



Oceana proposal for a Marine Protected Area

Bogskär

INTRODUCTION TO THE AREA

Bogskär is a small group of islets, located 60 kilometers from the nearest coast in the middle of the Baltic Sea, between Finland and Sweden. It is the southernmost point of Finland. The main skerry holds a small automatic lighthouse with a helicopter landing pad. The offshore islets are home to a colony of grey seals (*Halichoerus grypus*) which is currently listed as a protected species under Annex II and Annex V of the European Habitats Directive. In the spring 2012, Oceana conducted underwater research in the area near Bogskär, both in shallow waters next to the main island, and in the deeper waters some kilometers from the islands.

DESCRIPTION OF THE AREA

Grey seals are found throughout the Baltic Sea, but the northern part of the Baltic Proper is the most important place for the species, as the largest number of grey seals is found there (HELCOM 2009). During winter the seals are in areas with open waters. The breeding season is in February and March, and they breed preferable on ice, as breeding on land has a higher mortality (Jüssi *et al.* 2008). The grey seals in the Baltic Sea have had a tough time the last century: In the beginning of the 20th century, they were hunted to extinction south of 59° northern latitude, and environmental pollution through the last three decades has caused low fertility rates. The recovery of the grey seal in the Baltic has been slow and no established colonies have been described in the Southern Baltic Proper (HELCOM 2009). However, in the more northern areas of the Baltic Sea the annual increase of grey seals is positive, and data from the Swedish coast from 1990 to 2005 shows an increase in population on almost 8 % per year (Harding *et al.* 2007, HELCOM 2009). As grey seals are top predators in the ecosystem of the Baltic Sea, the population of the seals is an indicator for describing the state of the entire environment (Bäckling *et al.* 2011).

On hard substrates, like boulders, blue mussel beds (*Mytilus* sp.) are often found in the Baltic Sea. Bogskär is no exception. On the shallow water near the islets, where large rocks dominate the bottom, blue mussel beds are found. In the northern Baltic Proper, *Mytilus* beds are found on shallower areas down to 25 meters depth. As blue mussels dominate the animal biomass on hard substances in the northern Baltic Proper, they are considered to be a key functioning species for the region (HELCOM 2009). *Mytilus* beds host a number of other species like barnacles, hydroids and bryozoan living on the mussel shells or in between the mussels (HELCOM 2009, Paulomäki *et al.* 2011).

In this part of the Baltic Sea, the large isopod *Saduria entomon* is an important community regulator. The isopod is omnivore, eating both carcasses and living organisms like amphipods (*Monoporeia affinis*), and it can also be cannibalistic (Haahtela 1990). *Saduria entomon* is an important food supply for young cod and other fish (Haahtela 1990). The isopod occurs at varying depths, from shallow to deep waters up to -290 meters (Sandberg & Bonsdorff 1990).



Grey seal (*Halichoerus grypus*) at the skerry of Bogskär, Åland Islands, Finland. © OCEANA/ Carlos Suárez



Two-spotted goby (*Gobiusculus flavescens*) at the shallow water of Bogskär, Åland Islands, Finland. © OCEANA/ Carlos Suárez

PROPOSAL

In spring 2012, Oceana conducted a number of underwater recordings with both an ROV (*Remotely Operated Vehicle*) and scuba dives around the small desolate island of Bogskär. A grey seal (*Halichoerus grypus*) colony consisting of two dozen individuals, was found at the skerry. Surprisingly a dozen dead grey seals, mainly young and pups, was also found in the shallow seabed of the islet. Subsequent studies of the bodies showed that the cause of the death was not anthropogenic, but from drowning and/or physical damages acquired during severe weather, which is commonly fatal for young pups (Jüssi *et al.* 2008).

The shallow water around the main island revealed large stones with blue mussel beds (*Mytilus* sp.), where flounder (*Platichthys flesus*), two-spotted goby (*Gobiusculus flavescens*), and shorthorn sculpin (*Myoxocephalus scorpius*) were also recorded. The shallow water enables algae to grow, such as red algae (*Aglaothamnion roseum*), and brown algae, including bladder wrack (*Fucus vesiculosus*) (for entire species list see Table 1). Bladder wrack provides shelter to many epiphytic and epibenthic communities, and is therefore considered the most important phytobenthic species in the Baltic (Kautsky & Kautsky 1989).

A number of species were recorded in the deeper areas, from 40 meters to 117 meters, dominated by mud bottoms. In addition to the shrimp *Neomysis integer* and the isopod *Saduria entomon*, many fish species were documented, including eelpout (*Zoarces viviparus*), shorthorn (*Myoxocephalus scorpius*), cod (*Gadus morhua*), herring (*Clupea harengus*), fourbeard rockling (*Enchelyopus cimbrius*), and fourhorn sculpin (*Triglopsis quadricornis*) (Table 1). *Saduria entomon* is an important food source for cod, which we confirmed by recording both at a depth of 117 meters. No visible life could be found at 128 meters depth.

