

SEAFOOD

NEW ZEALAND

August 2021 | Volume 29 | No. 05 | Issue 270

**Unlocking Aquaculture's
ambitious \$3 billion
growth target**

**How seaweed could
be the answer to our
sunburn woes**



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Features

- 22** **Cover Feature:** Open ocean salmon farming the key to ambitious \$3 billion growth target
- 09** What is Kai Rescue and how the industry can help
- 17** Finding seabird solutions at 50 degrees south
- 28** Guiding graduates into a smart aquaculture sector
- 32** Net innovation balancing conservation and catches
- 34** How seaweed could be the answer to our sunburn woes
- 36** Trans-Tasman approaches to improving our mental health



Regulars

- 06** From the Chief Executive
- 07** News: Vast majority of New Zealand's seabed untouched by bottom trawling
- 19** News: Auckland Fish Market in partnership with the sea
- 38** Sustainable Seas: The massive potential of the seaweed sector
- 40** MPI: Working together during a pandemic



- 41** From the President: Dolphin protection and applauding industry leaders and the new wave
- 42** Seafood Stars: Celebrating revolutionary ideas, sustainability, industry heroes - young and old
- 44** Best Fish 'n' Chips: Snapper at the Galley
- 45** Recipe: Scandinavian Cured Rimmel Salmon
- 46** Economic Review: Economic review of the seafood industry June 2021



EDITORIALS

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In this issue

ISSUE #270:

Aquaculture is to the fore in the October issue. The Government is promoting an ambitious five fold expansion in aquaculture export earnings to \$3 billion annually by 2035. But how realistic is that? Fisheries New Zealand (FNZ) aquaculture director Mat Bartholomew details a proposed pathway, confident that it can be achieved.

Waikato University academic Dr Simon Muncaster, currently teaching the country's first aquaculture degree graduates, is also positive about the sector's potential. And the university's Tauranga aquaculture facility is developing flounder/paruru breeding.

Seaweed offers big potential and is the focus of a National Science Challenge Sustainable Seas project. Cawthron Institute scientists are also investigating seaweed as a source of sunscreens.

The deepwater fishery has made big strides in protecting endangered species. Sea lion, fur seal, dolphin and seabird captures have all markedly reduced, with further measures in train. The deepwater sector is also pushing back against misguided anti-seabed trawling advocates.

In the inshore fishery, wider net meshes and other innovations are helping balance conservation, effort and cost in avoiding smaller fish and non-target species. Four well known skippers explain how they are using Smart Gear to advantage.

Mental health is an issue in an industry that is already stressful enough and initiatives are under way on both sides of the Tasman to provide help.

Also, our Seafood Stars are recognised for their contributions to the industry and FNZ has praise for the response to the latest Covid lockdown.

In Nelson, learn how seafood booked for the cancelled Seafood New Zealand annual conference was put to good use.

The Best Fish 'n' Chips column heads to Market Galley at the Auckland Sea Market and our recipe is a delicious take on salmon with a Scandinavian twist.

Tim Pankhurst
Editor

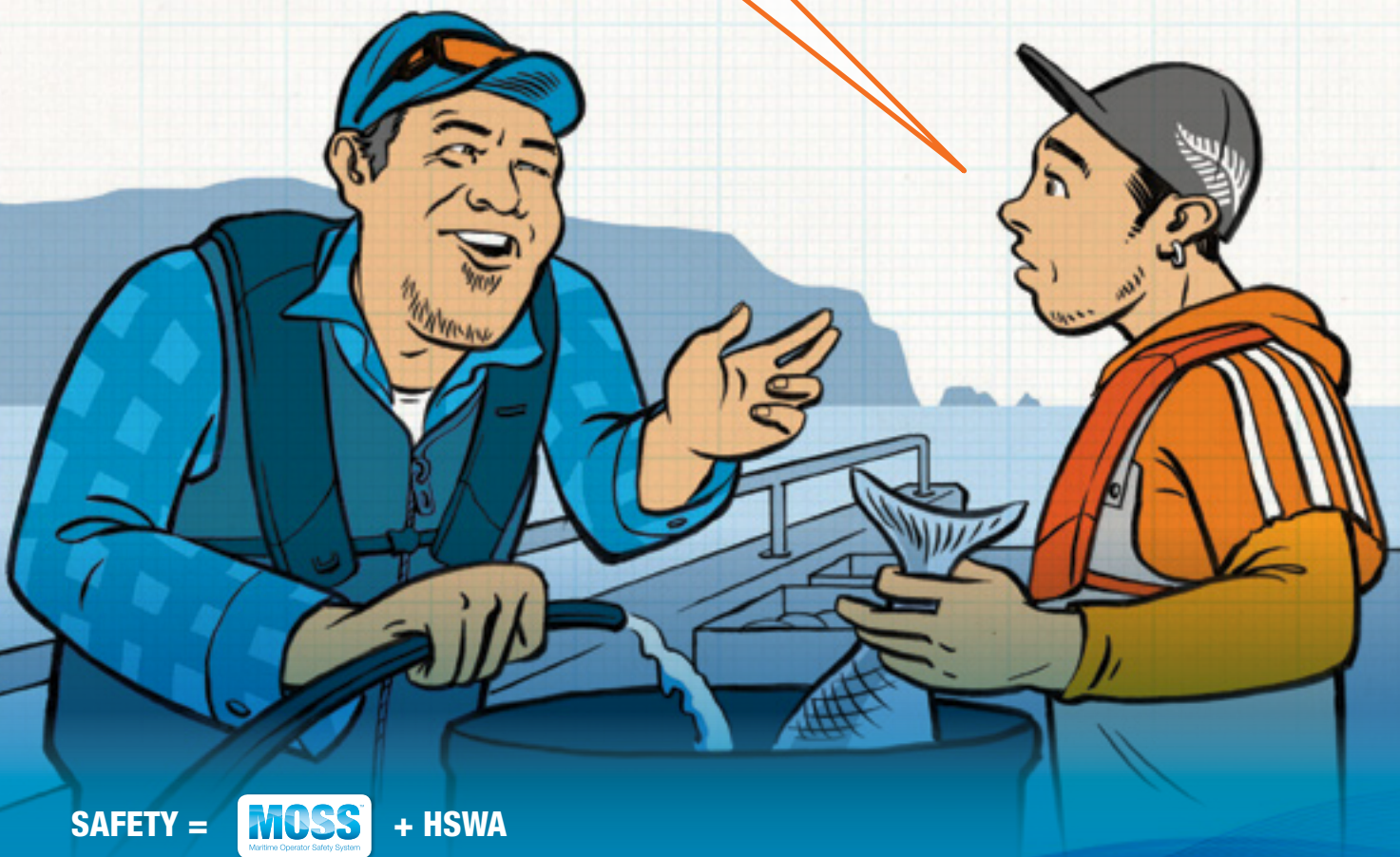
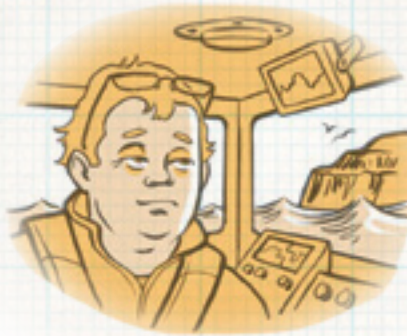
Too tired to fish

#1

JANGLE JIM ALWAYS MADE SURE THAT HIS CREW GOT SLEEP, BUT NO NOT HIM. AFTER ONE REALLY ROUGH TRIP, JANGLE SENT THE CREW TO GET SOME SLEEP AND KEPT WATCH.

BUT HE HAD AN AUTO PILOT, RIGHT?

THEY'RE NOT ALWAYS RELIABLE IN FLOOD TIDES. NEITHER ARE TIRED SKIPPERS. BUT ROCKS ARE. AND SO WAS THE AWFUL JANGLE SOUND WHEN HE SMASHED INTO THEM. THEY COULDN'T FISH FOR WEEKS.



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Covid-19, year two - bringing out the best in a generous industry

Dr Jeremy Helson



In 2020, as the world came to grips with the pandemic that is Covid-19, New Zealand's seafood industry showed how generous it could be in trying times.

This year has also been notable for generosity from the industry and, at

the risk of missing many others out, it is right to pay tribute to the people and companies we know have stepped up.

Roger Rawlinson, the skipper of Moana's Santy Maria, relocated the vessel from his home port of Tauranga to Mangōnui in Northland during lockdown, because he knew that was where the greatest need for kai would be.

Rawlinson has distributed three tonnes of fish caught under Iwi customary quota for snapper, gemfish and kingfish. More than 60 families have received the kaimoana.

Across the country through customary catch permits, Moana New Zealand contract fishers have been providing kuia and kaumātua with ika (finfish) to assist with cooked meals which will be a welcome addition to food relief packs.

Moana says they understand that COVID-19 puts communities under pressure and that people need support and providing value beyond financial return is an Iwi shareholder expectation.

Sealord donated half a container, or nine tonnes of hoki fillets, to not for profit organisation The Food Network in August, which re-distributed the fish to a whole host of charities around the South Island, including the Latimer Square soup kitchen in Christchurch and the Pacific Trust in Dunedin.

Sanford worked with both the Papatūānuku Kōkiri Marae in Māngere, via the Kai Ika program, as well as the BBM Foodbank in Manukau. During the first five weeks of the August and September lockdown, Sanford managed to supply a total of 2,780 kg of fresh heads and frames from snapper, kingfish and hapuka as well as 1,215 kg of fillet product from inventory. That's 21,400 meal equivalents provided to those communities which have been hardest hit by the latest outbreak.

And the contribution of the kaimoana and other food from the cancelled Seafood New Zealand conference in Nelson has also been gratefully received. The donation went to Kai Rescue, which then passed it on to multiple organisations dealing with those in need in the Nelson/Tasman region. Thank you to all the companies who were willing to donate this conference kai.

The industry doesn't like to blow its own trumpet but the generosity of our companies and individuals should be acknowledged.

The industry, whilst grateful to be deemed essential, has still had to grapple with challenges of working in constrained circumstances.

