

What you really need to know about:

Changes in North Sea fish distributions from 1977 to 2001

Nearly two-thirds of 36 exploited and non-exploited North Sea fish species, studied from 1977 to 2001, have shown shifts in mean latitude and/or depth in response to climatic warming. The boundaries of half of the studied fishes with a northern or southern range limit in the North Sea, moved with warming, all but one, northward.

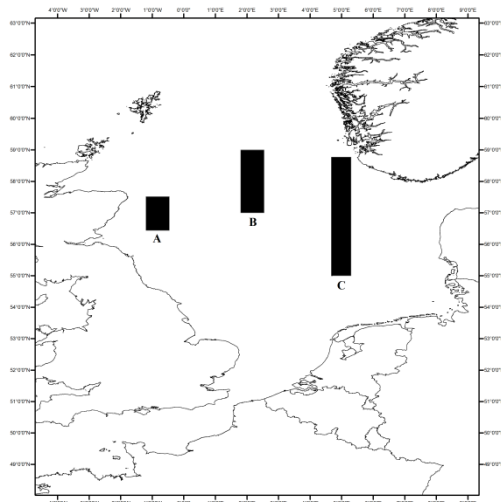


Figure 1. Ranges of shifts in mean latitudes for Atlantic cod *Gadus morhua* (A), anglerfish *Lophius piscatorius* (B) and snake blenny *Lumpenus lampretaeformis* (C) (after Perry et al., 2005)



Figure 2. Atlantic cod (*Gadus morhua*)

Distributions of both exploited and non-exploited demersal (bottom-living) North Sea fishes have changed markedly over a 25 year period (1977-2001). In the same period (1962 – 2001) North Sea waters have warmed by an average of 0.6°C. In 15 of 36 studied species, including Atlantic cod, *Gadus morhua*, and common sole, *Solea solea*, centres of distribution shifted by distances ranging from 48 to 403 km, most of them northward. A further 6 species, including plaice *Pleuronectes platessa*, moved deeper (=to colder waters) with warming but did not change in latitude. Boundaries of half of the studied fishes with a northern or southern range limit in the North Sea, moved with warming. All but one of the species shifted their boundaries northward over distances from 119 to 816 km.

The rate of shift for a selection of marine fish species whose boundaries shifted in relation to both climate and time (bib Trisopterus luscus, blue whiting *Micromesistius poutassou*, lesser weever *Echiichthys vipera*, Norway pout *Trisopterus esmarkii*, scaldfish *Arnoglossus laterna*, witch *Glyptocephalus cynoglossus*) turned out to be higher than what has been estimated through a meta-analysis of 99 species of shifting birds, alpine herbs and butterflies (2.2 km versus 0.6 km per annum).

The authors conclude that further temperature rises are likely to have a profound impact on commercial fisheries.

Do you want to read more?

- Perry A.L., P.J. Low, J.R. Ellis & J.D. Reynolds (2005). Climate change and distribution shifts in marine fishes. Science 308: 1912-1915.