



## Oceana proposal for a Marine Protected Area Ulkokrunni and Merikalla

### INTRODUCTION OF THE AREA

The two areas, Ulkokrunni and Merikalla, are situated in the Finnish EEZ, in the northern part of the Baltic Sea, the Bothnian Bay. The Bothnian Bay is characterized by having a low salinity of 3.5 psu, which limits the number of marine species living there (Bergström and Bergström 1999) and freshwater species are more common. During winter the bay has at least four months of ice, which also affects which species can live there. The Ulkokrunni area consists of small scattered islands and primarily shallow waters. However, deeper areas down to almost 100 meter also exist. Merikalla is a shallow area situated almost 20 km west of the island Hailuoto, and south of Ulkokrunni. In the spring of 2011, Oceana conducted research in the area of Ulkokrunni, and in the spring of 2012, a more comprehensive research was carried out in the area of Ulkokrunni. Additionally Merikalla was also carefully studied by an ROV (*Remotely Operated Vehicle*).

## DESCRIPTION OF THE AREA

There are important offshore sandbanks in the northern Baltic Sea. The deeper parts of the Bothnian Bay have relatively good oxygen concentration as this part of the Baltic Sea is not suffering severely from eutrophication, compared to the other areas of the Baltic Sea where the deeps are oxygen depleted or anoxic most of the time. Therefore the deeper areas in the bay are characterized by having oxygen and animal life.

The northernmost part of the Bothnian Bay is an important area for many species of birds. Fish, such as river lamprey (*Lampetra fluviatilis*), dace (*Leuciscus leuciscus*), roach (*Rutilus rutilus*), whitefish (*Coregonus* sp.) and sand goby (*Pomatoschistus minutus*) live in the more shallow parts of the Bothnian Bay. The deeper, and more open waters host salmon (*Salmo salar*), sea trout (*Salmo trutta*), pike (*Exos lucius*), and perch (*Perca fluviatilis*).

The largest crustacean in the Baltic Sea, the isopod *Saduria entomon*, is widespread in the Gulf of Bothnia. It is an ice age relict, and can exist in different depths, from shallow water to deep areas. It is an important community regulator, as it is an omnivore (behaves as both scavenger and predator), and has generally few competitors. Thereto the isopod is an important food source for cod (*Gadus morhua*) and fourhorn sculpin (*Trigloopsis quadricornis*), among other fish species (Sandberg & Bonsdorff 1990, Ejdung & Bonsdorff 1992, Køie & Kristiansen 2000). Oceana recorded the isopod *Saduria entomon* on both mud and sand bottoms, in depths from 9 meters to 94 meters (see Table 2 and 3).

The small amphipod *Monoporeia affinis* (also known as *Pontoporeia affinis*) is found in the Bothnian Bay. The amphipod can live in both brackish and limnic waters, but generally, high oxygen concentration and sufficient food, such as detritus and algae, are essential for survival of the species. The amphipod is eaten by cod, herring (*Clupea harengus*) and fourhorn sculpin (Bonsdorff *et al.* 2003, Donner *et al.* 1987). Oceana found *Monoporeia affinis* in a mud sample from 50 meters depth (see Table 2).

## PROPOSAL

Oceana has conducted several underwater recordings over two consecutive years, and taken bottom samples in the areas of Ulkokrunni and Merikalla. *Saduria* and *Monoporeia* communities were documented and fish species such as eelpout (*Zoarces viviparus*), fourhorn sculpin, and goby (*Pomatoschistus* sp.) were also filmed (Table 2 and 3).

The existing Natura 2000 site (Perämeren saaret) near Ulkokrunni includes mainly terrestrial features, and has only one marine habitat (sandbank) and two coastal (coastal lagoons and estuaries) habitats protected. Oceana proposes the Finnish Government to the establishment of a new purely marine protected area that includes both the shallow and deeper waters of Ulkokrunni, and also the shallow waters at Merikalla, in order to guarantee better protection of the aquatic species and habitats in the region.

## POSSIBLE THREATS AND MANAGEMENT PROPOSALS

Possible threats in the area include offshore developments, extraction of materials and removal of species by fisheries, as well as hunting of seals and birds. Through the approval of management plans, key threats to protected area should be assessed, and strategies should be developed and implemented to prevent and mitigate those.