That they had time to consider those less fortunate is commendable.



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Vast majority of New Zealand's seabed untouched by bottom trawling

Tim Pankhurst



The Deepwater Group (DWG) has strongly defended bottom trawling in a submission to Parliament's environment select committee.

It says the scientific evidence is that bottom trawling does not provide an existential threat to either coral populations or to benthic diversity on seamounts.

The submission is highly critical of a petition presented to the select committee by the Deep Sea Conservation Coalition calling for a ban on trawling on seamounts.

The claims in that petition rely on misinformation and inconsistencies, DWG says.

The most egregious is that it conflates seamounts with other underwater geographic features – including knolls, hills, the continental shelf and slope features that also support biogenic habitat types – and much of its content is based on incomplete knowledge and is lacking in essential context.

"Much of the information relied upon in the report is historic and therefore incorrect in terms of current deepwater fishery practices," the DWG submission says.

"Many of the conclusions, along with much of the reference material, are only relevant in an international context and are not directly applicable within New Zealand's Exclusive Economic Zone (EEZ).

"DWG submits that the management of New Zealand's EEZ by the Government and the deepwater seafood industry in a global context is not only comprehensive but is also recognised internationally as being second to none.

"The condition-free certification of 19 of New Zealand's most important fisheries against the robust science-based Marine Stewardship Council standard demonstrates the success of this management framework."

The National Institute of Water and Atmospheric Research (NIWA) has advised there are 142 known seamounts within New Zealand's EEZ. Of these, 89 percent are either closed to trawling, or have never been trawled.

"As bottom trawling has only occurred on nine seamounts (6 percent) over the past decade, fishing does not comprise a threat to the biogenic habitats on seamounts with New Zealand's EEZ," the submission says.

"Scientific and observer records demonstrate that coral species are widespread throughout New Zealand's EEZ, occurring over a wide range of depths (both deeper and shallower than those fished) and across a wide variety of habitat types – not just on seamounts, knolls and hills.

"The data supporting our understanding of benthic fauna distribution is strongly driven by the distribution of known fishing grounds and observed fishing effort. While coral species are known to be widespread throughout New Zealand's EEZ, there is limited detailed knowledge

on precise locations of species and their abundances.

"DWG reiterates our call to the Government to fund public good science to establish the locations, extent and nature of deepwater corals across New Zealand's EEZ.

"NIWA has used modelling approaches to assess the likely areas of suitable coral habitat, based on records of coral captures and environmental parameters. Results from this work assess the overlap of these areas and bottom trawling to be less than one percent. By this measure, almost all of the areas where scientists predict coral may exist are outside of our fishing grounds and are untouched by bottom trawling.

"The fishing-related risks to corals within New Zealand's EEZ is low. Stony corals and hydrocorals occur over wide depth ranges, most of which are outside of the depth ranges being trawled. Of the depth range that has been trawled for orange roughy (ie, 800-1200 metres), 92.6 percent remains untouched by bottom trawls. In addition, corals and other benthic organisms are afforded protection by the Benthic Protection Areas

(BPAs) and Closed Seamount Areas (CSAs)."

The submission says the estimated amount of coral captured annually by bottom trawling off seamounts, knolls and hills in the New Zealand EEZ, based on observer records over the past three years, is 572kg.

"This amount could fit into the back of a ute.

"Bottom trawling has taken place on fishing grounds which in total comprise only nine percent of New Zealand's EEZ – 91 percent remains untouched. Within these grounds, 1.1 percent of the EEZ is subject to bottom trawling each year.

"Most of these grounds have been fished for decades and are responsible for the food production from New Zealand's deepwater fisheries resources. DWG estimates that around 80 percent of the volume of wild seafood produced in New Zealand is harvested by bottom trawl.

"Food production is an essential component of New Zealand's social and economic wellbeing."



What is Kai Rescue and how the industry can help



The astonishing number of people fed by Kai Rescue in Nelson/Tasman

A new Zealander's mid-life crisis was the unlikely path a former Christchurch man, with a Kiwi mother and a Croatian father, took from a successful career in corporate communications to feeding those in need in Nelson. LESLEY HAMILTON reports:

As another level four Covid lockdown loomed, the decision was made to cancel this year's Seafood New Zealand conference in Nelson, and months of planning had to be unwound.

A conference of this size is no small organising matter and credit needs to be given to Seafood New Zealand's Karen Olver who almost singlehandedly manages every part of the process.

Amongst the immediate decisions that had to be made was what to do with food for 300 delegates over a two-day conference. Some seafood was able to be returned while still in transit, but much was already at Nelson's Rutherford Hotel, where chefs had spent months planning the menu.

With the help of the Nelson Regional Development Agency and the Rutherford Hotel, the decision was made to donate the food, some of it the very best lobster and salmon, to an organisation called Kai Rescue.

Kai Rescue's Anton Drazevic is on a mission to save the planet from climate change after witnessing coral bleaching in Vanuatu.

Drazevic and his partner Holly Cole had been settled in Melbourne and had run highly successful corporate communications businesses, working and living in North America, Asia and Europe as well.

"I have had a very fortunate corporate career,"

FEATURE

Drazevic says. "At 29 I was director of one of Australia's top corporate communications agencies. I had a career working with some of Australia's and the world's best organisations to help them make more money, and I sort of wanted to use my expertise to help.

"My whole life was spent around chasing the almighty dollar, but I may have had a little mid-life crisis and thought, 'what the hell am I doing?'"

Drazevic first had the idea of going to Vanuatu. The couple sold their house and businesses and headed off to the tropics to do due diligence.

"I thought I was going to do this whole Robinson Crusoe thing. But the reality of bleached coral reefs caused by warming waters dashed those dreams."

So, back to Melbourne it was.

"When the Christchurch earthquakes struck, I said to Holly, let's go back and help and she said, 'you want to go back to an earthquake zone?'. So, we didn't. And then the Kaikoura earthquake struck. "My family have a farm in Kaikoura, and the earthquake struck at the time we were already planning a holiday back home.

"I have this gorgeous wife, three beautiful children – my twin boys are nine and my daughter is 12. And this time when I suggested we move, they agreed.

"I got a job on the Kaikoura recovery scheme right away. I led the community engagement piece on the ground in Kaikoura, which was basically troubleshooting, and that is where I got the real taste for community work. It was also some of the most challenging work I have ever done. Lives were substantially impacted.

"I have always been a backyard greenie, and then this amazing opportunity came up to manage the Nelson Environment Centre."

Drazevic is now its chief executive.

The centre is the oldest of its type in New Zealand, formed almost 45 years ago. Kai Rescue, an organisation under its umbrella began four years ago.

Drazevic says food waste is a big contributor to climate change.

"Every tonne of food waste sent to landfills releases two



The astonishing number of people fed by Kai Rescue in Nelson/Tasman



Kai rescue rely on volunteers to distribute the donated food

tonnes of greenhouse gas emissions."

It gets worse. Drazevic says New Zealanders waste 30-40 percent of all food produced or manufactured in this country.

"And that's across the board. The waste comes from growers and manufacturers all the way through to households. And it's just astonishing that anyone can afford to waste 30-40 percent of their food."

Kai Rescue services 60 community groups in the Nelson Tasman region.

"We supply food to everyone from St Vincent de Paul's, Salvation Army, Community Food Bank, to even schools across Nelson. I won't name them, but some are perceived to be prestigious schools and we are putting food in for breakfast and lunch clubs. One of those schools had their nurse call me to ask for donations because students were telling her they were hungry."

Drazevic says before Covid they were supplying about 40 organisations but that has jumped to 60.

"Normally we supply about two and a half tonnes a food a week. During lockdown, we had an increase in donations and we needed them, because demand jumped up to five tonnes."

To give perspective, two and a half tonnes of food supplies 7,000 meals, which, in a non-Covid environment, was feeding between two and four thousand people a week.

Different organisations have different ways they contribute food. Some make the food supplied by Kai Rescue into meals, others like Women's Refuge make freezer packs so women in crisis situations always have something healthy to feed their families.

Drazevic says the very welcome donation from the cancelled Seafood New Zealand conference was gone in two days.

With Nelson being Australasia's biggest fishing port, the question needs to be asked – given the clear community need, is there more our seafood companies can do?

"I need to say that a lot of your companies contribute to us through the "E-waste" programme. Many of the bigger companies here will send their second-hand equipment to



Anton Drazevic collects Seafood New Zealand's donation from the Rutherford Hotel. Image TVNZ

us here to reprocess, which is great, and all of the seafood companies here in Nelson have, at one time, sent kai our way. For example, if a fishing vessel needs to come back to port unexpectedly early, they need to restock the freezers and they will send all that existing product to us."

The Kai Rescue programme is expensive to run.

"Kai Rescue is 100 percent reliant on donations, grants, and the goodwill of agencies like Ministry for Social Development (MSD), and Ministry for the Environment (MfE)."

Drazevic is also focused on education and says they are fully behind a Nelson District Health Board programme that is aimed at giving people information about how food is prepared.

He says the instance of Harbour Fish in Dunedin supplying basic recipe cards with the fish they supplied to food banks is a good example.

"Not everyone has the same experience in our community, especially when you look at immigrants and refugees and the more vulnerable. How do you cook a meal when, for example, your power has been turned off? What if you only have one pan? If you are from Senegal or Somalia, how do you know the difference between a carrot and a



Anton Drazevic and Erin Taylor of Nelson Environment Centre

parsnip? We just forget that you only know what you have been taught."

He says it is one thing to give people food, but it is another to support that generosity with education.

Drazevic agrees it is also a generational divide. The generation that was schooled in home economics has a different world view.

"The phone calls we field at the Nelson Environment Centre are a case in point. When people ask how they deal with half a kilo of cooking oil they do not want to put down the drain, we ask them if they have a vege patch and tell them if they dig a trench 25 centimetres down you can pretty much put any organic material in it and nature will take care of it. And they realise that is exactly what their grandparents used to do."

New Zealand fishing vessels, particularly deepsea vessels, adhere to strict 'no waste' protocols whilst at sea. They are mindful of utilising all of the catch.

