

# Warming waters endanger fish health

July 21 2015, by Saffron Howden

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Seafood consumption is rising but domestic supply is not coping with demand.  
Credit: Thinkstock

New evidence is emerging that climate change could join overfishing as a major threat to the world's seafood supplies.

While Australia – a small producer on a global scale, accounting for only

0.2 per cent of the world's seafood – has relatively healthy fisheries, it is suddenly and quite brutally feeling the effects of warming ocean waters.

Scientists concluded last year that species of the algal genus responsible for ciguatera poisoning in 13 people on the north coast of NSW in 2014 had been found in bloom proportions in south-eastern Australia for the first time. The disease is one normally associated with the tropics.

Its victims, who simply considered themselves unlucky, had eaten Spanish mackerel weighing more than 15 kilograms. Within hours, they had developed a burning skin sensation, severe diarrhoea, vomiting, aches and cramps.

Associate Professor Shauna Murray, who works in the Plant Functional Biology and Climate Change Cluster at the University of Technology Sydney (UTS), says climate change may be allowing some of these marine microalgae – which produce the toxins that then accumulate in larger fish – to proliferate in waters previously considered too cold to support them.

"My research is showing that some of these things look like they have already increased in abundance because of climate change," she says.

"[These are] the first cases that have been reported of fish caught in NSW waters and we've seen that just over the past two years."

Dr Murray, who works on detection methods, is researching how microalgae respond to living in different temperatures. She says other studies show a 60 per cent rise in the incidence of ciguatera across the Pacific between the 1970s and the turn of this century.

Queensland reported 55 cases of ciguatera poisoning last year, compared with an average of 15 annually in the five preceding years.

The impact on the fishing and aquaculture industries can be devastating.

One large-scale bloom of *Alexandrium tamarense* – which can cause paralytic poisoning in consumers of shellfish, such as mussels, clams, oysters and scallops – occurred on Tasmania's east coast in late 2012. It left the fishing and aquaculture industry about \$23 million worse off.

However, some fishers are not yet ready to ring the alarm. Mark Mikkelsen, a former seafood wholesaler and life-long recreational fisher, admits he is sceptical about climate change.

Mikkelsen is one of more than 905,000 anglers in NSW, according to figures from the Department of Primary Industries, and says last year "was probably one of the best mackerel seasons on record ... I don't think that fishing has been badly affected at all".

If Mikkelsen's opinions chime with a broader view, researchers and authorities have some way to go to persuade the industry and anglers that there is cause for concern.

However, marine ecologist Professor David Booth says Australia overestimates the sustainability of its fisheries.

"If we compare ourselves with Nigeria, which we shouldn't do, we're wonderful," he says.

"If we ate the amount of fish that is recommended by the Department of Health, we'd be overfished within two years."

Professor Booth says unreported fishing accounts for one third of the world's fishing. According to the United Nations Food and Agriculture Organisation (FAO), per capita fish consumption globally has almost doubled since the 1960s, from an average of 9.9 to 19.2 kilograms.

But the proportion of stocks fished within biologically sustainable levels has declined from 90 per cent in 1974 to 71.2 per cent in 2011.

The FAO estimates illegal, unreported and unregulated fishing takes between 11 million and 26 million tonnes of fish worldwide each year.

In Australia, seafood consumption is on the rise. We ate 345,326 tonnes of it in 2012-13, according to figures from the Australian Bureau of Agricultural and Resource Economics and Sciences.

But our domestic supply is not keeping pace with the increased demand, forcing Australians to rely increasingly on imports, particularly of tuna, and frozen fish and prawns. According to ABARES, imports accounted for 66 per cent of Australia's total seafood intake in 2012-13.

Professor Booth, who is director of the Centre for Environmental Sustainability at UTS and president of the Australian Coral Reef Society, says local fish production, particularly in north-eastern Australia, is also threatened by increased shipping activity as coal ports expand and new ones are built.

The potential for a major shipping incident in which a vast amount of oil is spewed into the ocean, is a growing concern, he says.

Ships travelling from far-flung parts of the globe can also introduce new species to local fisheries with harmful consequences.

Dr Murray says some threats to Australia's fisheries, such as those encroaching rapidly through [climate change](#), could be controlled. On-site testing and early detection of toxins could avert large-scale losses for the fishing and aquaculture industries.

"We're trying to develop more rapid tests that can be done on the farm,"

she says.

Vigilance is the key. "As long as research and monitoring can keep up, they [the industries] should be all right," she says. "But we can't become complacent."

Provided by University of Technology, Sydney

Citation: Warming waters endanger fish health (2015, July 21) retrieved 27 April 2024 from <https://phys.org/news/2015-07-endanger-fish-health.html>

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