

## What is already happening?

Mackerel are migrating earlier, spawning further north, and becoming vulnerable to fishing in Icelandic and Faroe Island waters.

Regions: CP 2 regions 4, 8 and Irish Waters

Anchovy and sardines are moving northwards, with anchovy establishing a breeding population in the southern North Sea.

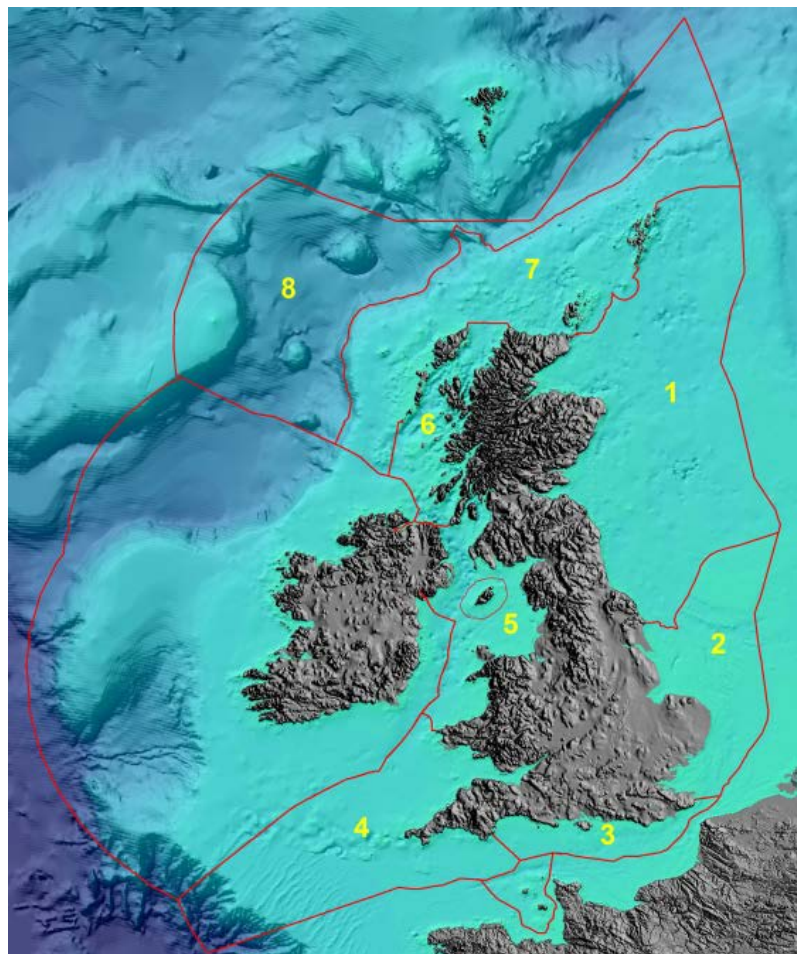
Regions: CP 2 regions 2, 3, 4, 5, Channel Islands and Isle of Man

Spring spawning fish (e.g. dab, whiting and lemon sole) are spawning earlier after cold winters due to thermally-forced offshore migration into deeper, warmer water.

Regions: CP 2 region 4

Salmon, trout and eels are all declining, partly due both to climate change at sea and also in rivers.

Regions: CP 2 regions 4, 5, 6 and Irish Waters



### CP2 regions

1. Northern North Sea
2. Southern North Sea
3. Eastern English Channel
4. Western English Channel, Celtic Sea and South-West Approaches
5. Irish Sea and North Channel
6. Minches and Western Scotland
7. Scottish Continental Shelf
8. Atlantic North-West Approaches, Rockall Trough and Faroe-Shetland Channel

## What could happen?

Boreal (cold-water) species will continue to decline and/or shift northwards with further warming, while Lusitanian (warm-water) species will invade and increase in abundance.

Regions: All regions

Warmer water will spill in to the northern North Sea favouring deeper-water Lusitanian species (e.g. hake) but driving out Boreal species (e.g. haddock).

Regions: CP 2 regions 1 and 7

Warmer conditions may mean the Celtic Sea and English Channel will become more productive, while the North Sea becomes less productive.

Regions: CP 2 regions 1, 2, 3 and 4 and Channel Islands

Ocean acidification may increasingly compromise fish physiology, growth, reproduction and behaviour later in the 21<sup>st</sup> Century.

Regions: All regions