Our companies have been generous during the Covid period, and well before that, with many examples of providing good seafood to those who would not normally receive it.

Let's keep this up.

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"catch fish...not cables"

There are a number of international submarine cables which come ashore in the Auckland area. These cables supply international communications for both New Zealand and Australia to the rest of the world.

New Zealand is a very isolated nation and as such is extremely reliant upon global communication via submarine cables. Here in New Zealand over 98% of all international communication is carried via submarine fibre optic cables. These cables are a key component of New Zealand's infrastructure and play a significant role in our everyday lives, the general economy and future growth of New Zealand.

These cables are laid in three submarine cable corridors in the greater Auckland area where anchoring and fishing is prohibited under the Submarine Cables & Pipelines Protection Act.

These areas are:

- **Muriwai Beach** out to the 12 mile territorial limit where both anchoring and fishing is prohibited.
- **Scott Point to Island Bay** in the upper Waitemata Harbour where anchoring is prohibited.
- **Takapuna Beach** this runs from Takapuna Beach in the south to just north of the Hen & Chicken Island (opposite Taiharuru Head) where anchoring and fishing is prohibited.

Note: These protected areas are monitored by sea and air patrols.



Symbols Relating To Submarine Cables

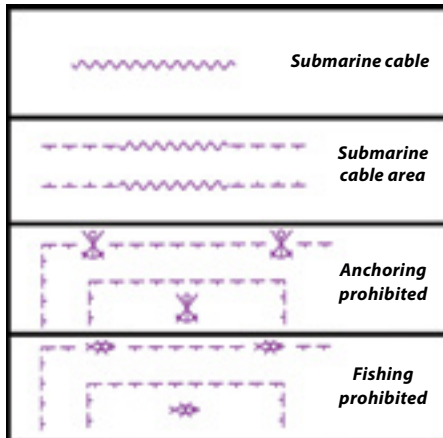


Figure 1.

These are some of the penalties

- A maximum fine of \$20,000 for a non-commercial vessel.
- A maximum fine of \$100,000 for a commercial vessel.
- A maximum fine of \$250,000 for damaging a submarine cable.

Additional to the fine for damage, the cable owners would inevitably pursue the recovery of costs associated with repairs, this could be up to \$100,000 plus a day; a typical repair can take up to two weeks.

Be Aware

These International submarine cables carry up to 10,000 volts to power the system repeaters along the cable.

For more detail refer to appropriate marine charts.

What should you do?

- If you are going into any of these areas, be sure to check your marine charts and/or GPS plotter so you know the exact locations of the prohibited zones. The relevant charts are NZ53, NZ5322, NZ532, NZ522, NZ52, NZ42 and NZ43. The symbols used to mark the zones are detailed in Figure 1.
- If you suspect you have snagged your anchor or fishing gear on a submarine cable in one of these areas, don't try to free it. Note your position, abandon your gear, then call 0800 782 627.

What happens outside the prohibited areas?

These cables are covered by the Submarine Cables and Pipelines Protection Act regardless of whether they are inside or outside a prohibited area. Beyond the confines of the "anchoring and fishing prohibited" areas, the cables are clearly marked on the appropriate marine charts.

Considering possible positioning inaccuracies and repaired cable section deviations, fishermen are advised to keep a minimum distance of one nautical mile from either side of charted cables.

Note this number:

For any queries regarding submarine cables call: **0800 782 627**



Finding seabird solutions at 50 degrees south



Trawling for squid at 48-51 degrees south

Just as well there are some determined people about because finding a solution to seabirds targeting fish in trawl nets is not proving an easy task. LESLEY HAMILTON reports:

Whilst historically, albatross interactions with trawlers were mostly due to warp strike, better offal and fish waste control on vessels means the birds, denied usual food sources from processing decks, are more actively targeting the contents of the net itself.

For the New Zealand offshore trawl fleet, the squid fishery annually accounts for the majority of seabird incidental captures due to seasonal overlap in squid and seabird abundance. The relatively high interaction rates, high observer coverage, and bird species mix, make the fishery a good testing ground to seek to both reduce impacts and trial tools and measures to that will reduce them across the board.

Richard Wells from Deepwater Group (DWG) says whilst sooty shearwater and white-chinned petrels have always been observed captured in squid trawl nets and dominate the total interactions, it is now more common to also see albatross

caught and more mitigation is desired.

The squid fishery operates in high latitudes (48oS-51oS) and it is a hostile ocean environment for vessels and crew. The westerlies that howl through this stretch of ocean are exacerbated by the scarcity of landmasses to serve as windbreaks, and in the age of sail, the dangerous waters were named the Roaring Forties, the Furious Fifties and, if you dared venture further, the Screaming Sixties.

Wells says these southern and sub-Antarctic grounds usually yield 95 percent of New Zealand's arrow squid catch.



Seabirds targeting a trawl net. Image: John Cleal

FEATURE



Red streamers were found to be ineffective. Image: Fisheries NZ observer programme

“These are very productive and important grounds, however finding specific solutions to seabird captures must be balanced with a very careful eye on the safety of the vessels and crew, whilst also not hampering our ability to avoid other protected species, such as sea lions.”

In 2019, work began again on refocusing mitigation effort from the trawl warps to captures in the net.

Led by Southern Seabirds and Deepwater Group and supported by the Department of Conservation, Fisheries New Zealand, fishing companies, skippers, gear suppliers and technical experts, the group identified three key mitigation options: attraction, deterrence, and prevention.

Wells explains that they looked at solutions for reducing the attractiveness of the vessel and net to seabirds, deterring them away from the net by distracting or scaring them, and creating barriers to them being caught in the net at all.

“Through two COVID-disrupted years, a large range of

solutions were tabled and discussed by the group, however only four projects, so far, were assessed as having enough potential to conduct at-sea trials.

“It was imperative to have a rigorous ‘sieving’ process for ideas to keep focussed on best options, and this meant looking at practicality which encompasses safety, potential efficacy, cost, complexity, durability, and ease of use,” Wells says.

Last year, preliminary trials at sea began on strategic batching of fish waste, white strips, red streamers, and a high-capacity water sprayer. However, most were delayed and affected by Covid disruptions.

“The staged and documented nature of trials means that initial trials are to prove, or not, whether the ideas are worth taking to a larger-scale trial where results can be used to justify use or not. All trials include well- documented protocols and data forms to ensure we know what occurred and trials stop if things go awry. Ministry for Primary Industries observers have been a great help in supporting trials to date.”

Wells says, at this stage, there is no clear contender for a likely useful tool although one or two have shown to be unlikely to have any effect at all, for example the red tapes.

“It is a big and vibrant environment around these vessels with wind and weather and noise; coupled with large numbers of birds – so any deterrent has to be pretty significant,” Wells says.

Interestingly, other countries with similar fisheries and comparable seabird populations, such as South America and South Africa, are not as yet reporting similar problems.

“So, for now we are on our own, but this programme is dedicated to finding solutions.”



The high capacity water sprayer shows promise. Image: Sealord

Auckland Fish Market in partnership with the sea

Tim Pankhurst

The only way to eat fresher fish is to be another fish.

That is the clever line Sanford uses to promote its Auckland Fish Market.

The revamped market, opened three years ago on Sanford's historic Jellicoe St site on the waterfront just a stroll from the Viaduct and downtown Auckland, remains the go-to place for the biggest variety of fresh fish.

But it is facing challenges that are prompting some creative thinking.

The Covid-19 pandemic and resultant lockdowns have hit the market hard.

Buses filled with tourists no longer pull up and the cruise liners are tied up.

Tourists represented up to 25 percent of turnover – the cream on top of the local trade.

The once popular cooking school has closed and business is down across the board.

As a result Sanford, as the market managers, are adapting their approach.

Live bands perform in the open courtyard at weekends, which recently attracted a sold out crowd of 300.

Kids' activities and one-off celebrations such as Bluff oyster day also feature.

"We've got to make ourselves a destination," Sanford chief customer officer Andre Gargiulo says.

"Like the rest of the food sector in this city it is based on bums on seats.

"Our goal is to have more Kiwis enjoying seafood.

"We see this as New Zealand's market, something for the whole industry to be proud of."

Gargiulo was heavily involved in the multi-million dollar market renovation, on the same site as the original fish market opened in 1924.

What is now New Zealand's biggest seafood company has a rich history, founded by Albert Sanford in 1864 who sold kauri-smoked Hauraki Gulf snapper directly from his vessel at the old Queen St wharf.

By the time the market opened 60 years later, the company owned more than 20 fish shops throughout Auckland and had a fleet of vehicles that also sold direct to the public.

The fish market was a magnet for seafood lovers for nearly a century but it had become rundown and there



came to be one overpowering impression – the smell. It became a hard sell marketing fish as fresh, when the overriding impression was that it was anything but.

That was due to inadequate drains, some of which were blocked or had no outlet.

Rectifying that was the major expense of the redevelopment but the payoff is immediately obvious – the market smells as fresh as it looks.

It is home to eight food and beverage businesses – mussels and oysters at Billy Pot; Polynesian-style Ika Bowl; Azabu, an extension of the wellknown Ponsonby eatery; Tiki Thai; South American grill Mar & Tierra; coffee and gelato from Good Karma; Italian street food at Super Pizza; best fish 'n' chips from Market Galley; and craft beer on tap and local wines at The Wreck.

NEWS

Four of the businesses are operated by the Savor Group, which owns restaurants in Auckland and now in Queenstown as well.

And, of course, there is Sanford's retail fish outlet, rebranded Sanford and Sons Fishmonger, denoting the company's origins.

Fish can be bought whole or filleted, with a free filleting service.

"One in five Aucklanders are now of Asian descent and they are the best utilisers of fish," Gargiulo says.

"They eat the whole thing. More and more are doing that now."

The market has also been impacted by the massive scale of building development in the surrounding Wynyard Quarter area. Road closures, construction and restricted parking have all been disruptive.

Apartments are planned to accommodate as many as 40,000 residents when the area is fully developed.

