

Oceanic ridges with hydrothermal vents/fields

EUNIS code: A6.94

National Marine Habitat Classification for UK & Ireland code: Not defined

Hydrothermal vents occur along spreading ridges (such as the mid-Atlantic ridge), subduction zones, fracture zones and back-arc basins (Gage & Tyler, 1991), and are caused by seawater penetrating the upper levels of the Earth's crust through channels formed in cooling lava flows, reacting chemically with hot basalt in the Earth's crust and then rising back to the sea-bed to vent as superheated water containing compounds such as sulphides, metals, CO₂ and methane (Tunnicliffe *et al*, 1998 in Gubbay, 2002). The water may trickle out from cracks and crevices on the seabed as hot springs (5-250°C), or as very concentrated jets of superheated water (270-380°C). As these concentrated jets of water cool, minerals dissolved in the water precipitate out in black clouds, giving them their common name of 'black smokers'. At lower temperatures, sulphides are mostly precipitated within the rocks, making the venting fluids appear cloudier. These are known as 'white smokers' (Gage & Tyler, 1991). Hydrothermal vent fields cover relatively small areas of the seabed in water depths of 850-4,000m. The biological communities associated with hydrothermal vents are unusual as they are able to derive energy under conditions where photosynthesis is not possible. These habitats contain a huge diversity of chemoautotrophic bacteria, which form the core of the trophic structure around the vent. Characteristic species include the mussel *Bathymodiolus azoricus* and its commensal worm *Branchipolynoe seepensis*, the shrimps *Mirocaris fortunata*, *Chorocaris chacei* and *Rimicaris exoculata* (this last one is dominant on the southern vent fields of Lucky Strike), the crab *Segonzacia mesatlantic*, the polychaete *Amathys lutzi*, the amphipod *Luckia strike* and the limpet *Lepetodrilus atlanticus*.

See OSPAR Agreement 2008-07 for references