is most likely an important human pressure in many areas. Along the Swedish coast for example, recreational fishing takes the largest proportion of catches of coastal fish species such as pike and perch.

It is still unclear exactly to what extent fishing is a threat to habitats and species in Baltic Sea MPAs. However, it is safe to say that fishing has direct effects on species caught in the fishing gear. This includes bycatch of endangered fish, seabirds and marine mammals. Fishing gear, especially demersal trawls, can have dramatic effects on seafloor habitats by changing the structure of the seafloor, damaging large and long-lived species and stirring up sediment.

Predatory fish mitigating eutrophication

Fishing can also alter food webs, thus affecting the whole ecosystem. Predatory fish species, such as perch, pike and zander, have declined in several coastal areas of the Baltic Sea, partly due to the high fishing pressure. This has most likely contributed to the change and loss of important vegetation habitats.

Over the past decades there has been a shift in coastal vegetation in many areas, where large and long-lived species of seaweeds and seagrass are replaced by ephemeral algae. This represents a major deterioration of species' natural habitats and makes the bays un-



Large and stable stocks of predatory fish in an area leads to a decrease in the amount of small fish, such as stickleback, which in turn leads to an increase in small mesograzers that the stickleback feeds on. These mesograzers are important consumers of ephemeral algae. This type of trophic control, or top-down effect, can have as large effect on the amount of ephemeral algae as nutrients coming from land.

pleasant for tourism, swimming and other recreational activities. The increase in ephemeral algae has previously been explained by increasing nutrient inputs from land. But recent studies in both the Baltic Sea and the Atlantic show that decreasing amounts of big predatory fish in a coastal area can have as big effects on growth of ephemeral algae and other eutrophication effects as increased nutrient concentrations.

MPAs as integrated part of ecosystem based management

The fragmented and incomplete fishing regulatory system in Baltic Sea MPAs is a consequence of the fact that fisheries and marine environment is managed more or less separately and often with different goals.

Fisheries management focus on the stability of commercial fish stocks and profitability of associated fisheries, with little consideration of how the ecosystem and other organisms are affected.

The objectives of ecosystem based management are present in both the Marine Directive and the Common Fisheries Policy, in which article 11 states that conservation measures are to be adopted. But in practice, these goals are currently far from being met. The 2015 evaluation study supporting the EU Commission's Fitness Check of the Nature Directives states that the implementation of marine Natura 2000 is challenging, due to a lack of scientific data and conflicts of interest between nature protection objectives and the fisheries sector.

For stakeholders and responsible institutions at EU, national and regional levels to be able to cooperate better, there is a need for a common vision of the purpose of MPAs and how to attain it.



Photo: Tony Holm/Azote

Healthy stocks of predatory fish like pike in coastal areas can mitigate eutrophication effects.

MPAs can be an important tool for ecosystem based fisheries management, functioning as reference areas to study the effects of fishing on natural habitat types and ecosystems.

Evaluation, knowledge and new reference areas

Monitoring and evaluation of the effectiveness of MPAs are essential tools to achieve an effective marine protection. According to HELCOM, monitoring is only carried out in one third of the Baltic Sea MPAs, which points to the need to step up efforts in monitoring MPA effectiveness. This is the only way to know which restriction of human activities lead to desired effects. There is also a need for further mapping of distribution of species, habitats and areas of biological significance.

An important tool to increase the knowledge and possibilities for evaluation would be to establish MPAs that are completely free from human influence. These areas would function as valuable reference areas for how underwater nature can look like without fishing, maritime activities and physical exploitation.

FURTHER READING

EEA 2015. *Marine protected areas in Europe's seas. An overview and perspectives for the future.* EEA Report No 3/2015

HELCOM 2016. *Ecological coherence assessment of the Marine Protected Area network in the Baltic.* Balt. Sea Environ. Proc. No. 148

Olsen EM, Johnson D, Weaver P, Goñi R, Ribeiro MC, Rabaut M, Macpherson E, Pelletier D, Fonseca L, Katsanevakis S, Zaharia T 2013. *Achieving Ecologically Coherent MPA Networks in Europe: Science Needs and Priorities.* Marine Board Position Paper 18. European Marine Board, Ostend, Belgium

BALTIC EYE – BRIDGING THE GAP BETWEEN SCIENCE AND POLICY

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