The short term inconvenience stands to deliver significant longer term benefits to the market and other businesses.

Gargiulo, a big, affable man with a ready smile, is an optimist.

"I think 22 is going to be a good year," he says.

"We want to be more than just a fishing company.

"We are a proud New Zealand listed company with a



Lesila Sau happy in her work at Sanford's Auckland fish factory.

proud history. Our provenance story will drive value long term.

"We want Kiwis to be proud of what we do as a primary industry and to enjoy seafood.

"If we could have more demand, that would be awesome.

"Price is part of it but it's multiple factors."

He knows price is a deterrent for some but sees that as an opportunity.



Sanford chief customer office Andre Gargiulo aiming to have more Kiwis enjoying seafood.

"The price per kilo may look expensive, and for the most popular fish it is relatively expensive, but people rarely eat a kilo. It is more realistic when priced by the 100 gram.

"And there is still a level of nervousness around preparation and cooking and shelf life of fish.

"It retains its freshness when properly stored for longer than many people realise."

Then there is Aucklanders' fixation with snapper. That is the species most in demand in the region, just as blue cod is in the south.

There are as many as 30 species on sale in the market.

Customers were introduced to some of the lesser known species such as porae and ling during lockdown when Sanford extended its home deliveries – My Food Bag-style with fish.

Sushi has been added to the offerings along with four ready-prepared fish meals, including sauces.

"We have a state of the art facility stocked with the best seafood in the country," Gargiulo says.

"We currently export about 60 percent of our catch. I would love to see that split as more 50:50.

"It is less costly to sell locally and it would be wonderful to see that greater appreciation of such delicious seafood from our waters."

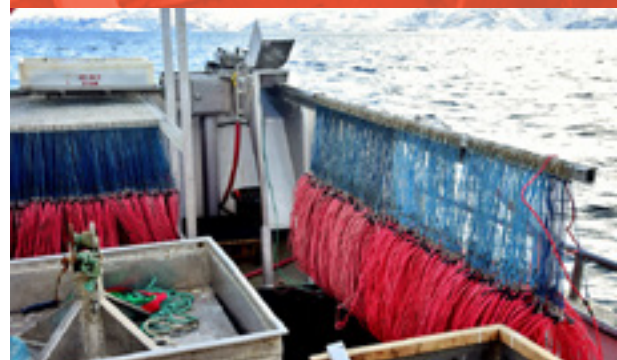


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COVER FEATURE

Open ocean salmon farming ambitious \$3 billion growth

How can the aquaculture industry deliver on a Government target of a five-fold increase in export revenues? TIM PANKHURST reports:



the key to target



Aquaculture director Mat Bartholomew overseeing a proposed massive industry expansion.

Two years ago the Government announced a highly ambitious target – a \$3 billion annual aquaculture sector by 2035.

Given that is nearly five times current sector export earnings, to say it is a stretch is an understatement.

Like Predator Free by 2050, the aquaculture goal is worthy but is it realistic?

The problem with such long lead times is that those responsible for delivering the promised outcome may be long gone. And priorities change.

The person leading the strategy delivery, Fisheries New Zealand aquaculture director Mat Bartholomew, is in no doubt it can be achieved.

“The scenarios have to have optimism behind them but we don’t ignore the realities either,” he says. “There is nothing but a clear expectation on the team to find a way to deliver this.”

He says an initial \$1.3 to \$1.5 billion annual aquaculture sector can be achieved by 2030 through four key areas:

- continued value growth at four percent year on year, Covid issues notwithstanding
- added production from the development of some existing consented space for mussels
- increased productivity from existing mussel and oyster space through additional hatcheries
- open ocean salmon farming – one to two farms

There are then three growth horizons that would deliver the \$3 billion target.

They are:

- maximising the value of the existing industry -

increasing export revenue growth to 6 percent year on year; developing all consented but unused water space for mussels; expanded hatchery spat for mussels and oysters

- increased production and scale through open ocean salmon farming – 70,000 tonnes annual production
- nurturing new opportunities – accelerated testing of pre-commercial opportunities with transformative potential, like seaweed farming

“The top line is, to get to \$3 billion New Zealand will have to develop open ocean farming at scale,” Bartholomew says.

“That’s a little drop in the global salmon market but it is a huge ramp up for New Zealand. How do you make that happen. And how do you manage the risks?”

Current annual production of the premium king salmon (chinook) in both sea cages and freshwater hydro canals is about 15,000 tonnes.

The growth strategy call for 70,000 tonnes is a more than four-fold increase.

That represents as many as seven new farms, with all the associated costly infrastructure.

The hurdles include capital raising, research and development, new hatcheries and staffing.

There is also the challenge of marketing such increased volumes, of retaining premium prices rather than slipping down the value chain to become a commodity more like the lesser value Atlantic salmon.

Bartholomew is undeterred.

“We are going into a product category that’s got two

million tonnes of Atlantic going into it from Norway and other parts of the world. We shouldn't be scared. Our role is to flip it and say, what do we need to do to keep king salmon at a premium level?

"There is no reason to get this wrong, even with accelerated growth."

He accepts the Resource Management Act, currently under review, is not aligned to open ocean farming and government needs to address the regulatory settings to reduce uncertainty and adjust accordingly.

There are four open ocean salmon farm applications across Marlborough, Otago and Southland now being considered – one each from King Salmon (Blue Endeavour) and Ngai Tahu (Hananui) and two from Sanford (Project South and Project East).

A longstanding application from King Salmon to relocate existing Marlborough Sounds farms to cooler water with more tidal flows to alleviate high summer mortalities is still under review.

The aquaculture strategy has many strands to it, with an extensive array of objectives akin to Soviet or Sino five-year plans.

There are the four outcomes – sustainable, productive, resilient, inclusive – the 10 objectives, the 36 actions.

There are also five key priorities for 2021.

They are:

- advising ministers on options for managing and supporting the sustainable development of open ocean aquaculture
- exploring options to support Southland's economic growth through aquaculture
- finalising reviews into delivery of the aquaculture settlement to iwi
- providing advice to ministers on comprehensively managing aquaculture biosecurity
- developing a framework for measuring and ensuring the environmental performance of aquaculture

Despite all the wordage, it is no flimflam. An implementation plan review records a long list of investment highlights over the strategy's first 20 months.



Coromandel mussel farm.



Sanford salmon farm in Big Glory Bay.

Supporting sustainable outcomes lists six projects.

They include investigating carbon sequestration and the benefits of kelp/mussel co-culture in the Hauraki Gulf and Marlborough Sounds (\$1 million); investigating creating climate change resilient kelp forests (\$1 million); mussel reef restoration in Marlborough and Hauraki Gulf (\$600k).

Supporting productive outcomes has eight projects with a total investment of \$70 million.

They are: development of Sugarloaf wharf in Coromandel (\$19 million); research into mobile aquaculture technologies to transform finfish production (\$18.75 million); microbial conversion of kelp to high nitrogen plant and animal feeds (\$6 million); transforming oyster farming in Coromandel and Northland through new farming technology to lift productivity and create jobs (\$10 million); developing a salmon hatchery in Bluff (\$8 million); kingfish farming development in Northland (\$6 million); commercialisation of seaweeds including asparagopsis, undaria and porphyra (\$1.1 million); developing shellfish aquaculture on the Chatham islands (\$1.69 million).

Supporting resilient outcomes lists \$80k to develop an optimal feed for ongrowing Te Hiku mussel spat from Te Oneroa-a-Tohe/Ninety Mile Beach to improve survival.

Supporting inclusive outcomes has two projects.

The major one is \$79.4 million to develop a new harbour entrance at Opotiki.

The other is identifying opportunities for Te Moana-a-Toi/Bay of Plenty iwi with regard to aquaculture settlement (\$125k).

The aquaculture strategy fits within a broader primary sector challenge, titled Fit for a Better World, that aims to accelerate the country's economic potential.

It targets an overall \$10 billion lift in annual export earnings over the next decade and an additional 10,000 jobs.

"Covid-19 is a once-in-a-century public health crisis that has shaken societies and economies around the world," the plan says.

"The food and fibres sector will be at the forefront of an export-led recovery. The primary sector can be the

COVER FEATURE

foundation of New Zealand's recovery."

Several case studies include the SPATnz Greenshell mussel breeding programme, a partnership between Sanford, the Ministry for Primary Industries (MPI) and the Cawthron Institute.

"The final results from this programme have exceeded all expectations," the study says. "Growth rates for mussel spat from the SPATnz hatchery were compared with those collected in the wild from Golden Bay and Kaitaia. The trials show the SPATnz mussels reached market size nearly a year faster.

"This work is expected to be worth around \$200 million a year to the wider New Zealand economy."

The aquaculture strategy poses the challenge that "the world's climate is changing, the global population is growing and natural ecosystems are under increasing pressure; consumers and regulators are increasingly demanding sustainability not just at the farm level but across the value chain – from farm to plate".

Its vision is "New Zealand globally recognised as a world leader in sustainable and innovative aquaculture management across the value chain".

A previous aquaculture growth target was set at \$1 billion by 2025. Current sector earnings – for calendar year 2020 - are \$600 million.

Bartholomew's career is steeped in the seafood sector and he brings missionary zeal to his role.

He was a New Zealand representative on the Convention for the Conservation of Antarctic Marine

Living Resources (CCAMLR) and on World Trade Organisation (WTO) negotiations on fishery subsidies; was policy development and governance director for the Marine Stewardship Council in London; wrote the first government aquaculture strategy and helped implement the aquaculture settlement with iwi and became aquaculture director in 2018 when Fisheries New Zealand was established within MPI.

He is unfazed by the magnitude of his task.

"I have days I'm so bloody excited, I get off a call and say it's working," he says.

"Every day I see examples of people in the sector using the strategy to guide what they're doing. That's encouraging. People are doing the heavy lifting in the absence of being pushed to.

"What we have to do is keep banging on those 10 critical doors that we need to focus on now.

"What is the next domino that has to fall?

"What are the things that need to fall into place now, next... after that?

"The world's changed. We need aquaculture to go faster."

