

## BIOTOPE INFORMATION SHEET

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|--|---|---|--------------------------|
| English name:<br><b>Baltic aphotic sand dominated by ocean quahog (<i>Arctica islandica</i>)</b> |   | Code in HELCOM HUB:<br><b>AB.J3L3</b>   |                          |
| Characteristic species: <i>Arctica islandica</i>   |   |   |                          |
| Past and Current Threats (Habitat directive article 17):<br>Eutrophication (H01.05)              |   | Future Threats (Habitat directive article 17):<br>Eutrophication (H01.05), Mining (sand and gravel extraction C01.01) |                          |
| Red List Criteria:<br><b>A1</b>  | Confidence of threat assessment: <b>M</b> | <b>HELCOM Red List Category:</b>  | <b>VU<br/>Vulnerable</b> |
| Previous HELCOM Red List threat assessments  |   |   |                          |
| BSEP 75 (HELCOM 1998):<br>"3" Endangered:<br>2.5.1 Sandy bottoms of the aphotic zone             |   | BSEP 113 (HELCOM 2007):   |                          |
| Greater concern stated by:   |   |   |                          |

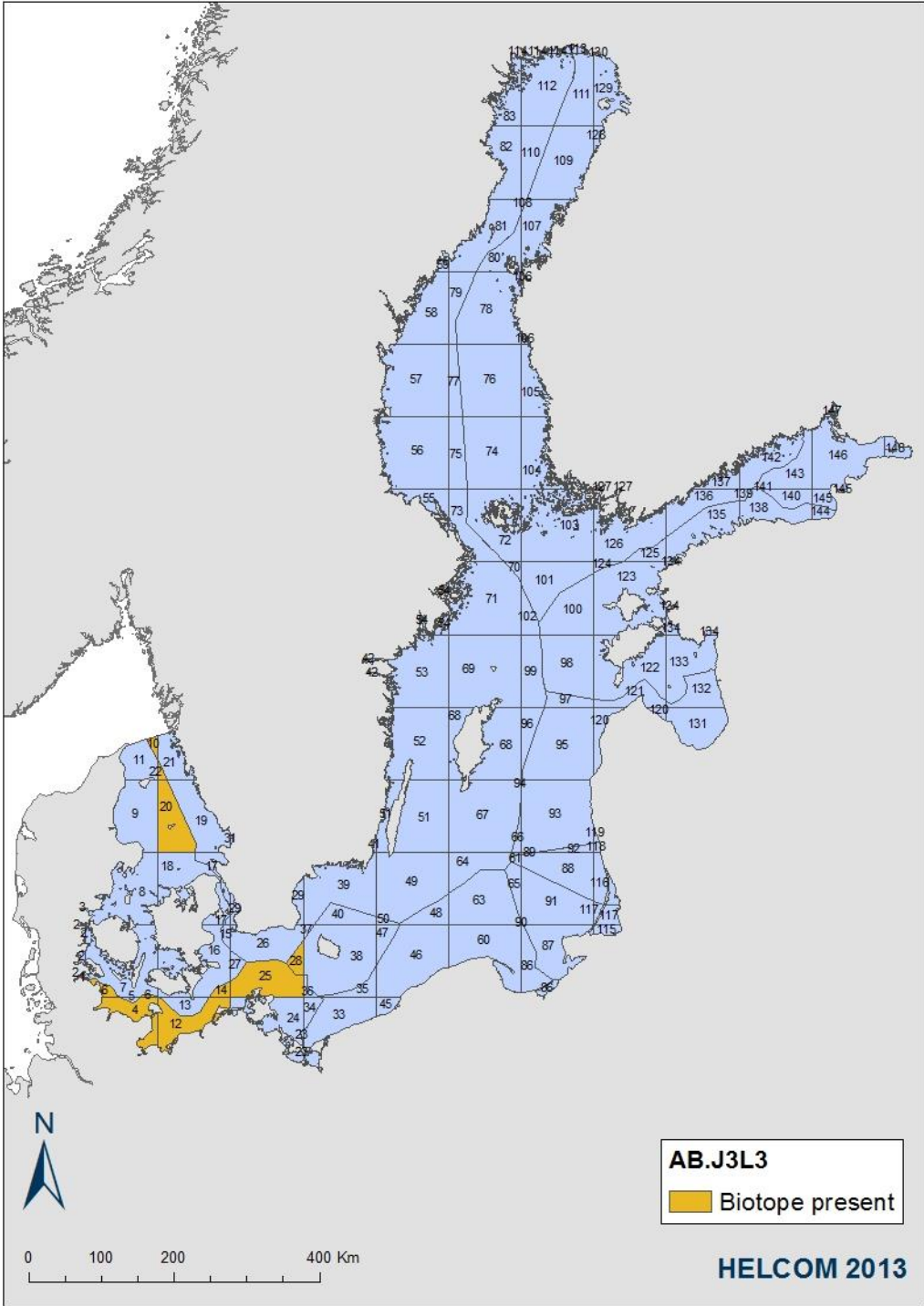
### Habitat and Ecology

The biotope occurs in the aphotic zone where sand covers more than 90% of the bottom and *Arctica islandica* constitutes more than 50% of the biomass of the benthic macrofauna community. The sandy aphotic areas with a salinity > 15 psu occur only in the southwestern part of the Baltic Sea. *Arctica islandica* is a longlived bivalve and has a slow growth- and reproductive rate. It is a large species that can grow up to 20 cm length. The species prefers sandy and muddy bottoms, with a high clay content (Moen & Svensen 2004).

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**Distribution and status in the Baltic Sea region**

The main distribution area of this biotope is the western Baltic Sea. The largest populations of *A. islandica* are found in Kiel and Mecklenburg Bights (Zettler et al. 2001). The distribution map indicates the area in the 100 x 100 km grid where biotope is believed to occur based on the suitability of the environmental conditions.



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### Description of Major threats

Eutrophication is considered to be one of the major threats to this biotope. Long lasting and frequent periods of oxygen depletion have increased the mortality of *Arctica islandica* populations. Due to the slow population growth rate, the recovery of declined populations is slow. Communities previously characterized by *Arctica islandica* have been replaced by communities consisting of short living polychaetes (Zettler et al. 2001).

