

## BIOTOPE INFORMATION SHEET

English name: <b>Baltic aphotic muddy sediment characterized by sea-pens</b>		Code in HELCOM HUB: <b>AB.H2T1</b>	
Characteristic species: <i>Virgularia mirabilis</i> , <i>Pennatula phosphorea</i>			
Past and Current Threats (Habitat directive article 17): Fishing (bottom trawling F02.02.01), Eutrophication (H01.05)		Future Threats (Habitat directive article 17): Fishing (bottom trawling F02.02.01), Eutrophication (H01.05)	
Red List Criteria: <b>A1</b>	Confidence of threat assessment: <b>M</b>	<b>HELCOM Red List Category:</b>	<b>EN Endangered</b>
Previous HELCOM Red List threat assessments			
BSEP 75 (HELCOM 1998): "3" Endangered 2.7.1 Muddy bottoms of the aphotic zone		BSEP 113 (HELCOM 2007): Sea-pen communities are under threat and/or in decline in Kattegat.	
Greater concern stated by:			

### Habitat and Ecology

The habitat is characterized by aphotic zone bottoms with at least 90% coverage of muddy sediment. The biotope is characterized by conspicuous populations of sea pens that usually live scattered over the sea floor and cover less than 10% of the muddy surface. The biotope occurs typically from 15 to 200 meters' depth. It appears in low to moderate energy exposure classes in full marine salinities (>30 psu). To properly identify the biotope both grab samples and visual surveys are often needed as the sea pens are not adequately sampled by typical infauna sampling methods.

These deep water communities are crucially important to the function of the ecosystem. They provide food and shelter for many other species, including commercially important fish. In the Baltic Sea the most common sea pens are *Virgularia mirabilis* and *Pennatula phosphorea*. *Virgularia mirabilis* is found in sheltered areas with soft bottoms such as fine, muddy sand or mud in depths below 10 meters. It lives in colonies partly embedded in the sediment (Bay-Nouailhat 2008a) and can form colonies up to 60 cm tall (Hill and Wilson 2000). *Pennatula phosphorea* forms erect colonies up to 40 cm tall. Only the upper part of the stem is visible, the rest being embedded in sediments (Bay-Nouailhat 2008b). It lives in muddy bottoms, usually below 15 meters (Moen & Svensen 2004).