He says the growth modelling that guides their work has become more sophisticated, but growth is expected to be lumpy.

"Our tracking will show if the gap is closing fast enough but there is not much value in setting interim targets.

"It is an ambitious goal but it is achievable."



Greenshell mussel harvesting.



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Guiding graduates into a smart aquaculture sector



Dr Simon Muncaster sees exciting opportunities for aquaculture expansion.

Waikato University's Dr Simon Muncaster is championing the aquaculture industry and his graduates. TIM PANKHURST reports:

Waikato academic Dr Simon Muncaster was so frustrated by the biased Seaspiracy "documentary" he decided to do something about it.

He believes the portrayal of the aquaculture industry in particular is focused on the negative and does not fairly reflect either the innovations and advances made or the opportunities.

"For me, it was seeing a whole lot of selective truths and wanting to address that," he says.

His response was to hold a public lecture at the University of Waikato's Tauranga campus to present a more balanced view.

He titled his lecture Aquaculture in the 21st century; a problem or solution?, pitched in a neutral way so that his stance was not obvious.

He undertook to cover issues facing the aquaculture industry, bust some myths and offer some solutions for the future.

There was plenty of interest – the evening event was

fully subscribed with 200 plus people present.

"I was anticipating a percentage of hecklers, but instead I received a broad range of engaging questions" he says. "I think people understand the rationale for aquaculture, but they want reassurance that this does not have to come at the expense of the environment".

And Muncaster, senior lecturer in Waikato University's School of Marine Science and Aquaculture, does present a compelling case.

He believes to meet the Government's ambitious goal of \$3 billion in annual aquaculture exports by 2035, five times the current level, we will require significant innovation.

"The New Zealand industry is essentially based on three species: Greenshell mussels, king (or chinook) salmon and the Pacific oyster," he says.

"To build a large robust and sustainable aquaculture industry, we need diversification."

That also means winning public support.

"The examples opponents tend to give are about marine sea cage farming, not aquaculture per se, but they leave this idea in people's heads that aquaculture is bad," Muncaster says. "They give some snippets of truth but they have huge omissions. It's very selective

picking of information. The public only know what they get told and or what gets put in front of them in the most eye catching way."

While Muncaster is only focused on aquaculture, the distortions he cites about portrayals of the industry could equally apply to the wider seafood sector.

The sustainability of our seafood, the effectiveness of the quota management regime, the extensive benthic protections, the reductions in environmental impact, increased protection of mammals and seabirds, advances in technology and the economic contribution are all dismissed by the anti-commercial fishing lobby.

The Seaspiracy approach of taking a worst case scenario and presenting extreme examples as the norm is straight out of the activist playbook, designed to raise fear and drive donations.

Muncaster will not be drawn on that, saying he does not concern himself with such groups. While he supports environmental standards and accountability, he is also critical of those who keep throwing up problems but never solutions.

"That doesn't help us. When I talk to our students we try to be very balanced. We believe in what we do but we don't hide from the fact any type of farming has an impact and we discuss how we can limit these impacts through innovation.

"There is always an agenda. Everyone has an agenda. It's my job to educate the students to find their own truths."

He says there are huge advances in aquaculture that are not given due credit.

Northern hemisphere concerns about genetic introgression, the transfer of genetic material from farmed to wild salmon, are being addressed.

"We have been selective breeding in farming for centuries," Muncaster says.

"There's nothing wrong with that but we don't want farmed mixing with wild, we want to keep them separate. That's been recognised in Norway and there is a huge focus on biotechnology to create sterile fish.

"That is developing the technique to eliminate the cells that give rise to eggs and sperm. In every other way the fish are normal fish. It's about environmental protection and secondly, you don't want sexual maturity in the sea cages, the fish lose the capability of salt water balance as they adjust to going up rivers and also there's potential for increased growth.

"It's a win/win across different fronts – environmental protection, welfare and production efficiencies.

"That's the kind of thing that never gets talked about."

There have also been big advances in feed production, negating the claims that marine farming is simply feeding fish to fish.

Amino acids are the building blocks of proteins

IVF for flounder holds the key to a fledgling aquaculture industry



William Georgetti Scholarship recipient Brooke Ellis-Smith.

Creating an IVF programme for New Zealand's endemic Yellowbelly flounder was not how Brooke Ellis-Smith envisaged her career in aquaculture, but her research holds the key to a fledgling industry for New Zealand's small coastal communities.

An artificial breeding programme for the flounder, known as Pātiki, has been launched by University of Waikato researchers. Forty-two Pātiki, netted from the Tauranga Harbour and housed in tanks at Toi Ohomai's Aquaculture Facility, are its foundation breeding stock.

University of Waikato Master of Science student Brooke Ellis-Smith, has received a William Georgetti Scholarship to research induced reproduction in Pātiki, encouraging them to spawn in captivity using a natural hormone analogue.

Her research is part of an externally funded collaboration between University of Waikato, Toi Ohomai Institute of Technology and research partners from Matakana Island and Whakatōhea who are exploring the development of small whānau-owned aquaculture farms in coastal communities.



The first aquaculture degree students due to graduate this year.

and some of these essential nutrients are abundant in marine food chains but alternatives have been developed in plant proteins and oils to the extent they now dominate fish feed content.

In the 1990s in Norway, fish products made up 90 percent of fish feed. That percentage has fallen to 30, with the remaining 70 percent being plant protein and oil.

And at least seven insect species have been approved by the European Union for addition to aqua feed. The insects are fed on green waste in a circular system providing quality protein.

Microbial protein production is another innovation, with a company in Finland using forestry waste to grow fungal protein.

"How green can you get?," Muncaster says.

"It's quite impressive what's going on. Tens of millions of euros are being invested. If we want to get to our target we need to take more of that approach, continue to innovate.

"Fish being fed in sea cages have particulate matter coming out of those cages. You could have filter feeders growing on that matter – a circular economy approach.

"You still have dissolved nutrients coming from the animals that ultimately end up as nitrogen that micro-algae could be soaking up as a great medium. I think we will see a lot more macro-algae in the future. It has got a lot more to offer, bioactive compounds that could be adding value as well as helping to remediate coastal waters from land runoff."

He says the world has a vested interest in aquaculture expansion.

"We've got a huge global challenge and we all know it, with a population of eight billion and then 10 billion in the next 30 years and 11 billion by the end of the century.

"We're talking about having to need 50 percent more food production and that's a huge ask. We can't shy

away from that, we've got to find solutions.

"Our food production is terrestrially based and we've got 70 percent of our planet being covered in oceans. There's a finite area of land space, yet less than two percent of food production is from the oceans.

"We know aquatic organisms are very efficient at converting food into growth. I don't think aquaculture is the answer in itself but it can step up. It's the fastest growing primary industry on the planet."

There are competing interests for water space and the obvious answers are offshore or land-based expansion.

Cawthron Institute are working on the former and the National Institute for Water and Atmospheric Research (NIWA) is concentrating on the latter with its recirculating aquaculture system focused on kingfish at its Bream Bay facility in Northland.

"You've seen the film *Salmon Farming in Yemen* and there's a salmon farm in the Emirates in the desert," Muncaster says.

"There are high infrastructure costs but you have complete control over production."

Christchurch-born and raised Muncaster completed a Bachelor of Science at Canterbury University followed by a Master of Science at the Otago University Marine Science department. His interest in fish farming saw him travel to Norway where he worked as a technician at the Norwegian Institute of Marine Research learning practical aquaculture skills.

He was invited to join a PhD programme developing a new candidate species for aquaculture.

That species was ballan wrasse, a cleaner fish that removes parasites from salmon.

Norway is the world's biggest producer of farmed salmon, more than one million tonnes annually of the lesser value Atlantic species (New Zealand's king salmon production is around 15,000 tonnes) but the fishery is plagued by sea lice requiring chemical treatment.



The University of Waikato's Tauranga campus.

The cleaner species wrasse are effective but there was concern about impacting wild stocks.

"My project was focused on doing that groundwork on the reproductive physiology of these fish and the hatchery phase of it," Muncaster says.

When the hatchery was established near Bergen, Muncaster was employed as a consultant by its operators Marine Harvest Labrus, Europe's largest aquaculture company.

He returned to New Zealand to teach on the marine studies programme at the Bay of Plenty Polytechnic, now Toi Ohomai Institute of technology, before joining Waikato University in his current role.

"We're trying to make a unique programme where we create high skilled graduates who can go out and contribute to the blue economy that we're building," he says. "These are smart, unpretentious and socially capable young people who know what's going on out there around the world, they are really motivated to contribute and add value to those companies.

"When you look at median house prices in this country creeping up to a million dollars, young people need an education and a career. They want the same thing we've always wanted. They want a house and a family and a career and they need to be able to afford to do that, so we need to look at creating a high value and well paid industry.

"Part of that will be maximising efficiency, how we can automate so that we are training people to be operators at a higher level rather than doing simple manual tasks.

"We have a team in the engineering school that specialises in robotics and they've been developing robotics for the horticulture industry and I know they are very interested in helping the push towards that aquaculture target of \$3 billion.

"There is a lot of activity in the Bay of Plenty, a groundswell here."

The first offshore mussel farm has been established by Whakatohea 11km off Opotiki, the port has been improved and there is investment in onshore processing and employment.

"We've got local government that is quite pro-active and the business community around Tauranga and iwi driving very hard in their commitment to developing industry here.

"Iwi are driven to be pushing industry toward that \$3 billion target, with their natural concept of kaitiakitanga, of looking after the environment.

"It all spells a really good story for local aquaculture."

The inaugural 20-strong Waikato aquaculture degree class graduates later this year and is on the job market.

Muncaster says "the mantra we are pursuing with our students is aquaculture needs to be sustainable, we need to look after the environment and it needs to be efficient"

Pātiki do not easily breed in captivity, but researchers plan to use a gonadotropin releasing hormone analogue (GnRHa), to encourage the fish to spawn in tanks during their normal winter breeding season.

"I guess it's a bit like IVF treatment in humans. The hormone we use encourages them to develop their eggs," Ellis-Smith says.

