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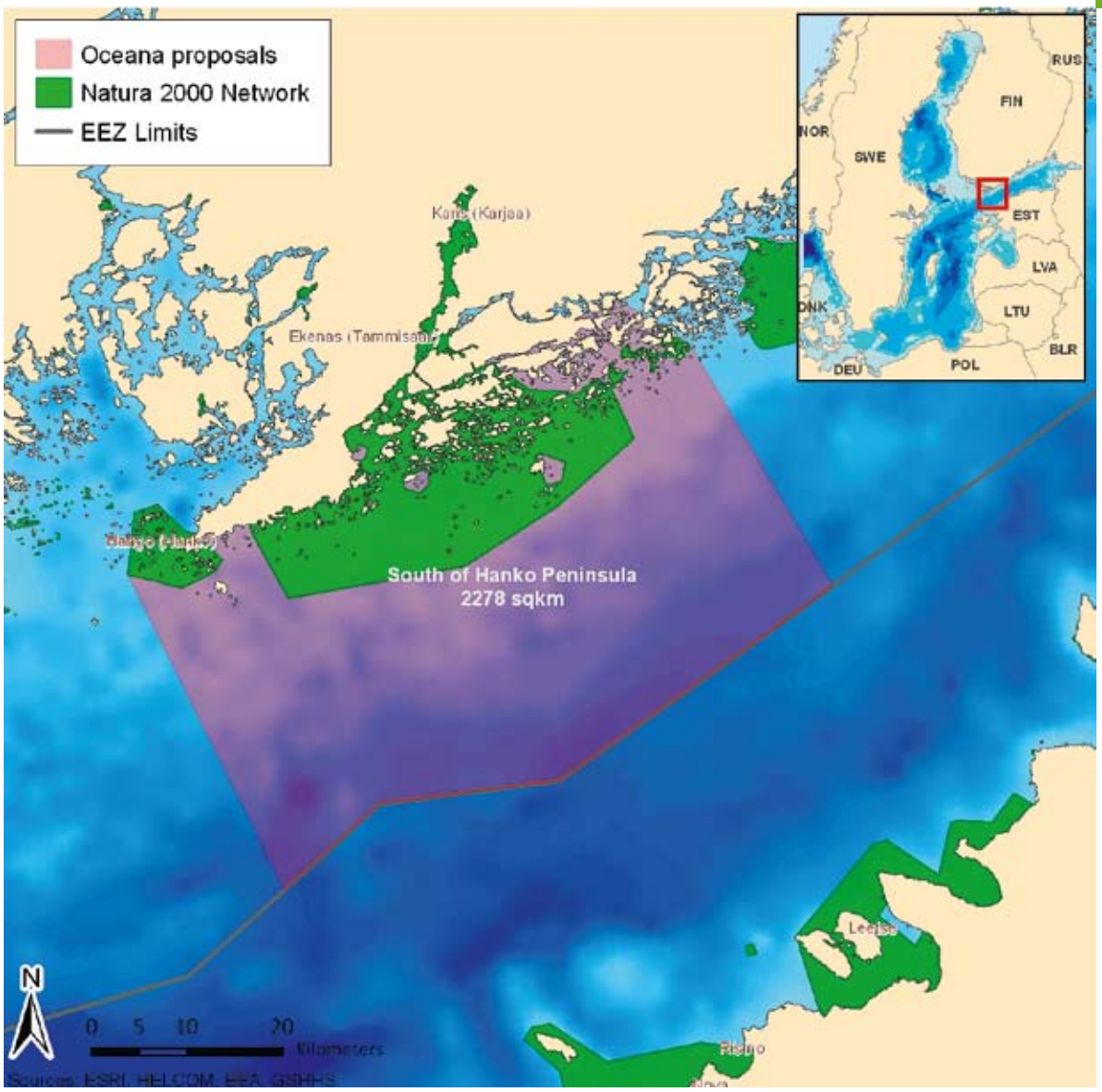
BALTIC SEA PROJECT



Oceana proposal for a Marine Protected Area

South of Hanko Peninsula

INTRODUCTION

Hanko Peninsula, located at the entrance to the Gulf of Finland, is the southern-most part of the Finnish mainland and boasts an archipelago and long sandy beaches. Salinity is relatively low, ranging from 5.5 to 7.5 psu, and the waters in the shallower coastal areas are limnic[1]. Upwellings, a common occurrence in the area wherein nutrient-rich sediments are brought up to the surface, cause a rapid increase in the salinity in areas at 35 meters, and a small increase in salinity in the surface water[2]. The inner waters of the archipelago freeze every year, while the more open waters freeze regularly, but not every winter[3].

