



## Oceana proposal for a Marine Protected Area South of the Åland Islands

### INTRODUCTION TO THE AREA

The autonomous region of the Åland Islands, which is made up of more than 6,500 islands, forms part of the Archipelago Sea. It is situated between Finland and Sweden at the entrance to the Gulf of Bothnia (Figure 1). The coastal area has a complex topography, with many small islands and skerries, and experiences up to 90 ice days during the winter<sup>1</sup>. The seabed in the region is characterized mainly by hard bottoms, including boulders and stones, but patches of sand occur as well. In deeper waters, mud dominates the seabed. Physical factors, like water temperature, dissolved oxygen saturation and the organic content of sediment, control benthic life in the area.

Some marine protected areas, including Natura 2000 areas and a Ramsar (The Convention on Wetlands) site called Signilsär-Märket Archipelago<sup>2</sup>, exist in the Åland region, but the offshore waters in particular, lack protection.

Oceana conducted underwater surveys with an underwater robot (ROV) and scuba dives, at different depths from the coast to offshore waters in the area south of the Åland Islands in 2011, 2012 and 2013.

## DESCRIPTION OF THE AREA

The area south of the Åland Islands hosts a unique biodiversity consisting of marine, brackish and freshwater species. The inner coastal waters of the archipelago have a relatively high organic content, and thus suffer from occasional oxygen depletion, while the offshore waters have a lower organic content and generally high oxygen saturation<sup>3</sup>.

The Åland Islands are an important feeding and spawning ground for many fish and mammals, including the grey seal (*Halichoerus grypus*)<sup>4</sup>. In the deeper parts of the area, the dominating community is made up of the *Monoporeia affinis* amphipod, while shallower areas are dominated by Baltic clam communities, *Macoma balthica*<sup>5</sup>.

Many characteristic species and communities were documented during Oceana's fieldwork in the region. These include marine (such as blue mussels *Mytilus* sp.), brackish (the lagoon cockle *Cerastoderma lamarcki*) and freshwater (the pondweed *Potamogeton perfoliatus*) species along the coastal area.

In deep waters, below 200 meters, Oceana documented an isopod (*Saduria entomon*) and an amphipod (*Monoporeia affinis*) (see Table 2), both of which are relicts in the Baltic Sea, and were in the past considered by HELCOM to be threatened or declining in some parts of the Baltic Sea. Today, they are considered to be, at least, in a concerning state<sup>6</sup>. Another ice age relict, the fourhorn sculpin (*Trigloopsis quadricornis*) was spotted at medium (down to 75 meters) and shallow (down to 25 meters) depths.

Other species found in the shallower waters of the area include flowering plants (*Ruppia* sp. and *Potamogeton perfoliatus*), mud shrimp (*Corophium volutator*), algae, including bladder wrack (*Fucus vesiculosus*) and *Halosiphon tomentosus*, and stoneworts (*Tolypella nidifica*). Several fish species were also recorded, including black goby (*Gobius niger*), two-spotted goby (*Gobiusculus flavescens*), straightnose pipefish (*Nerophis ophidion*), and turbot (*Psetta maxima*).

In 2013, Oceana also documented brown shrimp (*Crangon crangon*) in the area; a species previously unknown by HELCOM to live around the Åland Islands<sup>7</sup>. For the entire species list, see Tables 1 to 3.

## PROPOSAL

Oceana is proposing to protect an area south of the Åland Islands that ranges from the coastal waters of Mariehamn and its surroundings, to the offshore islands of Lägskär and the deeper trench between Sweden and the Åland Islands (see map).



Fourhorn sculpin (*Trigloopsis quadricornis*) on shallow water. Åland Islands, Finland. © OCEANA/ Carlos Suárez



Lagoon cockles (*Cerastoderma lamarcki*). Åland Islands, Finland. © OCEANA/ Carlos Suárez

The proposed protected area would include a couple of smaller scattered MPAs to the east, and most importantly, the deeper areas and those in the northern part of the region, which are currently completely unprotected. This more comprehensive area would set aside enough space for species and habitats to recover, without being subject to human pressure, including fisheries.

## POSSIBLE THREATS AND MANAGEMENT PROPOSALS

Since the 1960's, one of the major threats to the marine ecosystem of the region has been eutrophication, caused by agriculture and rainbow trout (*Oncorhynchus mykiss*) farming<sup>8</sup>. Due to the nutrient rich water, fast-growing filamentous algae like *Cladophora* sp. and *Enteromorpha* sp. flourish in the shallow waters, suffocating the bladder wrack<sup>9</sup> and threatening the species and habitats in the area, as well as the functioning of the communities<sup>10</sup>.

Commercial fishing is also a threat, as it impacts the food-web structure by removing mostly large predatory species, such as whitefish, pikeperch, pike and to some extent, salmon<sup>11</sup>, though fishing for the latter is restricted to the spring<sup>12</sup>. Other than that, aquaculture represents the most important fishing activity in the Åland Islands.

In the 1980's, a deep-water route in the sea of Åland was established for the maritime traffic between the Baltic Proper and the Gulf of Bothnia. Today, the narrow strait between Sweden and Åland Islands is subject to heavy traffic between the two sub-basin. Rules were established in 2008 to avoid collisions, but the risk of accidents, including oil spills, represents a considerable threat towards the marine environments around both the Åland Islands and the Swedish coast<sup>13</sup>.

