

The rapid warming of our oceans

The Tasman Sea is warming at one of the fastest rates on Earth, four times the global average.

That alarming fact was presented to last week's Seafood NZ annual conference in Wellington by MetOcean chief scientist Dr Moninya Roughan.

Surface temperatures were as much as 6 degrees C above the norm last summer, with the increase the most marked in the Tasman Sea.

Such dramatic shifts have profound implications for the marine environment as heatwaves become more frequent and more intense.

The most obvious are the geographic redistribution of species such as tropical fish ranging as much as 3000km south of their normal habitat, such as Queensland groper found off the northern New Zealand coast this year.

Less visible but equally as significant is impact on larval flows. Tiny rock lobster, for instance, are carried across the Tasman from Australia to our shores and could be displaced by hundreds of kilometres.

Temperature peaks can also cause habitat destruction to kelp and corals, diminish paua recruitment, sharply increase farmed salmon mortalities and alter species distributions and abundance, even in deep water.

Despite the seriousness of such changes, there remains a paucity of open ocean data, Dr Roughan says.

“We have under invested in our ability to comprehensively measure, monitor and predict the state of New Zealand’s coastal oceans.

“Marine industries are operating in the dark without accurate ocean circulation and temperature information.

“We have a poor understanding of temperature trends, variability and climate change scenarios. New Zealand is lagging a decade, if not two, behind other developed nations in this regard.”

Dr Roughan and her colleagues are seeking to address that through an ambitious programme termed the Moana Project.

It includes the widespread use of low cost temperature sensors, with the data recorded added to an open access data base.

The seafood sector is central to this. Fishing vessels crisscross the oceans and could readily attach sensors to trawls, integrated with satellite communications.

Data from a single float off the west coast of New Zealand on March 15 this year showed that the temperature anomaly went as deep as 1200 metres.

The research also aims to improve ocean circulation modelling.

MetOcean, acquired by State-owned MetService earlier this year, is seeking funding of \$10 million from the Ministry of Business, Industry and Employment’s Endeavour Fund for the project.

The assessment is demanding, as it should be with so much public money at stake.

Proposals are first ranked for their scientific excellence and then on impact and benefit to New Zealand.

The Moana Project has easily cleared that first hurdle and is one of 60 proposals to advance to round two.

“We have strong industry support (including Seafood NZ) and we are confident of the value of the project to the growth of our Blue Economy,” Dr Roughan says.

Confirmation on successful projects is due by the end of September.

In parallel with this project, the industry-owned Trident Solutions research body in partnership with research funder Seafood Innovations Limited is exploring what types of information can be collected by the seafood sector that is likely to be required for future fisheries management, and could include salinity, currents, turbidity and chlorophyll as well as temperature.

These projects are small first steps towards a comprehensive ocean observing and modelling programme for NZ that will support an ecosystems based approach for better management of our marine resources.



Tasman Sea.

Fish tagging research underway

One of the largest fish tagging programmes to ever take place in New Zealand is finally underway.

Conducted by the Tindale Marine Research Charitable Trust, the programme tags and collects details on common New Zealand fish species with the aim of expanding what we know about them. Researchers are hoping to work with the public to help run it.

A green fish tag with a serial number is attached to the fish below the dorsal fin using a hollow needle applicator. The information collected will specify species type, fish size, water depth, tag number and release location.

A pilot study took place earlier in the year where the team captured and attached an ID tag to several inshore fish species before they were released back to the ocean.

The first fish captured was a 63cm snapper that had travelled more than 305km from Kaipara Harbour to Taranaki in 41 days.

Founder of the trust, Scott Tindale, said "We know very little information about our inshore species and there has only been minimal tagging research carried out on our most common fish."

Although there is a fish-tagging programme for open-ocean species, Tindale said there's still a lot to know about New Zealand's common fish which are often only studied when deceased.

The new programme will allow researchers to examine their habitats and how far these fish travel all with a simple measure-up, tag and release.

"Tagging fish is the cheapest and easiest way to study fish," Tindale said.

"We've moved away from the days of anglers having bags and bags of dead fish around them, it's all about sustainability and research now, there's a lot about the sea that needs to be looked at."

A similar tagging project started 30 years ago in Sydney, Australia and now provides valuable information on fish species. Tindale hopes New Zealand's new tagging project will be just as long-lived and successful.