Her research is being overseen by Dr Simon Muncaster who is leading the wider interdisciplinary project as part of the Government's Sustainable Seas, National Science Challenge, designed to develop New Zealand's Blue Economy, including growing our aquaculture industry to a \$3 billion industry by 2035.

"Aquaculture is an industry that is already dominated by corporate businesses because of the generally high set up costs," Ellis-Smith says. "Rural coastal communities, who have the land, are generally excluded because of the high set-up costs."

But farming Pātiki on land could be as simple as constructing shallow raceways to breed them in and they return a similar or higher value than whole snapper per kilo, up to \$26, making it a potentially lucrative business.

Pātiki are a taonga species, and numbers have been in decline in the Tauranga Harbour, Ellis-Smith says.

"If we're successful we could farm them a lot more economically and sustainably and by turning it into a viable industry, we would also take the pressure off wild stocks and create local jobs. There would also be the potential to restock fish back into the wild. However this would need careful planning to preserve wild gene pools."

Within the 42 brood-stock they have identified the male and female Pātiki and will treat both with the hormone. Once the hormone has worked, the female Pātiki develop a large bump on the top side indicating their eggs are ready.

"At that point we strip the eggs and assess them for quality and quantity, and we also do the same to the males, taking their milt to fertilise the eggs."

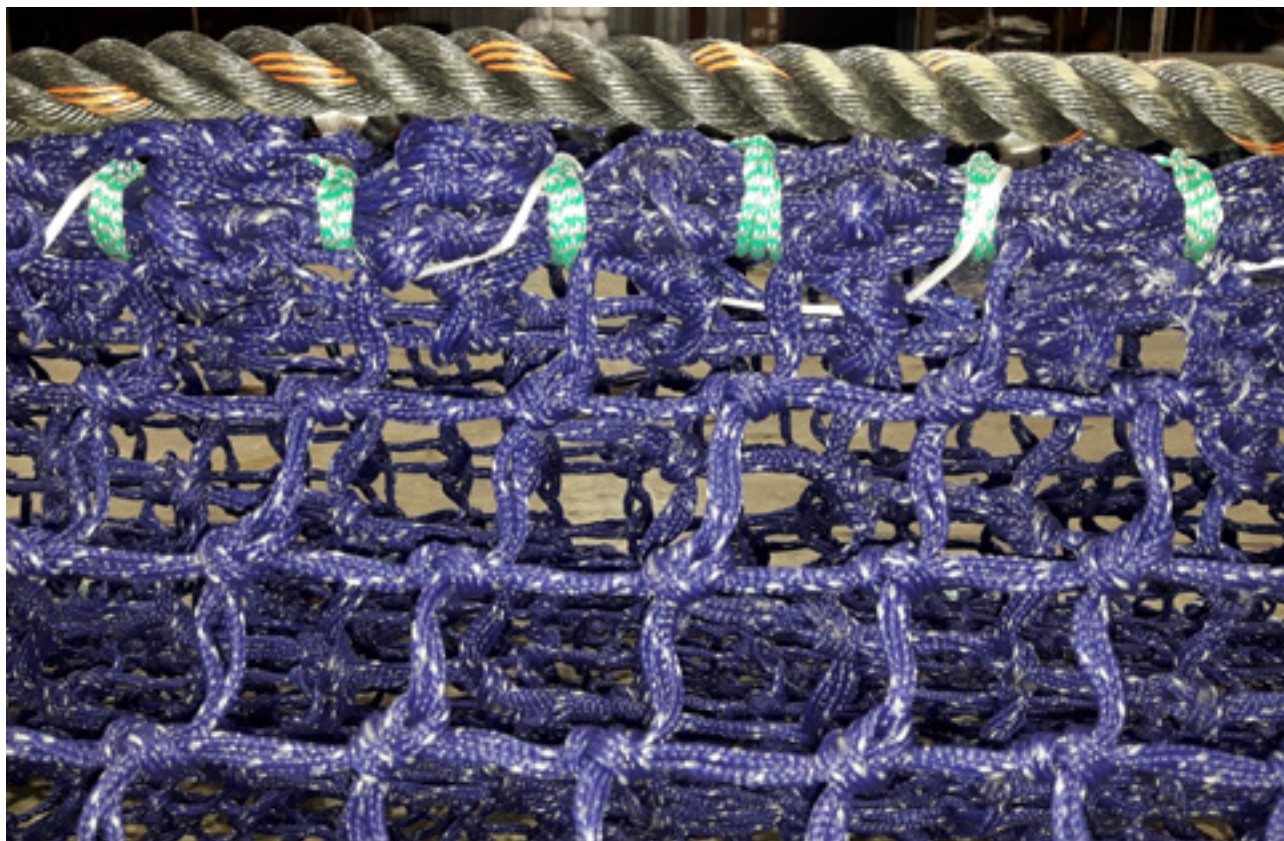
It is careful work. The male's milt cannot touch any seawater before being mixed with the eggs otherwise it activates and the whole process is lost.

"While it is delicate work once you have the eggs and the milt it can be as simple as mixing them with some seawater in a bowl to fertilise them."

Ellis-Smith says the type of land-based fish farming they are proposing would also sit well alongside the growing seaweed aquaculture industry.

"Fish aquaculture can put a lot of nutrients in the water, but it could be partnered with a seaweed algal pond that could filter the water and produce a high value organic fertiliser."

Net innovation balancing conservation and catches



The minimum 5inch cod end now in common use.

Net design innovations are already addressing concerns about unwanted catch. CHRIS CAREY reports:

A proposed Government review into the way our fisheries are managed has sent ripples of uncertainty radiating throughout the industry.

An enforced landing of all fish caught is of particular concern.

"I don't see any logical reason to land anything that doesn't have a commercial value, only for it to be discarded once it's ashore," says Glen Curtis, recently appointed operations manager of Motueka Nets in Nelson.

"The removal of minimum size limits is one thing, but what of Schedule 6, those protected species

previously being returned to the sea? I guess the devil will be in the details when they say you've got to land everything."

Most guys will tell you fishing is way, way better than it used to be.

– Glen Curtis

"More of our net design and build these days is about selectivity. Of the four jobs we've currently got on the floor, three are about mitigation. Back in the day we built nets to catch fish, to retain virtually everything, and that was it. People don't want that now, instead they want a net that catches this, this and this, but not that or that. I guess what we're

really building are nets that are efficient in letting everything go we don't want."

The traditional 4inch diamond mesh codends are almost a thing of the past now primarily used only for those targeting squid.

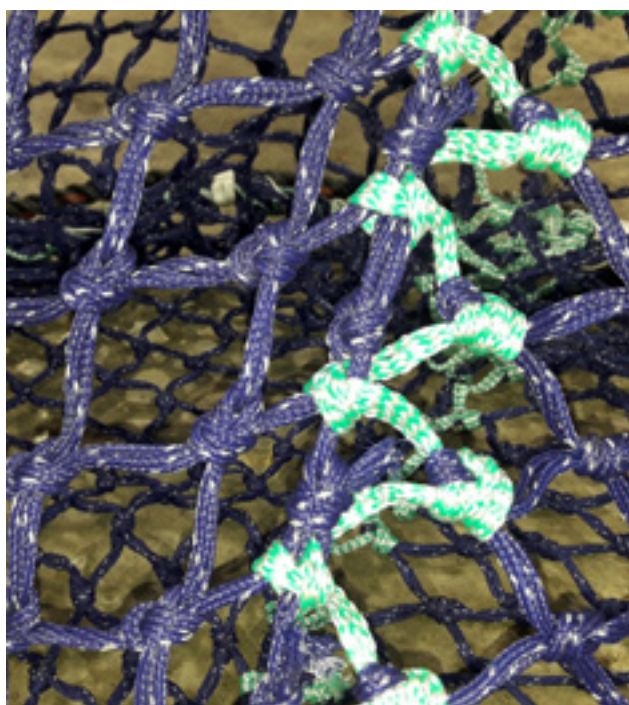
"The bog standard 150meshes of 4inch diamond in the tapered section [of the trawl] is being replaced with 6inch followed by all the palaver, the T90's and square mesh, stitched on behind it."

While there were some innovative fishermen already using Smart Gear, Curtis says Talley's Fisheries drove change as far back as 2013 in encouraging their skippers to change up to a minimum 5inch codend.

"That was across their entire inshore fleet of 60 odd trawlers. There was opposition at first with fishermen claiming that they would lose too much fish. However, the reality was that within six months they were wondering why they hadn't done it years before, catching less fish but significantly, catching less, small fish. Everything now went into a bin, it had a value, thus was more cost efficient and they were catching less rubbish like sticks and weed."

Initial and largely anecdotal reports of blossoming stocks of gurnard, snapper, john dory and others, has been supported by recent trawl surveys and it is this growing abundance of inshore species that has been the driver behind the species selectivity development of Smart Gear.

"The fire had been lit and the push towards



Smart Gear – innovative net design balancing conservation, effort and cost.



Curly Brown
Brown and Hayman Fisheries Ltd
FV Receiver
New Plymouth

Curly Brown runs the FV Receiver fishing the North and South Taranaki Bights out to the edge of the continental shelf 50-60 nautical miles off New Plymouth.

"With the Maui dolphin restrictions and the abundance of snapper, we don't fish much inside 50m and as such we don't have a lot of issues with juvenile fish, it is a tiny part of our catch although it is never a huge problem when we do," he says.

"Fishing in deeper water has increased our catch of unwanted species a lot, however the main species we have to mitigate is snapper, primarily SNA8."

With his main target species being gurnard, Brown's setup uses a 4inch T90 lengthener and 4inch square mesh codend to let the small fish go.

"I was originally towing a 4-panel 3-bridle net with about 5 metres of lift. Now our net has a nominal headline height of one metre. It has no square and long low wings we tow it at 2.8 to 3.0 knots. We have used this low lift net for about 4 years and there's been a lot of modifications in that time like removing the square around 2 years ago. It has also improved the quality of the fish we land."

