BIOTOPE INFORMATION SHEET

English name: **Baltic photic and aphotic maërl beds (unattached particles of coralline red algae)**		Code in HELCOM HUB: **AA.D, AB.D**	
Characteristic species: *Lithothamnion* spp. and *Phymatolithon* spp.			
Past and Current Threats (Habitat directive article 17): Mining and quarrying (C01), Climate change (pH-change M01.04), Construction (wind farms C03.03), Fishing (bottom trawling F02.02.01), Eutrophication (H01.05)		Future Threats (Habitat directive article 17): Mining and quarrying (C01), Climate change (pH-change M01.04), Construction (wind farms C03.03), Fishing (bottom trawling F02.02.01), Eutrophication (H01.05), Random threat factors (–)	
Red List Criteria: **B1+2a(ii)**	Confidence of threat assessment: **M, L (AB.D)**	**HELCOM Red List Category:**	**EN Endangered**
Previous HELCOM Red List threat assessments			
BSEP 75 (HELCOM 1998):		BSEP 113 (HELCOM 2007): Maerl beds under threat and/or in decline in Kattegat	
Greater concern stated by:			

Habitat and Ecology

Baltic photic maërl bed bottoms are habitats in the photic zone which have at least 90% coverage of maërl. The term 'maërl' refers to several species of calcareous rhodophyte algae (family *Corallinaceae*, genuses *Phymatolithon*, *Litothamnion*, *Lithophyllum*). Maërl beds form in favourable environmental conditions where the unattached macroalgae form nodules, usually with a diameter <5 cm, and accumulate. Areas where maërl beds occur are generally well ventilated with low levels of turbidity and high salinity. The depth limit of maërl beds is light dependent, beds are often encountered in areas of subdued light conditions, often at depths of 17–22 m.

Especially in high latitudes the maërl algae are very slow-growing, resulting to very slow development of maërl beds (Barbera et al. 2003). In fully marine conditions the dominant species is typically *Phymatolithon calcareum*, whilst under variable salinity conditions *Lithothamnion glaciale* may develop beds (OSPAR 2006). Maërl beds are structurally and functionally complex perennial habitats that support a rich species diversity (Barbera et al. 2003). Animals associated with maërl beds include rare crustaceans such as *Corystes cassivelaunus* and *Thia scutellata* , and echinoderms such as *Ophiothrix fragilis* and *Ophiocomina nigra* (OCEANA 2011). In the Baltic Sea these species are only encountered in the Kattegat (HELCOM 2012). The habitat is rare in the Baltic Sea, and occurs somewhat more commonly in the Atlantic.

It is currently not clear if the maërl beds in the aphotic zone can be considered to form an actual habitat, or if aphotic maërl covered areas are merely accumulations of dead algae from the photic zone that are slowly being broken down. It is unclear if the aphotic areas are separate habitats from the photic areas.

