

New findings on impact of climate change on global fisheries

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Scientists have for the first time calculated the likely impact of climate change on the distribution of more than 1000 species of fish around the globe.

As species shift northwards, their predictions for the North Sea include a 20 per cent reduction in Atlantic cod but a 10 per cent rise in the more southerly European Plaice. Published this week in the journal 'Fish and Fisheries', the research was carried out by scientists at the University of East Anglia (UEA), the *Sea Around Us* project at the University of British Columbia (UBC) and Princeton University. The findings will also be presented at the AAAS Annual Meeting in Chicago tomorrow by the paper's lead author Dr William Cheung of UEA's School of Environmental Sciences.

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. Dr Cheung and his team have developed 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. Current conservation and fisheries management measures do not account for climate-driven species distribution shifts and it is hoped this research will change this.

The disturbing results demonstrate for the first time:

- There will be a large-scale re-distribution of species, with most moving towards the Pole
- On average, fish are likely to shift their distribution by more than 40km per decade and there will be an increasing abundance of more southern species
- Developing countries in the tropics will suffer the biggest loss in catch
- Nordic countries such as Norway will gain with increased catch
- In the North Sea, the northward shift of Atlantic Cod may reduce its abundance by more than 20 per cent, while European plaice - a more southerly fish - may increase by more than 10 per cent
- In the US, there may be a 50 per cent reduction in the number of some cod populations on the east coast by 2050
- 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 may disrupt marine ecosystems and biodiversity

“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.” He said the next step would be for the research to focus on the socio-economic impact of the predicted scenarios. ‘The capacity and likelihood of climate change adaptation in the world’s fisheries’ by William Cheung (UEA), Vicky Lam (UBC), Jorge Sarmiento (Princeton), Kelly Kearney (Princeton), Reg Watson (UBC) and Daniel Pauly (UBC) is due to be published on February 13 2008 in ‘Fish and Fisheries’.