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Norwich scientist warns on fish migration

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Commercial crab fishingA Norwich scientist is calling for an immediate rethink of global fisheries strategies as fears mount that climate change will ravage stocks worldwide by forcing fish to abandon their increasingly warm habitats for the colder temperatures of the poles.

Developing nations could be the hardest hit by fish migrations while Europe and North America could also suffer from depleted stocks of some of the most popular species of fish, with some species facing the danger of being wiped out entirely.

The call for a major strategy upheaval follows publication of the first comprehensive prediction of the impact of climate change on global marine biodiversity and fisheries – until now, conservation and fisheries management measures have not accounted for climate-driven species distribution shifts.

The findings are based on a new computer model that predicts for the first time exactly what might happen under different climate scenarios to the distribution of commercially important species, including cod, herring, sharks, groupers and prawns.

It has long been known that ocean conditions such as temperature and current patterns are changing due to climate change, and that these changes directly affect the numbers and locations of different species of fish.

This new model however, provides compelling evidence of exactly what shape these movements will take and according to lead author of the paper presenting the findings, Dr William Cheung of UEA's School of Environmental Sciences, action is needed imminently.

"Our research shows that the impact of climate change on marine biodiversity and fisheries is going to be huge," said Dr Cheung. "We must act now to adapt our fisheries management and conservation policies to minimise harm to marine life and to our society.

"For example, we can use our knowledge to improve the design of marine protected areas which are adaptable to changes in distribution of the species."

Backed by the 'Sea Around Us' project at the University of British Columbia, Canada, and Princeton University in the US, Cheung and the team have calculated the likely impact of climate change on the distribution of more than 1000 species of fish around the globe.

Published in the journal Fish and Fisheries, the findings predict that as fish shift an average of 25 miles per decade, high latitude countries such as the Nordic nations are to gain in catch potential, while the others suffer from losses.

Countries and regions in the tropics, many of which are developing countries, are expected to be the worse hit, though others such as the USA may lose over 25 per cent off their catch potential from 2005 to 2050 according the findings.

Some marine species are also projected to move away from the tropics and the southern boundary of the semi-enclosed seas such as the Mediterranean Sea, which leads to a high rate of local extinction in these regions.

The study also projects an increasing abundance of more southern species, such as the European plaice, which may increase 10 per cent, while the the northward shift of the hugely popular Atlantic Cod may reduce its abundance by more than 20 per cent.

In the most severe cases, some species will face a high risk of extinction, including Striped Rock Cod in the Antarctic and St Paul Rock Lobster in the Southern Ocean. The invasion and local extinction of species could also disrupt marine ecosystems and biodiversity.

Dr Cheung says the next step would be for the research to focus on the socio-economic impact of the predicted scenarios.

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