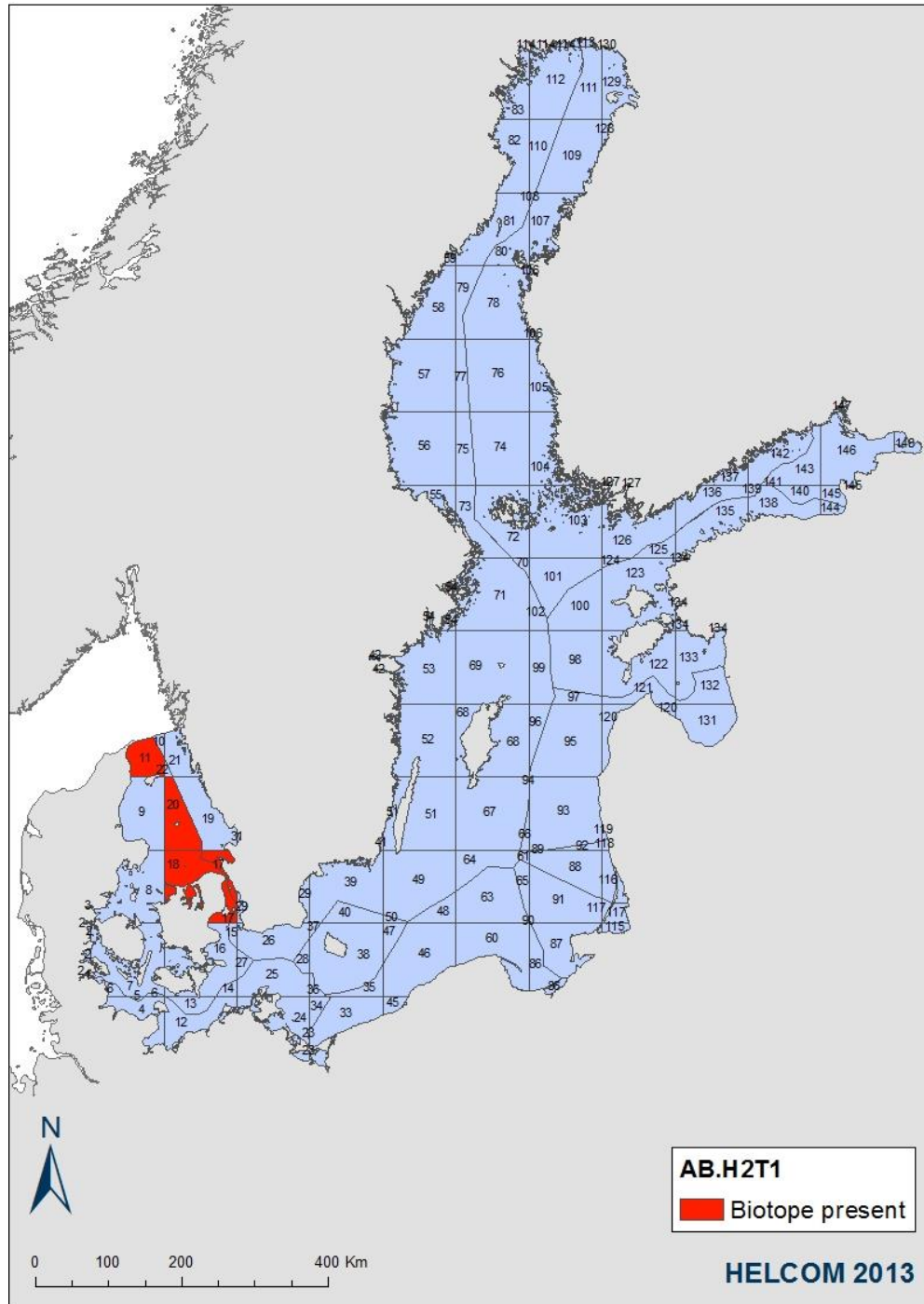


Underwater video images of sea pens living scattered on soft substrates near the island of Ven. The biotope should be sampled using visual methods (Photo Johan Näslund)

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### Distribution and status in the Baltic Sea region

Because of its salinity and depth requirements, this habitat occurs mostly in the deeper parts of Kattegat. The most common sea pen species *Virgularia mirabilis* and *Pennatula phosphorea* has been observed for example in the deep trenches of the Kattegat (The Kattegat trench, the Ddupa Rännan trench), in the Groves Flak and near the island Ven in the Sound. The habitat has likely suffered from bottom trawling as trawling marks and badly disturbed seabeds has been recorded in the area of their distribution. Distribution map indicates the area in the 100 x 100 km grid where biotope is known to occur.



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### Description of Major threats

The main anthropogenic threat for the habitat is bottom trawling, and also events of oxygen depletion caused by eutrophication. Bottom touching fishing gear extensively disturbs the habitat in terms of area and quality (OSPAR 2008). The sea pen biotope is negatively affected both by the direct physical disturbance of the fishing activities, and is also likely to be affected indirectly by increased siltation following the fishing activities.

### Assessment justification

A1

The amount of undisturbed soft sediment area in the region where sea pens are known to occur has decreased significantly. Some of the areas are intensively trawled and the sediments are disturbed several times a year, which does not give enough time for the sea pen biotope to recover as they have a relatively slow growth rate. Over half of the area classified as the biotope characterized by muddy sediments and sea pens is inferred to have been destroyed in the past 50 years.

### Recommendations for actions to conserve the biotope

Prohibiting bottom trawling in the areas where sea pen biotopes are known to remain is the most efficient method to conserve the biotope and enable it to slowly recover in areas where fishing activities has made it collapse. The Kattegat trenches should be prioritized for protection as they provide the most important distribution areas for this biotope. Strengthening the fishing restrictions, especially regarding bottom trawling, in the network of marine protected areas in the Kattegat and increasing protected areas to include sea pen biotopes would help to prevent the biotope from collapsing on a Baltic Sea scale.

### Common names

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### References

- Bay-Nouailhat W., (2008a). Description of *Virgularia mirabilis*, Available at: <http://www.european-marine-life.org/05/virgularia-mirabilis.php> (viewed 28 May 2013).
- Bay-Nouailhat W., (2008b), Description of *Pennatula phosphorea*, Available at: <http://www.european-marine-life.org/05/pennatula-phosphorea.php> (viewed 28 May 2013).
- HELCOM (1998). Red List of marine and coastal biotopes and biotopes complexes of the Baltic Sea, Belt Sea and Kattegat. Baltic Sea Environmental Proceedings No. 75. Helsinki Commission, Helsinki. 115pp. Available at: <http://www.helcom.fi/stc/files/Publications/Proceedings/bsep75.pdf>
- Hill, J. and Wilson E. (2000) *Virgularia mirabilis*. Slender sea pen. Marine Life Information Network: Biology and Sensitivity Key Information Sub-programme [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 11/07/2013]. Available at: <http://www.marlin.ac.uk/speciesfullreview.php?speciesID=4579>
- Moen, F. E., Svensen, E. (2004). Marine fish & invertebrates of Northern Europe. KOM, Kristiansund. 608pp.
- OSPAR 2008. OSPAR List of Threatened and/or Declining Species and Habitats.