

BIOTOPE INFORMATION SHEET

English name: Baltic aphotic hard clay dominated by <i>Astarte</i> spp.		Code in HELCOM HUB: AB.B1E4	
Characteristic species: <i>Astarte borealis</i> , <i>Astarte elliptica</i>			
Past and Current Threats (Habitat directive article 17): Eutrophication (H01.05)		Future Threats (Habitat directive article 17): Eutrophication (H01.05), Climate change (M), Random threat factors (–)	
Red List Criteria: B2c(ii)	Confidence of threat assessment: M	HELCOM Red List Category:	EN Endangered
Previous HELCOM Red List threat assessments			
BSEP 75 (HELCOM 1998): “3” Endangered 2.3.1 Hard clay bottoms of the aphotic zone		BSEP 113 (HELCOM 2007):	
Greater concern stated by:			

Habitat and Ecology

The biotope is characterized by species preferring cold and saline water. The near bottom water exhibits a salinity range between 10 and 15 psu, a temperature between 3 and 8 °C and relatively good oxygen conditions (Jan Warzocha pers. comm.)

The easternmost occurrence for clams *Astarte borealis* and *Astarte elliptica* is in the Baltic Sea. In the biotope they predominated in terms of biomass, often contributing about 70–90% of the total biomass (Jan Warzocha pers. comm.).

For ecological purposes, hard clay can be considered to be a hard substrate (HELCOM 1998). Very few macrofauna species have the capacity to burrow into the substrate. Hard clay substrates are mostly known to occur mostly in high energy environments.

