

Why warming oceans could mean dwindling fish

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Fish catches could be hurt by climate change

It's easy to forget that global warming doesn't just refer to the rising temperature of the air. Climate change is having an enormous, if less well understood, impact on the oceans, which already absorb far more carbon dioxide than the atmosphere. Like so much of what goes on in the vast depths that cover more than two-thirds of our planet's surface, the effect of climate change on the oceans remains a black box—albeit one that scientists are working to illuminate.

Here's one way: fisheries. Wild fish remain a major source of protein for humanity—as well as a major source of reality TV shows—and for some coastal communities, fish mean even more. Scientists aren't clear about what climate change, including the warming of the oceans, will have on wild fisheries. As Mark Payne of the National Institute of Aquatic Resources writes in a new piece in *Nature*, ocean researchers “tend to view climate change as a dark cloud on the horizon: potentially problematic in the future, but not of immediate concern”—especially compared to the much more pressing threat of simple overfishing.

But now a new study in *Nature* makes the case that climate change—including the warming of the oceans—is already having a direct impact on global fisheries. Researchers led by William Cheung at the University of British Columbia's Fisheries Centre created a new model that took the known temperature preferences of different species of commercial fish and compared those figures to global catch numbers from around the world. They found that species comfortable in warmer waters have been replacing fish that are more accustomed to cool temperatures. That means climate change is altering the makeup of fisheries around the world—and that could be particularly bad for the tropics, which may eventually become too hot for even for fish that tend to prefer it on the warmer side.

As Cheung's co-author Daniel Pauly put it in a statement:

We've been talking about climate change as if it's something that's going to happen in the distant future—our study shows that it has been affecting our fisheries and oceans for decades. These global changes have implications for everyone in every part of the planet.

The study's methodology is clever. Trying to estimate fish populations and distributions has always been a difficult and highly contentious process for the simple reason that there is so much ocean. You can use sonar estimates and trawl surveys—literally dredging the ocean—to try to get more precise samples, but that's difficult and expensive. Another option is to use commercial catch statistics, which are kept by nearly every country in the world—but lack tend to lack the requisite rigor. Countries have all sorts of motivations to fudge their catch numbers—especially in an age when catch quotas are being implemented to limit overfishing—and fishermen logically go after commercially viable species over unpopular fish, which then further skews the data.

The Nature team got around this problem by developing a sort of “thermometer” for fish distribution, analyzing the mean temperature of the catch (MTC). For each species in their database, the researchers derived a characteristic temperature range—in short, how hot or cold the fish could stand—weighted by the amount of each species caught.

They applied their metric to nearly 1000 species across 52 large marine ecosystems between 1970 and 2006, looking at how water temperature changed over that period. (Hint: it got warmer.) And they found what you might expect—as water temperatures increased, so did the MTC, meaning that warm-water preferring species moved in and cold-water preferring species moved out.

Because catch numbers do not automatically equal actual populations, we can't say for sure that the changes Cheung and his colleagues saw are an absolute reflection of what's happening to wild fish beneath the waves. Other factors—like a consumer preferences or fuel costs—influence what kind of species fishermen think are worth catching. But even the changes in the catch data alone are startling—especially for tropical regions, as Payne writes;

In these regions, the fact that the catch composition seems to have reached the terminal hot-water state means that further warming may reduce fishery yields, if it has not already done so. The countries that border tropical waters are also those that are the most dependent on fisheries as sources of employment, foreign revenue and food, and are least able to adapt to such changes.

The oceans can sometimes seem so vast that nothing we could do could possibly alter them. But climate change—and our enormous hunger for seafood—seems up to the task.

Fonte: Time. Disponível em: <<http://science.time.com/2013/05/16/why-warming-oceans-could-mean-dwindling-fish/?iid=sci-main-lead>>. Acesso em: 16 maio 2013.

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