"There's so much we can learn about fish and it'd be great to continue our research and the more fish we have tagged the more in-depth research we can do." He said.

The trust is now looking to get the wider public involved by distributing tagging kits to anglers nation-wide.

Diving graduates in hot demand

Being only one of ten commercial diving schools internationally and the only one in New Zealand, the [Subsea Training Centre](#) is never short of students.

Operations manager Mike Pascoe dived commercially for 12 years before taking on the Huntly facility.

A non-coastal site may seem counter-intuitive for a dive school, but Pascoe describes Huntly as the perfect location. The former open-pit mine was converted into Lake Puketirini and at 87 metres deep, it provides ideal conditions for diving.

"We have two barges anchored up out on the lake and we lower a platform down to whatever depth we need for the day and divers go down from there. We start nice and shallow and as they go through the course, the deeper we get - right up to 50 metres." Pascoe said.

As part of the NZQA programme, 50 students are enrolled in the five-month course each year and every graduate goes on to work in a range of offshore and onshore environments – both nationally and abroad.

Many of these industry divers are expected to be employed for the construction of wharves and waterfronts for America's Cup and earthquake repairs.

Graduates are snapped up quickly by aquaculture groups, Pascoe said.

"The aquaculture [industry] is booming in New Zealand and Australia - we cannot [train] enough students to support the number of divers required

"Huon and Tassal aquaculture in Australia would take every graduate if they could - but we try and keep some in New Zealand."

Hamilton man JK Bell had no diving experience but joined the school after a recommendation from a friend. He has never regretted the decision.

"You learn new [stuff] every day," Bell said.

"You get a bit nervous at the start, especially as you dive deeper than 40 metres, but once you get used to it - it is mint, mean as."



Subsea training centre divers ready to go.

News

Hawke's Bay Seafoods and its officers could be facing \$1.5 million in fines for misreporting the catch of bluenose and selling 27 tonnes of the unreported fish, *Stuff* reports. Wellington District Court judge Bill Hastings is in the process of hearing submissions from the Crown and lawyers for Hawke's Bay Seafoods regarding how those involved should be fined and how that will be apportioned. MPI lawyer Stephanie Bishop is arguing for a fine of \$1.5 million, whereas the defence are saying the fine should be \$600,000. Bishop said "It was commercial scale misreporting", adding that the companies showed a poor attitude to strict compliance to the fisheries regime. "It was an abuse of trust of the fishery. The integrity of the quota management system depended on their honesty to ensure its sustainability," Bishop said. Judge Hastings also has to consider the financial means of the companies and that four vessels have been forfeited to the Crown. Lawyer for the companies, Mike Sullivan, said it was true the fishery system was incumbent on honesty and the defendants accept they had had an impact on the integrity of the system.

Speaking at the New Zealand seafood industry conference last week, Nelson mayor Rachel Reese re-asserted her support for the industry which is a pivotal part of her city,

Stuff reports. Reese said Talley's, Sanford, King Salmon and Kono are key contributors to the Nelson region's economy, while Plant & Food Research, NMIT and the Cawthron Institute were developing new industries that utilised seafood and aquaculture by-products. Reese noted the absence of local government representatives and urged the industry to make greater connections with their respective councils if they wanted their voices to be heard locally. "My city would be so much poorer if it weren't for all of these industries...through all of these connections you are putting money in the wage packets of people in my city."

"Get your mayors to care - tell your stories to the rest of provincial New Zealand because what we need is that story of prosperity and innovation. I want it seen as an industry that needs New Zealander's support, because we're all going to benefit."

Maritime New Zealand said crew fatigue led to the grounding and loss of commercial fishing vessel *Jan*. Its owner, Wild Fish NZ Limited, was fined \$27,200 following the prosecution. Maritime NZ Northern Regional Manager, Neil Rowarth, said the 17-year-old sole helmsman fell asleep soon after going on watch in the early hours of 11 January 2016. The helmsman had worked a full day, slept for only one hour or so, and was then woken to take his turn. He had never before been on watch by himself at night. After the helmsman fell asleep, *Jan* ran on autopilot and grounded on rocks near Howe Point in the Bay of Islands. Rowarth said the prosecution sends a strong message to all maritime operators that they must have an effective system for managing crew fatigue.



Nelson mayor Rachel Reese speaking at the 2018 New Zealand seafood industry conference.

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