Parts of the coastal area are protected under EU Natura 2000 network, and the area is classified as a sea area requiring specific protection measures. Wetland areas are also included in the Ramsar network. Because of the special characteristics of the area (changing salinity, archipelagos, wetlands), there are a lot of different zones that are able to host a wide variety of different species and communities[4].

Oceana conducted in the spring of 2011 and 2012 information from the area with ROV (*Remotely Operated Vehicle*), bottom samples and scuba dives.

DESCRIPTION OF THE AREA

Low salinity limits the amount of marine species in the area. Species composition changes completely from the open waters to the coast; with marine species being more common further from the coast and limnic species getting more common closer to the shore. Other factors, like visibility, exposure to waves and ice, also affect the species composition. In the area around Hanko Peninsula, both true marine species, such as bladder wracks (*Fucus vesiculosus*) and cod (*Gadus morhua*), and true freshwater species, including pond weed (*Potamogeton perfoliatus*) and pike (*Esox lucius*), exist[5].

Two soft bottom communities, *Monoporeia* and *Macoma*, dominate the benthos. The *Monoporeia* community is named after the small amphipod *Monoporeia affinis* (also known as *Pontoporeia affinis*), which lives on mud bottoms in waters deeper than 20 meters. At deep depths the species diversity in this community is relatively low, but in shallower water, it is higher[6]. The amphipod is source of food for several fish, such as cod (*Gadus morhua*), herring (*Clupea harengus*), fourhorn sculpin (*Myoxocephalus quadricornis*) and smelt (*Osmerus eperlanus*)[7,8]. *Monoporeia* is listed as threatened and/or declining in the Gulfs of Finland and Riga, as well as in the Northern and Southern Baltic Proper[9].

The *Macoma* community, characterized by the Baltic clam *Macoma balthica*, is also one of the most dominant communities in the area. *Macoma balthica* lives buried in mud or sand mixed substrates, in shallow depths, where the water is warmer and the organic content is high[10,11]. The community is relatively species rich, and species linked to this community include lagoon cockles (*Cerastoderma edule* and *C. glaucum*), sand gapers (*Mya arenaria*), and bristleworms, such as *Pygospio elegans* and *Capitella* spp. Flounder (*Platichthys flesus*) can also be found in this community[12].

The *Mytilus* community is also present in the Hanko Peninsula and widespread in the Baltic Sea. These blue mussels are attached to rocks or boulders, and create a place for other organisms to live, including barnacles, bryozoans and hydroids. Over the course of the 2011 and 2012 expeditions, Oceana conducted three ROV immersions at approximately 20 meters depth, recording blue mussel beds covering big boulders (see Table 1)[13] and two dives at depths of 14 and 33 meters which revealed blue mussel beds (Table 2). On these beds, we documented bryozoans (*Electra crustulenta*), which are abundant in the Baltic Sea and which attach themselves to hard substances. In shallow water, algal growth can impede the distribution of *E. crustulenta*, and bryozoans are therefore often found in shaded areas or at depths where algae cannot grow. The bryozoan is considered to play an important role in the sea[14].

Other species found on and around the blue mussel beds include the bay barnacle (*Balanus improvisus*), which was introduced into this sea in the nineteenth century, the red algae rusty rock (*Hildenbrandia rubra*), the Baltic clam (*Macoma balthica*), and the fish leech (*Piscicola geometra*). Cod (*Gadus morhua*), butterfish (*Pholis gunnellus*), and sand goby (*Pomatoschistus minutus*) were also identified in the area (for entire list see Table 2).

