

# The Telegram (St. John's)

## Climate change forces fish to find cold water: study

Friday, February 13, 2009

Page: B8

Section: National

Byline: Alison Auld

Source: The Canadian Press

Illustrations: A fisherman holds a large cod in this file photo. -Photo by Joe Gibbons/ The Telegram

Climate change will cause a major redistribution of fish and other marine species around the world as they leave native habitats in search of cooler waters, says a new study.

The migration is expected to see certain cod stocks off the eastern United States cut by 50 per cent over several decades, with some moving into Canadian waters.

The paper paints a distressing picture of oceans dramatically reshaped as hundreds of commercially harvested fish species migrate toward the cooler polar regions while others are simply wiped out.

Daniel Pauly, a marine biologist at the University of British Columbia, said that could mean exotic species like the Mexican jumbo squid become mainstays in Canadian waters, while other native stocks head north.

"We will be invaded by some species that were before in Mexico and California," Pauly, who co-wrote the report, said from a conference in Bath, England. "You have this major reorganization and in the polar areas you have a wholesale extinction of the specialized fauna that is linked to the ice."

The findings, published today in the journal *Fish and Fisheries*, use new computer models to predict the distribution of over 1,000 fish stocks and invertebrates as temperatures rise.

Researchers used predictions endorsed by the Intergovernmental Panel on Climate Change that are related to temperature increase, salinity and ocean current patterns to project where fish will be over the next several decades.

Lead author William Cheung said they discovered on average, fish will likely travel more than 40 km per decade as they seek better habitats. That means the U.S. cod population could drop by half by 2050, but it wasn't clear how much of that stock would end up in Canadian waters.

Northern countries like Norway, Iceland and Russia could be the big beneficiaries of the phenomenon as species like cod and herring migrate to their waters.

But Cheung who is now at the University of East Anglia in England - warns poorer countries in the tropics that rely heavily on the fishery will be hard hit if their primary species head north to escape warming waters.

"If you're a fisherman in the tropics, you will suffer

most because there will be a major reduction in the catch potential," he said from Chicago where he is presenting the paper today.

Fish adapt to changing environments up to a certain point and then will migrate in search of a more hospitable habitat. They are particularly sensitive to temperature.

Cheung said there are already examples of the global redistribution of fish stocks brought on by climate change.

The giant Mexican squid has been found off Oregon and fishermen in the area have reported having to travel north to find catches of certain species of cod and stable fish.

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