Had Brown continued to use his old gear, his bycatch of snapper and the lack of access to SNA8 quota, would have forced him to stop fishing, end of story. His use of Smart Gear has also helped mitigate the catch of protected species.

"Having a low lift net with no square, towing slower and using a DDD [Dolphin Dissuasion

FEATURE

Device] certainly works for dolphins and our Dynema warps with a combination of warp deflectors and bafflers has mitigated the seabird issue."

Brown describes this net design as a 'de-evolution of fishing technology'.

"If fishing is bad our catch can be shockingly poor, but we have no other choice. But I would encourage fishermen to experiment with their fishing gear, to try different things, different combinations, to keep developing their fishing gear. It's not a silver bullet, what works for one may not work for another and what you do may not work initially but what have you got to lose in trying?"



Matt Howden
Hakuwai Fishing LTD
FV Hakuwai
Gisborne

Matt Howden, owner operator of the FV Hakuwai, fishes out of Gisborne, targeting tarakihi, snapper, trevally, moki, john dory and 'flats'.

"I use a Motnets design 90foot 'Flats Trawl' which proves well for all species," he says.

Made out of 6inch material with a 4½ inch square mesh lengthener and codend, finished at 100 meshes round, the trawl has a one metre headline height to reduce the bycatch of snapper.

"This has worked well for us and hasn't restricted any of our other target other species. We have also found towing under 3 knots helps a lot with snapper mitigation."

Howden chose the square mesh for the cleanliness and quality of the fish.

"I believe this creates more room for the fish and more chance for smaller fish to find its way to a mesh and escape which is mostly gurnard, the only round fish we target. I realise fishermen in other areas around the country are using other setups that work great for them because this is not a one size fits all!"



Fishing smarter – Alan Rooney's Tanea returning home across the Grey bar with a good catch.

further innovation quickly caught on," Curtis says. "Fishermen were experimenting, mixing and matching T90, square mesh and 5inch depending on the area they were working, time of year, the target species and seeing an immediate benefit whilst still maintaining an economic base."

T90 is mesh turned and hung 90 degrees. The size of the opening is determined by the size of the knot which prevents the mesh from closing completely. A double 5mm twine mesh will have a wider opening than single 5mm. By keeping the meshes open, the T90 prevents the hourglass effect when mesh hung traditionally is pulled lengthways as the weight comes on and thus by keeping the back of the trawl open, it stabilises [reduces the movement] of the codend minimising damage to the fish.

We're building nets that are efficient at letting everything go we don't want.

– Glen Curtis

A square mesh is standard mesh hung on the bar edge.

"Anytime you turn a mesh other than the way it wants to sit, they're not pretty to work with," Curtis says. "There's also a potential for a lot of wastage when you cut into a bale [of mesh]. T90 uses less mesh, while building a square mesh codend uses pretty much the same amount of material. With a lot more guys using it, we're wasting less because

we have bales on a bar edge and we keep working those bar edges all the way through. They're also a bit more time consuming to make, a bit of a rigmarole. You've got to put a joining round of conventional meshes top and bottom so they can chain stitch them together."

"T90 is really just put in to keep the back of your trawl open and while you do lose a bit of small fish when towing, the downside is when the net is on the surface moving around, the weight coming on and off as the net surges with the meshes opening and closing, you can lose a lot of fish particularly with the likes of small gurnard. Floating away, white bellies you could see from space. That had people ringing up, accusations flying. It's a bad look. So that's the benefit of the square mesh. It lets small fish go while the gear is on the bottom and they swim away to grow on."

"That's the benefit of the square mesh. It lets small fish go while the gear is on the bottom and they swim away to grow on."

– Glen Curtis

Curtis says square mesh ideally lends itself to letting round fish escape with the optimum chance of survival and has seen its popularity in the inshore fisheries surpass that of T90.

"One reoccurring comment I hear about the square mesh codends is that the fish come up alive. They're in good nick with bright colours and really clean; there's no mud, silt or debris. Even if your bag size is half the size but the fish are big and payers, what do you think? And at the fraction of the price, I believe it's a cost-effective alternative to PSH (Precision Seafood Harvesting).

"Fishermen are there to catch fish. If you're letting too much go, then that's money swimming away, particularly when some of that mid-range fish are still good payers.

"If you're going to put a 5inch square mesh codend in the gurnard fishery for example, you're going to come up with baseball bat sized fish, but not very many. So, a 4inch square mesh codend with a 50mm hole, while not a very big hole, will still let the fish you don't want escape. Likewise, you don't want to be dragging around a 5inch square mesh codend having to do 10 times the tows and burning all that extra fuel letting fish go, particularly if fishing is a little scratchy.



Tony Roach
FV Corsair
Greymouth

Tony 'Chinner' Roach and the FV Corsair fish principally in FMA areas 3, 7 and 8.

"We target mainly gurnard in area 8 with a bycatch of snapper, trevally and john dory," he says. "We have cameras on in this area and as with most of the North Island, it's very clean with no real problems other than snapper which can be hard to avoid."

Roach uses a Motnets trawl with no veranda and only 0.8m headline height. By keeping his towing speed at or below 3.1knots, he has reduced his snapper bycatch by a whopping 80-90 percent.

He also fishes 'the top of the Straits' for blue warehou, school shark and rig.

"As well as a bycatch of tarakihi, john dory and hapuku, the Cook Strait area is known for bags of rubbish; small ghost sharks, undersized or juvenile red cod, spikey dogs and large bags of rats."

Roach sails with three sets of lengthener and cod ends setups and while he has been running complete Smart Gear setups for the past five or six years, he's been a fan of 5inch for a lot longer.

"We use a 5inch set with a 5inch Turbo section in front of the main lengthener and codend when fishing for inshore species in areas 3 and 7. Unlike up north, here you can get up to 20 or more species per shot. But once we started using the 5inch gear with the Turbo section it cut our catch of unwanted species massively, particularly juvenile fish when we target tarakihi.

"We use another set with a 5inch lengthener with a codend in 4inch, the bottom half T90, when chasing flats on the inshore down the West Coast and up in Area 8 when targeting gurnard.

"The old 4inch set up is stored in a Dolav on the top deck and only sees the light of day if we're chasing squid in area 3."

Net design aside, the use of electronics such as door and catch sensors have also reduced the tow times considerably, all part of a Smart Gear setup.

"Spikey dogfish, rats, carpet sharks, common

FEATURE

roughy, bellowsfish, sea perch, small ghost shark and undersized red cod are the main unwanted species as far as I'm concerned which I think is pretty common with most South Island fishermen. They're also the hardest to avoid in my opinion.

"While we use a number of net and bag end changes each trip to avoid unwanted bycatch, you can't avoid catching every species. There needs to be some species that should be exempt from being landed. Either way, it's going to be a rough ride."



Alan Rooney
FV Robert H / FV Tanea
Lyttelton / Greymouth

Alan Rooney began using 5inch codends in 2000 when running the Robert H out of Lyttelton. Now as owner/operator of the FV Tanea out of Greymouth, he continues to use Smart Gear.

"When you only got 'cray bait' prices for the smaller gurnets, cods, 'cuda and dogs [spikey dogfish], the trick was to get the best return you could for what little quota you have," he says.

"While we were getting smaller bags, the fish were a bigger and better quality, there was also less bruising of the fish because of the smaller lifts over the side. That, and we were letting the smaller fish out to grow on and breed.

"I know Talleys and United have stated anyone unloading into them is to use 5inch codends. Talleys went so far as to supply free codends to all their boats.

"I've also heard of vessels using T90 5inch codends when they're running out of gurnet quota, and that it's pretty effective. I use a 5inch T90 if I'm heading into any area where its known dogs are lurking.

"Harry Lonie was experimenting with 6inch T90, but one skipper reckoned it was like being sent to sea not to catch fish. The holes were too big and letting everything go.

"But for Smart Gear to work, everyone has to be on the same playing field, so I urge any fishermen out there who hasn't already to get on board and start using it."

"It's a balancing act between conservation, effort and cost and the smart operators tinker with their gear set to get the best payload every trip."

Square mesh is now used in the middle-depth and deep-water fisheries; the 6inch, 5mm double mesh providing 'a pretty big hole' that allow small alphonsino and orange roughy to escape.

Mesh size and orientation aside, net design has an equally important role with mitigation and selectivity.

We're building nets that are efficient at letting everything go we don't want.

– Glen Curtis

"Snapper is becoming a huge problem, particularly in areas 7 and 8," Curtis says. "They're thick, pretty much there all year round and there's tiny quota. Snapper is now being caught in 150 metres of water off Greymouth which was unheard of a few years back. You just can't go into those areas with your traditional 3 metre headline height trawl because you're likely to get all of your quota in one shot."

When alarmed, snapper tend to rocket upwards and it is because of this behaviour that Motnets began building trawls without the traditional veranda or square and headlines as low as 800mm.

"Initially fishermen looked and said I don't want a bar of that because I'm not going to catch anything," Curtis says. "But they are and if they want to keep fishing, they've gotta be smart and avoid catching fish they don't want.

"Some time ago we made a net with a negative headline for a guy working out of Raglan, the headline behind the ground rope and while the snapper went up and over the top, he still catches his other quota, the gurnard, terakihi, shark and john dory. It's amazing how many species will stay that low.

"Some fish are easy to separate, some nigh impossible. There's no amount of mitigation that's going to get rid of porcupine fish the size of basket balls yet still retain your gurnards, tarakihi and that. But for the most part, these nets allow guys to target their other quota species without being deemed out by snapper. Even trevally go down which is a bit of a surprise, with guys reporting good catches towing as slow as 2.4, 2.8 knots."

Cameras play a crucial role in the continuing development of Smart Gear.

"You can do a trillion tows on different boats

across all sorts of areas, and you're still left thinking do we really know what's happening, or we just think we do, so good camera footage is gold to us. I talked to a bloke recently who put a camera in a square mesh lengthener to see what was actually going on, but the trouble was he was getting a whole heap of stickers because the fish were drawn to the light.

"I doubt there's few, if any, old school fishermen out there who aren't going to change. Most guys these days are pretty pro-active using at least one form of net design mitigation combined with technology like catch sensors and trawl geometry and reaping the benefits. The young guys coming through, well, they're even more hungry for technology. What else can we do?