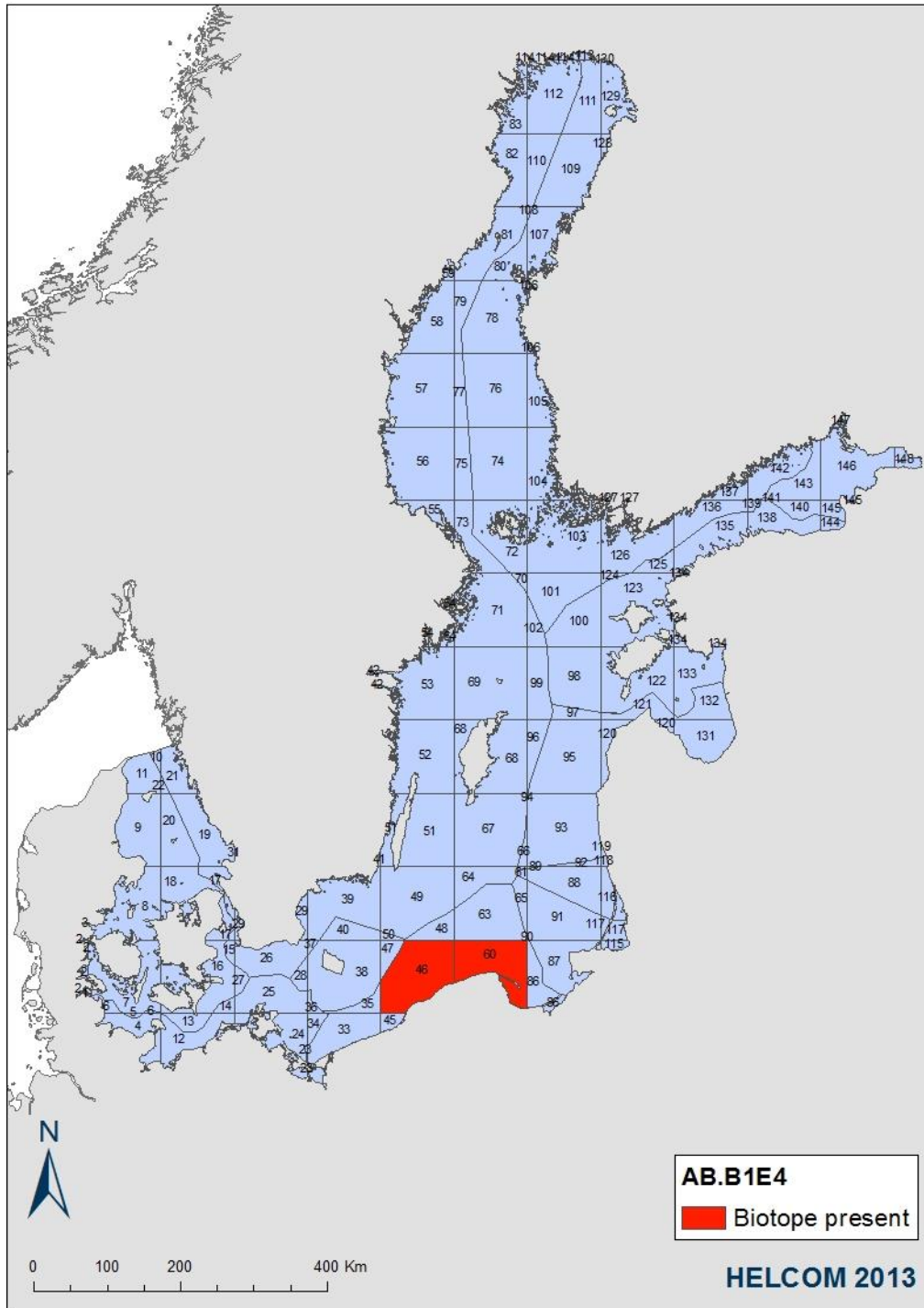


Biotope AB.B1E4 Aphotic hard clay dominated by *Astarte* spp. (Photo Jan Warzocha)

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Distribution and status in the Baltic Sea region

Known from German and Polish waters in the Baltic Sea. Aphotic hard clay dominated by *Astarte* spp. occurs on the sills (thresholds) of the Słupsk Furrow that connects the Bornholm Deep with the Gotland Deep and Gdańsk Deep. 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 biotope is characterized by species that require oxic conditions and rather cold and saline water. In the deep areas where the biotope occurs, anoxia is widespread due to eutrophication and low water turnover (HELCOM 2013). Eutrophication has posed a severe threat to the biotope in the past and is likely to also affect the biotope in the future. In the future the changes brought about by climate change are also potential major threats. In the Baltic Sea region climate change is predicted to increase the amount of rain which in turn may cause the salinity to drop in the Baltic Sea. Also a predicted warmer mean temperature may adversely affect the *Astarte* spp. clams that are characteristic to the biotope.

Assessment justification

B2c(ii)

The biotope is red listed due to the very limited area of occupancy. The area of occupancy is assessed to be ≤ 20 10x10km grid cells and the biotope occurs in 5 or fewer locations.

Recommendations for actions to conserve the biotope

Only limited information is available on the biotope, its distribution and persistence. Intensifying the biotope monitoring programs in the region is important in order to better understand the biotope and the conservation needs.

The distribution of the biotope is restricted and patchy. Minimizing anthropogenic pressures from construction and deep water pollution by hazardous substances will reduce the risk of the patches of the biotope disappearing due to random threat effects, such as variation in the reproduction and recruitment success of the clams.

All actions reducing eutrophication and counteracting climate change are beneficial in a conservation perspective for the biotope.

Common names

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References

- HELCOM (1998) Red list of marine and coastal biotopes and biotope complexes of the Baltic Sea, Belt Sea and Kattegat. Balt Sea Environ. Proc. No 75
- HELCOM (2007) HELCOM lists of threatened and/or declining species and biotopes/habitats in the Baltic Sea. Balt. Sea Environ. Proc. No 113
- HELCOM (2013) Approaches and methods for eutrophication target setting in the Baltic Sea region. Balt. Sea Environ. Proc. No. 133
- Jan Warzocha personal communication, National Marine Fisheries Research Institute (Poland), (9.4.2013)