Changes in biogeography and the distribution and extent of habitats

What is the issue?

Recent changes in ocean climate, most notably rising sea temperatures, have been linked to changes in the distribution, abundance and phenology of marine species across the OSPAR maritime area.

What has happened and how confident?

Rising temperatures over the last decade have played a primary role in influencing the ecology of European seas (Hoepffner, 2006). This conclusion is supported by an ICES meta-analysis of long-term datasets for almost 300 species of plankton, benthic species, fish and seabirds. This recent study identifies climate change as a recognisably important factor in driving changes in distribution, abundance and seasonality of marine biota across the OSPAR maritime area (ICES, 2008a).

Evidence from the MarClim project suggests that species range expansions in response to climatic warming is occurring quicker in marine systems (plankton, fish as well as intertidal species) than terrestrial systems.

What might happen?

Rising sea temperatures will continue to impact upon the distribution, abundance and timing of marine species with important consequences for predator-prey relationships, and could facilitate the spread of invasive species and stress locally restricted species. The Arctic ocean may become seasonally ice free in the next few decades, with important consequences for ice-dependant species in the Arctic. Sea-level rise, storms and erosion will affect coastal habitats. These changes will take place against the backdrop of increased acidification of our seas, adding further stress to marine ecosystems.

Are there any OSPAR regional differences?

Some regions within the OSPAR maritime area have been more intensively studied than others, such as OSPAR Region II (Greater North Sea). Recent global studies suggest that climate change may lead to numerous local extinction in the sub-polar regions, the tropics and semi-enclosed seas by 2050 (Cheung *et al*, 2009a).

➥ *Go to the full QSR assessment report on impacts of climate change (publication number 463/2009)*

References

Cheung, W.W.L., Lam, V.W.Y, Sarmiento, J.L., Kearney, K., Watson, R., Pauly, D., 2009a. Projecting global marine biodiversity impacts under climate change scenarios. Fish and Fisheries, 10: 235–251

Hoepffner, N. (Ed.), 2006. Marine and coastal dimensions of climate change in Europe. European Commission-Joint Research Centre, report EUR 22554 EN, Ispra, pp 107 (http://ies.jrc.ec.europa.eu/fileadmin/Documentation/Reports/Varie/cc_marine_report_optimized2.pdf)

ICES, 2008a. Advice on the changes in the distribution and abundance of marine species in the OSPAR maritime area in relation to changes in hydrodynamics and sea temperature. ICES advice 2008 book 1, section 1.5.5.1 32 pp.

MARCLIM Marine biodiversity and climate change – MARCLIM project - http://www.mba.ac.uk/marclim