The grey seal is listed in the Habitats Directive annexes (Annex II and Annex V), and important sites for grey seals should be proposed as Special Areas of Conservation (SAC) under the Habitats Directive. As an EU Member State, Finland is obligated to protect all natural habitats and species listed in the Directive, and therefore to designate as many SACs as necessary to guarantee a favorable conservation status.

POSSIBLE THREATS AND MANAGEMENT PROPOSALS

Hunting and environmental pollution threaten grey seals. Unsustainable management of fish stocks can lead to the depletion of important food organisms for marine mammals, such as grey seals, in the Baltic Sea. The blubber thickness in young grey seals in the Baltic has decreased over the last decade, which is perhaps caused by unsustainable fisheries (HELCOM 2009). By-catch of marine mammals can be a problem, but there is no information available on this in the Baltic Sea (HELCOM 2009).

With Bogskär's location just north of the 59° N latitude, its grey seal colony is probably one of the most southern in the inner Baltic Sea. Given this, and considering the other valuable species and habitats in the area, like *Mytilus* beds and *Saduria* community, the Bogskär area should be protected immediately.

REFERENCES

- Bäckling B.M., Moraes C., Kunnasranta M. & Isomursu M. 2011. Health Assessment in the Baltic grey seal (*Halichoerus grypus*). HELCOM Baltic Sea Environment Fact Sheets 2011. Online. Viewed 31.20.2012. Available at: http://www.helcom.fi/BSAP_assessment/ifs/ifs2011/en_GB/BalticGreySeal/
- Haahtela I. 1990. What do Baltic studies tell us about the isopod *Saduria entomon* (L.). *Ann. Zool. Fennici*, 27: 269-278.
- Harding K. C., Härkönen T., Helander B., & Karlsson O. 2007. Status of Baltic grey seals: population assessment and extinction risk. NAMMCO Scientific Publications, Volume 6: 33-56.
- HELCOM 2009. Biodiversity in the Baltic Sea - An integrated thematic assessment on biodiversity and nature conservation in the Baltic Sea. Baltic Sea Environment Proceedings No. 116B. Available at: <http://www.helcom.fi/stc/files/Publications/Proceedings/bsep116B.pdf>
- Jüssi M., Härkönen T., Helle E. & Jüssi I. 2008. Decreasing ice coverage will reduce the breeding success of Baltic Grey Seal (*Halichoerus grypus*) females. *Ambio*, Vol. 37, No. 2: 80-85.
- Kautsky L. & Kautsky N. 1989. Algal diversity and dominance along gradients of stress and disturbance in marine environments. *Vegetation* 83: 259-267.
- Paulomäki H., Abel C. & Aguilar R. 2011. Conservation proposals for ecologically important areas in the Baltic Sea. *Oceana*.
- Sandberg E. & Bonsdorff E. 1990. On the structuring role of *Saduria entomon* (L.) on shallow water zoobenthos. *Ann. Zool. Fennici*, 27: 279-284.

SPECIES LIST FOR BOGSKÄR

Table 1: List of species at Bogskär by depth in 2012 and their threat category.

Depth (m)	Species
136	No life at all
40-117	CNIDARIA
	<i>Cyanea capillata</i>
	CRUSTACEA
	<i>Neomysis cf. integer</i>
	<i>Saduria entomon</i>
	FISH
	<i>Enchelyopus cimbrius</i>
	<i>Gadus morhua</i>
	<i>Myoxocephalus scorpius</i>
	<i>Platichthys flesus</i>
	<i>Trigloporus quadricornis</i>
	<i>Zoarces viviparus</i>
	9
<i>Mytilus</i> sp.	
CRUSTACEA	
<i>Balanus cf. improvisus</i>	
FISH	
<i>Gobiusculus flavescens</i>	
<i>Myoxocephalus scorpius</i>	
<i>Platichthys flesus</i>	
MAMMALIA	
<i>Halichoerus grypus</i> (Habitat Directive: Annex II and Annex V)	
RHYDOPHYCEAE	
<i>Aglaothamnion roseum</i>	
<i>Polysiphonia cf. elongata</i>	
PHAEOPHYCEAE	
<i>Fucus vesiculosus</i>	
<i>Spongonema tomentosum</i>	

Table 2: Lists of habitats and communities at Bogskär 2012, and their threat category.

Habitats and communities	Red list category
<i>Mytilus</i> bed	
<i>Saduria</i> community	<i>Saduria entomon</i> is listed as threatened and/or declining in the Southern Baltic Proper (HELCOM)
Reef	