

## IG4-8 v1 SUBTIDAL MUSSEL BED ON ROCK Audit trail to The Matrix

<b>Gear and feature/subfeature combination:</b>		<b>All towed demersal gears (dredges and trawls) and subtidal mussel bed on rock</b>	
<b>Matrix risk category – RED</b>		<b>Explanation for categorisation:</b> It is unlikely that towed demersal gears (with the exception of mussel dredges, which are considered separately) will occur intentionally over mussel beds on subtidal rock. This is reflected by the limited literature describing impacts of towed demersal fishing gears (excepting mussel dredges) to mussel beds on subtidal rock. However, despite some limitation in the evidence base, it is considered that the risk of significant impact is sufficient to require a categorisation of RED in the Matrix	
<b>Impacts</b>			
<p>Trawling or dredging on subtidal rock is expected to damage or dislodge mussels. As extensive mussel beds on rocky substrates can be a biogenic reef habitat (see references cited in Buschbaum <i>et al.</i> 2008, and Holt <i>et al.</i> 1998) negative impacts to dependent animals and plants, in addition to a potential loss of mussel biomass which is an important source of food for a range of predators (Holt <i>et al.</i> 1998), are therefore likely. Although mussels, as a generalisation, are considered to have a strong ability to recover from natural disturbance due to high production rates (Tyler-Walters 2008), the more firmly attached, stable communities on subtidal rock can have significantly more diverse associated communities (than those on mixed sediments); comprised of typically 50-100 species (see references cited in Holt <i>et al.</i> 1998). Effects of mussel loss may therefore be significant at the community level, particularly as mussels settle preferentially on conspecifics and reduction of adults may reduce subsequent recruitment, although this relationship is poorly understood (Dare <i>et al.</i> 2004). Mussels are also likely to build up longer-lived beds on subtidal rock; <i>Mytilus edulis</i> has been reported as reaching 18-24 years in age in the Danish Wadden Sea (see references cited in Holt <i>et al.</i> 1998).</p> <p>Demersal fishing (targeting mussels) has also been identified as a potential factor in reducing bed stability, thus increasing vulnerability to storm damage and resulting in the reduction in extent or complete loss of beds (Anon 2010). However, this was identified for sediment habitats and it is not known to what extent this observation is applicable for mussel beds on subtidal rock.</p>			
<b>Evidence</b> Buschbaum <i>et al.</i> (2008), Holt <i>et al.</i> (1998), Tyler-Walters (2008), Dare <i>et al.</i> (2004), Anon (2010).			
All literature is from the UK.			
Directly relevant peer reviewed literature	Directly relevant grey literature	Inference from studies on comparable habitats, gears or geographical areas.	Expert judgement
	x	x	x
<b>Confidence</b>			
<b>Medium</b>			
The conclusions are supported by directly relevant scientific information from a number of different sources. However, this is largely from peer reviewed and grey literature of the impacts of fishing gear to similar habitats in the UK.			

## **Bibliography**

Anon. 2010. Ecosystem concepts for sustainable bivalve mariculture. Committee on best practices for shellfish mariculture and the effects of commercial activities in Drakes Estero, Pt. Reyes National Seashore, California. ISBN: 0-309-14696-8, 190 pp. Downloaded from: <http://www.nap.edu/catalog/12802.html>. Accessed October 2012.

Buschbaum, C., Dittmann, S., Hong, J.S., Hwang, I.S., Strasser, M., Thiel, M., Valdivia, N., Yoon, S.P. and Reise, K. 2008. Mytilid mussels: Global habitat engineers in coastal sediments. *Helgoland Marine Research*, 63: 47–58.

Dare, P.J., Bell, M.C. Walker, P. and Bannister, R.C.A. 2004. Historical and current status of cockle and mussel stocks in The Wash. CEFAS. Lowestoft, 85pp.

Holt, T.J., Rees, E.I., Hawkins, S.J. and Seed R. 1998. Biogenic Reefs (volume IX). An overview of dynamic and sensitivity characteristics for conservation management of marine SACs. Scottish Association for Marine Science (UK Marine SACs Project). 170 pp.

Tyler-Walters, H. 2008. *Mytilus edulis*. Common mussel. Marine Life Information Network: Biology and Sensitivity Key Information Sub-programme [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 05/11/2012]. Available from: <http://www.marlin.ac.uk/speciesbenchmarks.php?speciesID=3848>> Accessed November 2012.