A management plan for the area that addresses all possible threats, including fisheries and aquaculture, should be implemented.

### REFERENCES

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## SPECIES LIST FOR SOUTH OF ÅLAND ISLANDS

**Table 1:** List of species recorded at South of Åland Islands in 2011. Possible threat category indicated in brackets.

Species
<b>CRUSTACEA</b>
<i>Amphipoda</i> sp.
<i>Balanus improvisus</i>
<i>Saduria entomon</i> (least concern, HELCOM)
<b>MOLLUSCA</b>
<i>Cerastoderma lamarcki</i>
<i>Mytilus</i> sp.
<i>Radix peregra</i>
<b>BRYOZOA</b>
<i>Electra crustulenta</i>
<b>FISH</b>
<i>Gasterosteidae</i> sp.
<i>Gasterosteus aculeatus</i>
<i>Gobiidae</i> sp.
<i>Nerophis ophidion</i>
<i>Pleuronectes platessa</i>
<i>Pomatoschistus minutus</i>
<i>Zoarces viviparus</i>
<b>ARTHROPODA, INSECTA</b>
<i>Phryganea bipunctata</i>
<b>RHODOPHYTA</b>
<i>Halosiphon tomentosus</i>
<b>CHLOROPHYTA</b>
<i>Chaetomorpha</i> sp.
<i>Enteromorpha prolifera</i>
<i>Monostroma grevillei</i>
<b>ANGIOSPERMAE</b>
<i>Potamogeton perfoliatus</i>
<i>Ruppia</i> sp.



Shoreline at Åland Islands, Finland. © OCEANA/ Carlos Suárez

**Table 2:** List of species recorded at South of Åland Islands in 2012. Possible threat category indicated in brackets.

Depth (m)	Species
213-228	<b>CRUSTACEA</b>
	<i>Monoporeia affinis</i> (least concern, HELCOM 2013)
	<i>Neomysis cf. integer</i>
	<i>Saduria entomon</i> (least concern, HELCOM)
	<b>MOLLUSCA</b>
	<i>Macoma balthica</i>
75	<b>FISH</b>
	<i>Trigloporus quadricornis</i> (least concern, HELCOM 2013) <i>Zoarces viviparus</i>
14-25	<b>CNIDARIA</b>
	<i>Laomedea</i> sp.
	<b>MOLLUSCA</b>
	<i>Cerastoderma lamarcki</i>
	<i>Mytilus</i> sp.
	<b>CRUSTACEA</b>
	<i>Balanus improvisus</i>
	<b>ANNELIDA</b>
	<i>Piscicola geometra</i>
	<b>FISH</b>
	<i>Gasterosteus aculeatus</i>
	<i>Myoxocephalus scorpius</i>
	<i>Pomatoschistus minutus</i>
	<i>Trigloporus quadricornis</i> (least concern, HELCOM 2013)
	<b>CHOROPHYCEAE</b>
<i>Monostroma</i> sp.	
<b>PHAEOPHYCEAE</b>	
<i>Fucus vesiculosus</i>	
<i>Halosiphon tomentosus</i>	
<b>RHODOPHYCEAE</b>	
<i>Polysiphonia</i> sp.	

**Table 3:** Findings from south of Åland Islands, Finland, at depths varying from 7 to 13 meters, 2013. Possible threat category indicated in brackets.

Species	
<b>CNIDARIA</b>	
<i>Laomedea</i> sp. cf.	
<b>MOLLUSCA</b>	
<i>Cerastoderma lamarcki</i>	<i>Mytilus</i> sp.
<i>Macoma balthica</i>	<i>Hydrobia</i> sp.
<i>Mya arenaria</i>	
<b>CRUSTACEA</b>	
<i>Balanus improvisus</i>	<i>Mysidae</i> sp.
<i>Corophium volutator</i>	<i>Saduria entomon</i> (least concern, HELCOM)
<i>Crangon crangon</i>	
<b>BRYOZOA</b>	
<i>Electra crustulenta</i>	
<b>FISH</b>	
<i>Gasterosteus aculeatus</i>	<i>Perca fluviatilis</i>
<i>Glupea harengus</i>	<i>Pomatoschistus minutus</i>
<i>Gobiusculus flavescens</i>	<i>Pleuronectes platessa</i>
<i>Gobius niger</i>	<i>Psetta maxima</i>
<i>Nerophis ophidion</i>	<i>Zoarces viviparus</i>
<b>RHODOPHYTA</b>	
<i>Halisiphon tomentosus</i>	
<b>CHAROPHYCEAE</b>	
<i>Tolypella nidifica</i>	
<b>ANGIOSPERMAE</b>	
<i>Potamogeton perfoliatus</i>	<i>Ruppia</i> sp.

**Table 4:** List of habitats and communities recorded south of Åland Islands in 2011, 2012 and 2013, and their threat categories.

Habitats and communities	Red list category
<i>Macoma balthica</i> community	Least concern (HELCOM 2013)
Macrophyte	
<i>Monoporeia</i> community	
<i>Mytilus</i> bed	
<i>Saduria</i> community	
Water moss	