Nomination

Littoral chalk communities
EUNIS Code: Various including A1.126, A1.2143, A1.441, B3.114 and B3.115
National Marine Habitat Classification for UK & Ireland code: Littoral chalk biotopes (various including LR.HLR.FR.Osm, LR.MLR.BF.Fser.Pid, LR.FLR.CvOv.ChrHap, LR.FLR.Lic.Bli and LR.FLR.Lic.UloUro)

Definition for habitat mapping

The erosion of chalk exposures on the coast has resulted in the formation of vertical cliffs and gently-sloping intertidal platforms with a range of micro-habitats of biological importance. Supralittoral and littoral fringe chalk cliffs and sea caves support various algal communities unique to this soft rock type. Orange, brownish or blackish gelatinous bands of algae, composed of an assemblage of Haptophyceae species such as *Apistonema* spp., *Pleurochrysis carterae* and the orange *Chrysotila lamellosa*, but other genera and species of Chrysophyceae, Haptophyceae and Prasinophyceae are likely to be present as well. The lower littoral fringe may be characterised by a dense mat of green algae *Enteromorpha* spp. and *Ulva lactuca*. Lower down the shore in the eulittoral the generally soft nature of the chalk results in the presence of a characteristic flora and fauna, notably 'rock-boring' invertebrates such as piddocks, overlain by mostly algal-dominated communities (fucoids and red algal turfs) (Gubbay, 2002). Such coastal exposures of chalk are rare in Europe, with those occurring on the southern and eastern coasts of England accounting for the greatest proportion (57%) (ICES, 2003). Elsewhere, this habitat occurs in France, Denmark and Germany.

Geographical extent

OSPAR Regions; II
Biogeographic zones: 4, 6-9, 11-14
Region & Biogeographic zones specified for decline and/or threat: II

The erosion of chalk exposures at the coast has resulted in the formation of vertical cliffs and gently sloping shore platforms with a range of micro-habitats of biological importance. Littoral fringe and supralittoral chalk cliffs and sea caves support algal communities unique to the substrate. The generally soft nature of the chalk results in the presence of a characteristic flora and fauna, notably rock-boring invertebrates. Littoral chalk also supports distinct successive zones of algae and animals (Anon, 2000). In the OSPAR Maritime Area littoral chalk habitats are found on the coasts of England, France and Denmark.

Application of the Texel-Faial criteria

Littoral chalk communities were nominated by one Contracting Party, citing decline, rarity and sensitivity, with information also provided on threat.

Decline

A recent survey of chalk cliffs throughout England revealed that 56% of coastal chalk in Kent, and 33% in Sussex has been modified by coastal defence and other works. On the Isle of Thanet (Kent) this increases to 74%. There has been less alteration of chalk at lower shore levels except at some large port and harbour developments (e.g. Dover & Folkestone) (Doody *et al.,* 1991; Fowler & Tittley, 1993). Elsewhere in England, coastal chalk remains in a largely natural state.

Rarity

Coastal exposures of chalk are a rare in Europe with the greatest proportion (57%) and many of the best examples of littoral chalk habitats located on the coast of England. There is around 120km of chalk coastline on the French coast of Upper Normandy and Picardy and some chalk exposures at the coast in Denmark.

Sensitivity

The marine communities associated with littoral chalk habitats are generally tolerant of a high degree of turbidity. The most sensitive elements of the marine communities are probably the algae that are found in the splash zone of cliffed coasts.

Threat

The main threats to littoral chalk communities are from coast protection works, toxic contaminants and physical loss (Anon, 2000; Fletcher, 1974; Fowler & Tittley, 1993; Wood & Wood, 1986). Coast protection work has led to the loss of micro-habitats on the upper shore and the removal of splash-zone communities, including the unique algal communities. The deterioration of waters quality by pollutants and nutrients has caused respectively the replacement of fucoid dominated biotopes by mussel-dominated biotopes, and the occurrence of nuisance *Enteromorpha* spp. blooms.

A potential factor affecting the chalk biota is human disturbance especially be trampling, stone-turning, small-scale fishery and damage to rocks though removal of piddocks. Chalk exposures in the Straits

of Dover are also vulnerable to oil spills due to the proximity of major shipping lands. Native species along the English Channel have also been displaced, for example by *Sargassum muticum* and *Undaria pinnatifida*. These threats are significant primarily mainly because of the relatively restricted distribution and small total area of this habitat type.

Relevant additional considerations

Sufficiency of data

There is a limited but good basis for assessing the extent and status of littoral chalk habitat in the OSPAR Area. It is also clear that some areas of habitat have been lost to development and coastal protection works, but in many other areas the habitat has undergone a degree of modification

Changes in relation to natural variability

The natural erosion of chalk coastlines will result in changes in the extent of the habitat and has caused some dramatic cliff falls such as those at Ault (Somme) in October 1998, and at Le Tilleul (Seine Maritime) on November 1998. Falls at Beach Head in January 1999 resulted and estimated 100,000 m^3 of chalk debris and 150,000 m^3 at Puys in 2000 (Duperret *et al.,* 2001). Sea level rise and post-glacial land adjustment will submerge areas of intertidal chalk platforms.

Expert judgement

There is clear evidence of threats and declines of this habitat in some areas (OSPAR Region II) and therefore a good case for listing without much emphasis on the need for expert judgement to assess the significance of any qualitative or anecdotal information.

ICES evaluation

ICES finds that there is good evidence of declines and threat in some OSPAR regions and the precautionary approach would see this consideration extended to the whole OSPAR area (ICES 2002). This is based on the view that there is a clear and present danger to the existence of this habitat, primarily from physical threats such as development of ports or coastal protection works and from water quality threats, including those arising from maritime accidents, as many of the sites are in regions of high shipping activity.

Threat and link to human activities

Cross-reference to checklist of human activities in OSPAR MPA Guidelines

Relevant human activity: Constructions, coastal defence measures, landbased activities, shipping & navigation, tourism and recreational activities. *Category of effect of human activity:* Physical: substratum removal, increased siltation, turbidity changes. Chemical – hydrocarbon contamination, nutrient changes. Biological – physical damage to species, introduction of non-indigenous species.

There is a clear link between certain human activities and threats to littoral chalk habitats. This is particularly in cases where there has been coastal development or coastal protection works adjacent to this habitat type. Other threats such as post-glacial land adjustment are naturally occurring.

Management considerations

Management of both terrestrial and marine activities will be important to control factors leading to the decline and threats to this habitat type. Much of this is likely to fall under the remit of national planning authorities and would include decisions about the siting of coastal developments and improvements to water quality. Areas could also be designated under the proposed OSPAR MPA programme although it should be noted that littoral chalk habitats are covered by the EU Habitats Directive under the category of “reefs” and could therefore be included in the *Natura 2000* network.

Further information

Nominated by:
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Useful References:

Anon (2000). UK Biodiversity Group Tranche 2 Action Plans. Volume V – maritime species and habitats. English Nature, Northminster House PE1 1UA. ISBN 1 85716 467 9. 242 pp.

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Duperret, A., Genter, A., Mortimore, R.N., Lawrence, J.A., & Martinez, A. (2001) A classification of chalk cliff failures, based on recent cliff collapses along the Channel coasts of England and France. Abstract. International Conference on coastal rock slope instability – geohazard and risk analysis. Le Havre, 30-31 May, 2001.

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Fowler, S.L. & Tittley, I. (1993) The marine nature conservation importance of British coastal chalk cliff habitats. English Nature Research Report No.32. English Nature, Peterborough.

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