## REFERENCES

- Bergström & Bergström. 1999. Species diversity and distribution of aquatic macrophytes in Northern Quark, Baltic Sea. *Nordic Journal of Botany* 19, 3: 375-383.
- Bonsdorff, E., Laine, A. O., Hänninen J., Vuorinen I. & Norkko A. 2003. Zoobenthos of the outer archipelago waters (N. Baltic Sea) - the importance of local conditions for spatial distribution patterns. *Boreal Environment Research*, 8: 135-145.
- Donner K. O., Lindström A., and Lindström M. 1987. Seasonal variation in the vertical migration of *Pontoporeia affinis* (Crustacea, Amphipoda). *Ann. Zool. Fennica* 24: 305-313.
- Ejdung, C., Bonsdorff, E. 1992. Predation on the bivalve *Macoma balthica* by the isopod *Saduria entomon*: laboratory and field experiments. *Marine Ecology Progress Series*. Vol. 88: 207-214.
- Køie, M., Kristiansen, A. 2000. *Havets dyr og planter*. Gads Forlag. 351 pp.
- Sandberg, E. Bonsdorff, E. 1990. On the structuring role of *Saduria entomon* (L.) on shallow water zoobenthos. *Ann. Zool. Fennica* 27: 279-284.

## SPECIES LISTS FOR ULKOKRUNNI AND MERIKALLA

**Table 1:** List of species recorded at Ulkokrunni in 2011.

Species
<b>CNIDARIA</b>
<i>Laomedea</i> sp.
<b>CRUSTACEA</b>
<i>Saduria entomon</i>
<b>FISH</b>
<i>Zoarces viviparus</i>

**Table 2:** List of species at Ulkokrunni in 2012 by depth and their threat category.

Depth (m)	Species
94	<b>CRUSTACEA</b>
	<i>Neomysis</i> cf. <i>integer</i>
	<i>Saduria entomon</i>
	<b>FISH</b>
	<i>Trigloporus quadricornis</i>
31-50	<b>CRUSTACEA</b>
	<i>Monoporeia affinis</i> (Threatened and/or declining in the Gulf of Finland and Riga, Northern and Southern Baltic Proper, HELCOM 2007)
	<i>Neomysis</i> cf. <i>integer</i>
	<i>Saduria entomon</i>
	<b>FISH</b>
	<i>Myoxocephalus scorpius</i>
	<i>Trigloporus quadricornis</i>
<i>Zoarces viviparus</i>	
18	<b>CRUSTACEA</b>
	<i>Neomysis</i> cf. <i>integer</i>
	<b>FISH</b>
	<i>Gadus morhua</i> (threatened and declining, HELCOM)
	<i>Zoarces viviparus</i>



Sand ripples and isopod (*Saduria entomon*). Merikalla, Bothnian Bay, Finland. © OCEANA/ Carlos Suárez

**Table 3:** List of species at Merikalla in 2012 by depth and their threat category.

Depth (m)	Species
19-42	<b>CRUSTACEA</b>
	<i>Neomysis cf. integer</i>
	<i>Saduria entomon</i>
	<b>FISH</b>
	<i>Gobiidae sp.</i>
	<i>Trigloporus quadricornis</i> <i>Zoarces viviparus</i>
9-11	<b>CNIDARIA</b>
	<i>Laomedea cf. flexuosa</i>
	<b>CRUSTACEA</b>
	<i>Neomysis cf. integer</i>
	<i>Saduria entomon</i>
	<b>FISH</b>
	<i>Pomatoschistus microps</i> <i>Zoarces viviparus</i>

**Table 4:** List of communities at Ulkokrunni and Merikalla in 2011 and 2012, and their threat category.

Habitats and communities	Red list category
<i>Monoporeia community</i>	Threatened and/or declining in the Gulf of Finland and Riga, Northern and Southern Baltic Proper (HELCOM 2007)
Sandbanks	Endangered (HELCOM)
<i>Saduria community</i>	<i>Saduria entomon</i> is listed as threatened and/or declining in the Southern Baltic Proper (HELCOM)

Isopod (*Saduria entomon*). Merikalla, Bothnian Bay, Finland. © OCEANA/ Carlos SuárezEelpout (*Zoarces viviparus*) at a sandy seabed. Merikalla, Bothnian Bay, Finland. © OCEANA/ Carlos Suárez