



UK Biodiversity Action Plan Priority Habitat Descriptions

Deep-sea Sponge Communities

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Deep-sea Sponge Communities

This habitat description has been adapted from the OSPAR habitat description (2005) (<http://www.ospar.org/work-areas/bdc/species-habitats>: Definition available through the linked text 'case reports').

Correspondence with existing habitats

- OSPAR habitat: Deep-sea sponge aggregations
- Habitats Directive Annex I: Reefs

Description

Deep-sea sponge aggregations are principally composed of sponges from two classes: Hexactinellida and Demospongia. Glass sponges (Hexactinellidae) tend to be the dominant group of sponges in the deep sea, although demospongiids such as *Cladorhiza* and *Asbestopluma* are also present. The massive sponges that dominate some areas include *Geodia barretti*, *G. macandrewi*, and *Isops phlegraei*. They can occur at very high densities, particularly on the slope in areas where substrate and hydrographic conditions are favourable. Survey material from a sponge field in the northern North Sea and other locations had a comparable diversity and density of sponges with tropical reefs (Konnecker, 2002). The sponges also influence the density and occurrence of other species by providing shelter to small epifauna, within the oscula and canal system, and an elevated perch (e.g. for brittlestars) (Konnecker, 2002). Deep-sea sponges have similar habitat preferences to cold-water corals, and hence are often found at the same location. Research has shown that the dense mats of spicules present around sponge fields may inhibit colonisation by infaunal animals, resulting in a dominance of epifaunal elements (Gubbay, 2002). Information indicates that dominant species are slow growing taking several decades to reach large size (Klitgaard & Tendal, 2001). The habitat and the rich diverse associated fauna is therefore likely to take many years to recover if adversely affected (Konnecker, 2002).

They occur between water depths of 250–1,300m (Bett & Rice, 1992), where the water temperature ranges from 4–10°C and there is moderate current velocity (0.5 knots). Deep-sea sponge aggregations may be found on soft substrata or hard substrata, such as boulders and cobbles which may lie on sediment. Iceberg plough-mark zones provide an ideal habitat for sponges because stable boulders and cobbles, exposed on the seabed, provide numerous attachment/settlement points (B. Bett, pers. comm.). However, with 3.5kg of pure siliceous spicule material per m² reported from some sites (Gubbay, 2002), the occurrence of sponge fields can alter the characteristics of surrounding muddy sediments. Densities of occurrence are hard to quantify, but sponges in the class Hexactinellida have been reported at densities of 4–5 per m², whilst 'massive' growth forms of sponges from class Demospongia have been reported at densities of 0.5–1 per m² (B. Bett, pers. comm.).

Relevant biotopes

- EUNIS Classification: A6.62 – Deep-sea sponge aggregations (no associated biotopes)
- Marine Habitat Classification scheme v 4.06 – not covered

Current and potential threats

- *Fishing-bottom trawling*: There are anecdotal reports of sponges being brought up less and less frequently as the same area is fished. Little is known about damaged sponges that are left behind (e.g. dislodging or smothering).
- *Increased turbidity*: Which can lead to smothering.
- *Toxic pollution*: Little is known about the tolerance of sponges to toxic pollution of the water column although this may result in a higher than normal rate of abnormal and deformed spicules in a couple of species (Konnecker, 2002). This may be an issue if there are sponge fields in the vicinity of offshore oil and gas facilities.

- *Bioprospecting operations*: Many different chemical compounds are found in sponge tissues, and may have important pharmaceutical properties, especially as antibiotic and anti-cancer agents (Konnecker, 2002).

Image



Geodia sponge. ©Tomas Lundälf, Tjaerne Centre for Underwater Documentation.

References

ICES (2002) Report of the Working Group on Ecosystem Effects of Fisheries. Advisory Committee on Ecosystems. ICES CM 2002/ACE:03.

Klitgaard, A.B. (1995) The fauna associated with outer shelf and upper slope sponges (Porifera, Demospongiae) at the Faroe Islands, northeastern Atlantic. *Sarsia*, **80**, 1–22.

Klitgaard, A.B. & Tendal, O.S. (2001) “Ostur”-“cheese bottoms”-sponge dominated areas in Faroese shelf and slope areas. In: G. Gruntse & O.S. Tendal. *Marine biological investigations and assemblages of benthic invertebrates from the Faroe Island*, pp. 13–21. Kaldbak Marine Biological Laboratory, the Faroe Islands.

Konnecker, G. (2002) Sponge Fields. In: S. Gubbay. *Offshore Directory. Review of a selection of habitats, communities and species of the North-East Atlantic*. WWF-UK. North-East Atlantic Programme.

OSPAR Commission (2008) Case Reports for the OSPAR List of Threatened and/or Declining Species and Habitats.

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