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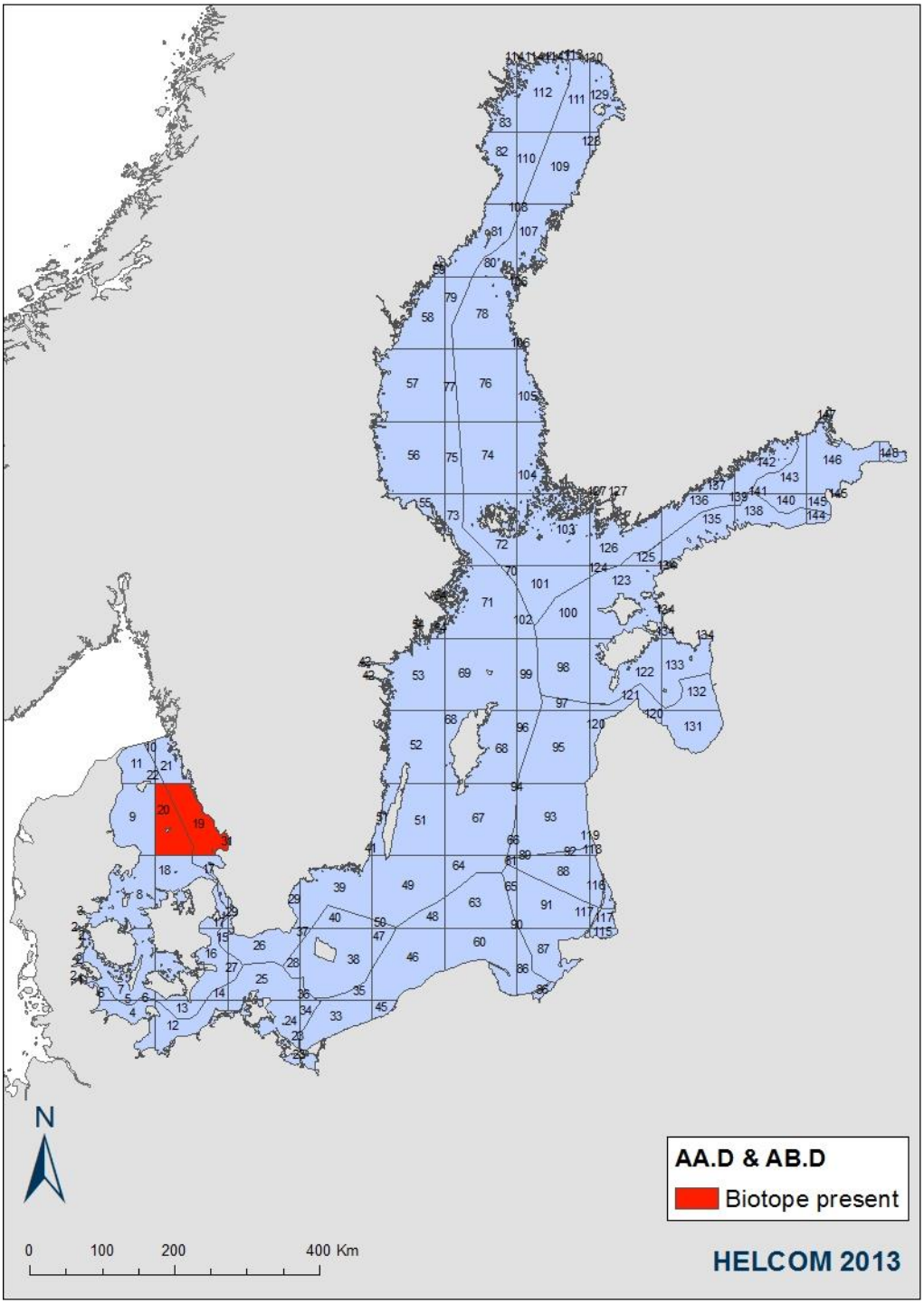
Distribution and status in the Baltic Sea region

Known areas where maërl beds occur are on offshore banks in the Kattegat (e.g. Lilla Middelgrund and Fladen). The presence of dead maërl at some offshore banks indicates that the habitat must have been more widespread in the past. It is unclear how large a proportion of the maerl beds occur in the aphotic zone. Maërl beds have a patchy distribution. The distribution map indicates the area in the 100 x 100 km grid where maërl beds are known to occur.



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Description of Major threats

As the living maërl algae are photosynthesizing and light-dependent. The algae are very sensitive to environmental changes resulting in deprivation of light. Eutrophication is known to increase turbidity, but in the Kattegat eutrophication is not considered to be a severe threat. Other factors causing turbidity include dredging and bottom trawling, activities that disturb the bottom sediment and re-suspend particles. Construction of offshore wind-farms may threaten the habitat, as the wind farms are often planned for shallower off-shore areas which can coincide with the rare maërl bed occurrences.

Historically maërl was commercially extracted to be used as fertilizer, the extraction was mainly carried out in Atlantic occurrences. Extraction mining can still be seen as posing a threat to maërl beds.

The future effects of ocean acidification on maërl beds is still somewhat unclear. Ocean acidification is predicted to have a negative impact on calcified organisms, such as the maërl algae. The regenerative ability of maërl algae is very poor due to a slow growth rate, and the slow growth rate might also make the algae more sensitive to the effects of ocean acidification. The low regenerative potential of maërl meds implies that any negative effects on the quantity and quality of the habitat will be long lasting.

Assessment justification

B1+2a(ii)

The biotope is very rare and is only known to occur in less than 20 locations within a 20 000 km^2 area in the Kattegat. Water clarity is not inferred to improve, and the uncertain effects of ocean acidification on the habitat are seen as a continuing decline in environmental quality that is relevant to the biotope.

Recommendations for actions to conserve the biotope

Maërl grounds should be regarded as effectively non-renewable resources. Commercial extraction of maërl beds should not be expanded and using fishing gears that damage the maërl beds should be restricted. Further permits for the siting of aquaculture units above maërl grounds should not be granted and the impacts that might affect water quality.

Common names

Maërl beds, rhodolith beds

References

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