

Science for Environment Policy

Climate change and pollution threaten fishing catches

Warming of coastal areas due to climate change is already having an important impact on fishing catches in the North Atlantic, according to a new study. The study also suggests that rising levels of nitrogen pollution, due to run-off from farming and sewage disposal, will pose a serious threat to fisheries in the near future if left unchecked.

At the World Summit on Sustainable Development in 2002, world leaders agreed to plans to improve the condition of the [marine environment](#), including introducing management based on maximum sustainable yield (MSY; the maximum fishing intensity that does not result in long-term decline of the population) by 2015¹. Between 2010 and 2020, efforts to improve the condition of the marine environment are focused on the world's largest marine ecosystems (LMEs). The 64 LMEs are coastal marine areas of 200,000 km² or larger, which together produce 80% of the world's fishing yields.

The authors of the study set out to understand how changes in sea-surface temperature due to [climate change](#) are affecting fisheries, plankton productivity and nutrient levels in the 15 LMEs surrounding the North Atlantic Ocean. In this region, between 1982 and 2009, sea surface temperatures increased faster in some LMEs than others. For example, the researchers show that the North Sea warmed by 1.38°C, whereas during the same period the Gulf of Mexico only warmed by 0.27°C. In general, warming rates were higher in the Northeast Atlantic.

Satellite observations suggest there were no significant changes in plankton productivity, except for along the southeast coast of Greenland. Nutrient levels, including nitrogen, from sources such as [farming](#) and sewage, were a concern across the region, but more so in the Northeast LMEs and the North Sea.

The picture for fisheries was complex, with rapidly, moderately and slow-warming LMEs all experiencing upward and downward trends in yields. However, overall, warming rates had a more direct influence on plankton and fisheries in the Northeast Atlantic than in the Northwest Atlantic.

The authors suggest that fishing catches will likely increase in sub-Arctic areas such as the Norwegian Sea and Iceland Shelf as warming continues, while yields will continue to decrease in the North Sea and more southerly coastal waters, extending from the west coast of Britain down to Spain and Portugal. In the Northwest Atlantic, pollution, low oxygen levels and harmful algal blooms related to nutrient increases were more important and fishing yields were declining.

The results highlight accelerated warming in the North Atlantic region and confirm that fishing catches are related to sea surface temperature. In addition, the researchers claim that if nitrogen pollution continues at current rates, levels could double by 2050, posing a serious threat to fishing catches. Therefore, the authors say, action needs to be taken on nitrogen pollution to avoid impacts on sustainable development.



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1. http://europa.eu/legislation_summaries/maritime_affairs_and_fisheries/fisheries_resources_and_environment/166037_en.htm