In deeper areas ranging from 60 to 70 meters deep, while no blue mussel beds were found, the *Saduria* community was richly present, as was documented in five out of six ROV immersions. The eelpout (*Zoarces viviparus*), which is abundant in the Baltic Sea, was also frequently recorded. Other fish species recorded were butterfish, and shorthorn sculpin (*Myoxocephalus scorpius*). A bottom sample taken at 57 meters depth revealed the Baltic clam *Macoma balthica*, which according to science normally occur in shallower areas, around 20 meters depth[15]. The invasive worm *Marenzelleria viridis* was also found in the mud sample (see Table 2).

PROPOSAL

The Hanko Peninsula hosts a number of important species and habitats, including feeding and spawning grounds for many species of fish. The current Natura 2000 area covers mainly only shallow waters leaving the deeper parts outside of the protection area. Based on data gathered over the course of the two expeditions in 2011 and 2012, Oceana is proposing an expansion of the already existing Natura 2000 site (Tammisaaren ja Hangon saariston ja Pohjanpitäjänlahden mertensuojelualue), to cover both the shallower waters with blue mussel beds, and the deeper parts which are home to the *Macoma* and *Saduria* communities. Oceana did not document the *Monoporeia* community, which, as mentioned above, is an important community in the region and is classified as threatened and/or declining by HELCOM[16].

This proposed expansion would guarantee better protection of the marine fauna in the area, enhance the representation of deeper water communities, and provide the species which are listed as threatened or declining by HELCOM, including *M. affinis*, cod and *Saduria entomon*, a better chance to recover.

POSSIBLE THREATS AND MANAGEMENT PROPOSALS

Climate change, hypoxia and anoxia, partly from eutrophication[17], threaten the dominant *Macoma* and *Monoporeia* communities and ecosystems in coastal waters. Other threats include materials extraction, dredging, coastal constructions (harbour etc.), untreated sewage and the expansion of aquaculture. When implementing management plans and measures, these threats should be addressed appropriately.

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SPECIES LIST FOR SOUTH OF HANKO PENINSULA

Table 1: List of species recorded at Hanko Peninsula in 2011. Possible threat category indicated in brackets.

Species
CNIDARIA
Laomedea sp.
CRUSTACEA
Balanus improvisus
Balanus sp.
Saduria entomon
MOLLUSCA
Mytilus sp.
BRYOZOA
Electra crustulenta
CHLOROPHYTA
Gasterosteidae sp.
Myoxocephalus scorpius
Platichthys flesus
Taurulus bubalis
Zoarces viviparus

Table 2: List of species at South of Hanko Peninsula by depth in 2012 and their possible threat category.

Depth (m)	Species
38-70	**CNIDARIA**
	Laomedea sp.
	BRYOZOA
	Electra cf. *crustulenta*
	MOLLUSCA
	Macoma balthica
	Mytilus sp.
	CRUSTACEA
	Balanus cf. *improvisus*
	Neomysis cf. *integer*
	Saduria entomon
	ANNELIDA
	Marenzelleria viridis
	FISH
	Clupea cf. *harengus*
	Myoxocephalus scorpius
	Pholis gunnellus
	Pomatoschistus sp.
	Sprattus cf. *sprattus*
	Zoarces viviparus
14	**MOLLUSCA**
	Macoma balthica
	Mytilus sp.
	CRUSTACEA
	Balanus cf. *improvisus*
	BRYOZOA
	Electra crustulenta
	ANNELIDA
	Piscicola geometra
	FISH
	Gadus morhua (threatened and declining, HELCOM)
	Pholis gunnellus
	Pomastoschistus minutus
	Triglopsis quadricornis
	Zoarces viviparus
	RHODOPHYCEAE
	Hildenbrandia rubra

Table 3: List of habitats and communities in the Hanko Peninsula in 2011 and 2012, and their threat category.

Habitats and communities	Red list category
Macoma community	
Mytilus bed	
Saduria community	*Saduria entomon* is listed as threatened and/or declining in the Southern Baltic Proper (HELCOM)
Sandbank	Endangered (HELCOM)
Reef	

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