



You might want to put down your Filet-O-Fish before reading this.

Between 1950 and 2010, the UN's Food and Agriculture Organization (FAO) underestimated the total amount of fish caught in the world's oceans by over half, according to new book *Global Atlas of Marine Fisheries*, the product of ten years of research. Instead of total fish catches hitting a peak of 86 million tonnes in 1996, the number was actually 130 million tonnes. That means the already serious decline in fish stocks since the mid-1990s was even steeper than scientists thought.

In fact, over three times steeper. Dropping a huge average of 1.2 million tonnes in catches every year.

"That is important," says Daniel Pauly, principal investigator at the University of British Columbia's Sea Around Us research centre and one of the two authors of *Atlas*. "If the catch is declining in spite of all the fishing that we do, we have less and less fish to go around. And global warming is going to make it worse, especially in the tropics."

Pauly, who's been dubbed "the most well-known—and most controversial—fisheries biologist in the world," co-led the massive project, involving scientists from 273 countries and requiring over a decade of research.

The team consulted 4,000 unique publications for the reconstruction, including peer-reviewed articles, literature reviews, household and nutritional surveys, harbour logs, and interviews with local experts and fishers. Effectively, they had to correct for decades of under-reporting by many member countries, mainly due to the failure to include any other types of catches that weren't industrial in nature.

That means that three smaller types of fishing—subsistence, recreational and artisanal—simply weren't included in the global database for catches. In addition,

there's been no historic consideration of "discards," the fish killed but tossed back overboard (compared to "landed" fish). Those combine to about one-quarter of fish catch in the world.

Omitting all those factors—as well as illegal fishing, which accounts for an estimated one of every five fish caught—has seriously compromised the accuracy of catch counts.

"The under-reporting is huge," Pauly says. "Canada reports zero catch for the Arctic. Zero. The Inuit obviously fish in the sea; it's not a large quantity, but it shows a lack of real interest for the Arctic. Canada also doesn't report as 'caught' the huge discards that have happened in the fisheries in the East."

To be fair, the gap between FAO and actual numbers has been tightening in recent years. That's a good sign, allowing for informed fish management and protection.

But the improvement in reporting might be too little too late. The world's oceans have absorbed a great majority of the excess heat in the atmosphere in recent years. Fish are already moving towards the poles as climate change continues to kick in, leaving countries in the tropics—many of which are already some of the poorest in the world—without a key source of sustenance.

"It's going to be very bad for the tropics, and later for everybody," Pauly says. "Global warming has this tremendous effect that makes itself felt already now, especially in the tropics. Countries like Canada can lull themselves into a sense of security because they can import fish."

Pauly retains a bit of optimism, noting the success of the United States' Magnuson-Stevens Act shows that rebuilding declining stocks can be done with proper legislation.

But currently, Canada doesn't have much resembling that; the Minister of Fisheries and Oceans has exclusive discretion over annual quotas, meaning the need to allow the fish stock to rebuild can often be sacrificed due to political pressures. Compounding the problem is that less than one-quarter of fish stocks in Canada are considered healthy, even further complicated by the lack of clear information on the situation.

"What we have to do is rebuild stock by not catching much and if we do that and the stocks rebuild then we get more diversity, more resistance against changes, even against global warming," Pauly concludes.

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