Fish moving poleward at rate of 26 kilometres per decade

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UBC researchers project a large-scale shift of marine fish and invertebrates toward Arctic and Antarctic waters. Credit: Dani Jaw

Large numbers of fish will disappear from the tropics by 2050, finds a new University of British Columbia study that examined the impact of climate change on fish stocks. The study identified ocean hotspots for local fish extinction but also found that changing temperatures will drive more fish into the Arctic and Antarctic waters.

Using the same climate change scenarios as the Intergovernmental Panel

on Climate Change, researchers projected a large-scale shift of marine fish and invertebrates. In the worst-case scenario, where the Earth's oceans warm by three degrees Celsius by 2100, fish could move away from their current habitats at a rate of 26 kilometres per decade. Under the best-case scenario, where the Earth warms by one degree Celsius, fish would move 15 kilometres every decade. This is consistent with changes in the last few decades.

"The tropics will be the overall losers," says William Cheung, associate professor at the UBC Fisheries Centre and co-author of this study, published today in *ICES Journal of Marine Science*. "This area has a high dependence on fish for food, diet and nutrition. We'll see a loss of fish populations that are important to the fisheries and communities in these regions."

Cheung and his colleague used modeling to predict how 802 commercially important species of fish and invertebrates react to warming water temperatures, other changing ocean properties, and new habitats opening up at the poles.

"As fish move to cooler waters, this generates new opportunities for fisheries in the Arctic," says Miranda Jones, a UBC Nereus Fellow and lead author of this study. "On the other hand it means it could disrupt the species that live there now and increase competition for resources."

This study follows previous research that looked at change in fisheries catch in relation to ocean warming since 1970.

Provided by University of British Columbia