### Assessment justification

A1

In the aphotic zone, sandy substrates occur in areas with some currents close to the bottom. These areas are somewhat less prone to oxygen depletion compared to the muddy sediments in the aphotic zone. Therefore the biotope delineated by a sandy substrate and a benthic macrofauna community dominated by *Arctica islandica* is assessed as less threatened than the biotope AB.H3L3 characterized by muddy sediment and a benthic macrofauna community dominated by *A. islandica*. Even so the anoxic areas in the deep parts of the Baltic Sea have also spread over the sandy bottoms and it is estimated that more than 30 % of the area covered by the biotope has disappeared.

### Recommendations for actions to conserve the biotope

All actions that reduce the level of eutrophication in the Baltic Sea will benefit the biotope. These actions include measures to reduce the diffuse run-off of nutrients from agriculture and tackling point-source pollution by installation of waste water treatment plants.

The aphotic sandy substrates may increasingly be utilized for mineral extraction. Restricting sand extraction in aphotic populated by *Arctica islandica* will support the persistence of the biotope. Sand extraction should be avoided in areas where the biotope is periodically subjected to anoxia, reducing the quality of the biotope over time.

### Common names

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### References

- OSPAR 2009. OSPAR Background for Ocean quahog *Arctica islandica*. Biodiversity Series.  
[http://qsr2010.ospar.org/media/assessments/Species/P00407\\_Ocean\\_quahog.pdf](http://qsr2010.ospar.org/media/assessments/Species/P00407_Ocean_quahog.pdf)
- Gogina, M., Zettler, M.L. 2010. Diversity and distribution of benthic macrofauna in the Baltic Sea: Data inventory and its use for species distribution modelling and prediction. *Journal of Sea Research* 64(3): 313–321.
- Moen, F. E., Svensen, E. (2004). *Marine fish & invertebrates of Northern Europe*. KOM, Kristiansund. 608pp.
- Zettler, M. L., Bönsch, R., Gosselck, F. 2001. Distribution, abundance and some population characteristics of the ocean quahog, *Arctica islandica* (Linnaeus, 1767), in the Mecklenburg Bight (Baltic Sea). *Journal of Shellfish Research* 20: 161– 169.