"Fishermen funnily enough, want to keep fishing. They like their jobs, and most guys will tell you fishing is way, way better than it used to be and has been good for quite a long time. So, if the fish you're landing are bigger, in better condition and worth more, and all the while you're letting the small fish escape to grow bigger, the fishery is only going to get better.

**"At the end of the day what business wants to look after the ocean more than the fishermen? It's their livelihood that's at stake if they don't."
– Glen Curtis**

"There will be pockets that are problematic if they have to land everything, but most operators don't see it as a problem that can't be solved because they're already getting rid of the small fish and unwanted species."

"At the end of the day what business wants to look after the ocean more than the fishermen? It's their livelihood that's at stake if they don't. Sadly, the fishing industry is on a hiding to nothing. You can put all the good news out there, but no-one believes it so for it to have any credibility the good news needs to come from someone independent from the fishing industry.

"If these proposed changes go ahead, then the Minister needs to understand there has already been an awful lot of good work done in the field of mitigation and it's a work in progress. But there are some species you just can't avoid catching and some species, like protected species, which should never be landed if they have a chance of surviving."

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How seaweed could be the answer to our sunburn woes



Fellow Cawthron seaweed scientist, Rossella Nicolai

Cawthron is developing an environmentally conscious sunblock made from algae.

JANAN JEDRZEJEWSKI reports:

Cawthron Institute senior research scientist Mike Packer is the co-lead on the Seaweed Sun Defence project - although, technically, it is "Preventing Sun-Induced Skin Damage with New Zealand Algae-Derived Bioactives".

As an algae biotechnologist with training as a redox biochemist and cell biologist, Packer is an expert when it comes to understanding these aquatic organisms. He explains that algae, being photosynthetic, are masters of utilising and managing light.

"The way algae need to manage light, means they need to deal with the damaging byproducts of harnessing the energy of it as well, which means that they have multiple strategies and tools.

"Those tools are often in the form of things that we can then repurpose to channel the light energy and its damaging effects.

"Some of the molecules that we're interested in, some of

the compounds that can be extracted, are actually algae's own sun defenses, and we're repurposing them.

"We're looking for several kinds of layers of defense approaches."

Packer says humans have a specific enzyme that incurs damage at the early stage of sun exposure that then



Mike Packer at work in the lab, sorting through some red seaweed

drives the skin's response to the sun. In addition to using algae's own sun blockers, another part of the project centres around developing a bioassay, a research tool, which will be used to look for and identify compounds that the team has found naturally occurring in some algae, that can

protect this enzyme. "This last approach could lead to a whole new paradigm in managing skin sun defence", Packer adds.

Modern sun skincare routines include SPF's as a must and there's myriad options on our shelves. So, why the need for an algae-based product?

The products we have now definitely work, Packer says. These can be classed in two main groups - absorbers and blockers. Blockers like zinc and titanium are effective, but depending on how they are formulated, they smear and are shiny – a turn off for consumers. This has led to these ingredients being 'nanostructured' into very small particles that can penetrate the skin.

"There is some controversy over the effects of making these nanostructured as photochemistry occurs where those molecules are in your skin instead of on top of your skin, and that is potentially problematic," Packer says.

"The other thing is that those nano-sized particles get into the environment and there is uncertainty about how damaging they are to aquatic ecosystems."

Many of the absorber class of current sun defence agents might be harmful to human health at the SPF levels that is being demanded by consumers, which leads to high concentrations of the molecules being used. There are indications that many of these agents can also be damaging to aquatic ecosystems and are increasingly being banned.

Another benefit of being able to find an extract from algae that protects the sunburn process coordinating enzyme, is that may give us more time to rescue our skin if we accidentally get sunburned, Packer says. This is, potentially, an entirely new approach.

It's thought it won't be long before these new algae-



Paul South, seaweed scientist from Cawthron

based sun products will be hitting our shelves. As well as receiving funding from The Sustainable Seas National Science Challenge, which was established in 2014 with the objective of enhancing utilisation of our marine resources within environmental and biological constraints, the project is co-developed and co-funded by the Wakatū Incorporation and SRW Laboratories Ltd. All parties are 'really keen' to roll out the eco-friendly sunblock.

"There's ground-breaking "stretchy science" going on behind the scenes to help develop new products which are better for people and for the environment," Packer says.



The seaweed sun defence project team visited partner Wakatū Incorporation marine farms in Marlborough Sounds, August 2021



Wakatū Incorporation marine farms, Marlborough Sounds

Trans-Tasman approaches to improving our mental health



The unofficial motto of FirstMate is “a friendly ear, no judgement, no agendas”.

World Mental Health Day takes place 10 October. To mark this, we talk to the people running mental health initiatives dedicated to the fishing industry in New Zealand and Australia. JANAN JEDRZEJEWSKI reports:

The Stay Afloat mental health pilot program was established in March 2020 as a partnership between Seafood Industry Australia (SIA) and Women in Seafood Australasia (WISA) to run as a trial in three industry-identified communities around the country.

Its origins lie with WISA, explains program manager Jo Marshall, where a number of members became increasingly aware of the mental health problems and illnesses they were seeing amongst their families and communities. After embarking on a research project that was completed in 2017, the concluding report found commercial fishers were experiencing around twice the base rate of psychological distress, as the general population.

While industry members are well-equipped to cope with the traditional stress of weather, seasonality changes, and natural market movements, Marshall says that this high rate of additional distress is due to ‘non-traditional stressors’ – such as dealing with the numerous sets of regulations (Australia has both Commonwealth and state

fisheries management), as well as changes to the regulatory requirements, and uncertainty around future changes.

On top of that, there are deeply ingrained industry-specific challenges on both sides of the Tasman.

“The most basic one is that we’re very male dominated industry and we know that there is stigma around mental health, particularly for men,” Marshall says.

“Another one is that the history of our industry is very much about stoicism. The identity of multigenerational fishermen is that they can deal with whatever is thrown at them.”

To address this, Stay Afloat is made up of four ‘pillars’: focus on communities and the presence of ‘Trusted Advocates’, engagement and support within the community, mental health training, and 35 ‘Community



FirstMate is a mental health initiative for industry, by industry



FirstMate's 'regional navigators' will connect people to the help they need.

Resilience Grants' of up \$2,000 for seafood communities to host social events with a focus on mental health and social support.

The Trusted Advocates play a key role in the initiative. They are people "within their local community who have links to the seafood industry, who are prepared to give some of their time to become educated about mental health, provide a listening ear and support to local people, and reduce the stigma".

This component of the program is vital. Marshall says that one in five people are experiencing a mental illness at any given time, and, of those, only 35 percent receive professional support. "By connecting people from within

industry to support one another, we can help figure out if professional support might be useful and guide them towards it," she adds.

"We hope that we're helping that 65 percent find their way to picking up the phone to get the help that they need to have a healthier life."

The Trusted Advocates pilot is currently live in three locations in Australia; Lakes Entrance (Victoria), Newcastle (New South Wales), Darwin (Northern Territory). However, The Mental Health First Aid Training, grants and other resources can be accessed online from any location at www.stayafloat.com.au

The New Zealand equivalent, FirstMate, is in very much the same vein. Led by five industry trustees across the sector, it was established with the assistance of the Ministry for Primary Industries, which will continue to enable and support the programme as it develops over the next couple of years.

The (unofficial) motto of FirstMate is "a friendly ear, no judgement, no agendas". The aim is to train up a network of 'regional navigators' who will connect people to the help they need to address the pressures of the job – not only when it comes to mental health, but also understanding regulations and business advice, among other things.

Pilot activities are being planned for Napier/Gisborne and the Dunedin region in the near future.

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The massive potential of the seaweed sector

Charlotte Panton



Seaweed (*Macrocystis pyrifera*) floating off the Kaikoura coast. Image: Leigh Tait, NIWA

A prosperous seaweed/rimurimu sector has massive potential to improve the health and well-being of Aotearoa New Zealand, new research shows. Our seas have more than 950 species of seaweed, around a third of which are endemic. Despite high – and increasing – global demand for seaweed for food, nutraceuticals, supplements, beauty products, livestock feed, soil biostimulants and more, our seaweed sector is small and fragmented.

A report by the Sustainable Seas Challenge analyses the global seaweed market, the gaps and barriers for Aotearoa New Zealand in developing its seaweed sector, and actions to address these. It shows the country could reap economic, environmental, social and cultural benefits – both nationally and locally.

“The impact of this sector on New Zealand’s economy and society, if we develop it right, could be a game changer for our country”, says Serean Adams, Aquaculture Group Manager at Cawthron Institute and project leader of Sustainable Seas Challenge’s Building a seaweed sector project.

“The potential for New Zealand as a whole and for local communities is massive.”

A thriving seaweed sector will provide value to Aotearoa and local jobs. Developing the sector using a ‘blue economy’ approach would lead to innovative products and

services that also improve the health of the moana and mitigate climate change.

New Zealand’s seaweed sector is in its infancy. There are pockets of product innovation happening at small scale, but the sector is constrained by regulation and supply. As a result, there is an under-developed local seaweed supply-chain.

“We need to remove barriers holding the sector back,” says Adams. “A big part of that is having a regulatory framework that is more responsive, collaborative and enabling. We also need to identify what unique characteristics our native species have and develop these native species into high value products and services.”

The researchers found signs that a seaweed sector regulatory framework has been evolving in response to emerging drivers and information. However, the process for those who have tried commercially-orientated seaweed research and farming trials has been lengthy, costly, and frustrating hindering progress and investment.

Co-development is crucial to successfully develop this new blue economy sector. Sustainable Seas is working with iwi, stakeholders, industry, researchers, and government agencies that currently, or plan to, operate in the sector – either as farmers or as users of seaweed products – and consider the wider community, to co-develop a seaweed

sector framework grounded in blue economy and ecosystem-based management principles.

"For Aotearoa to have a thriving, sustainable seaweed aquaculture sector, we need to take a collective systems approach," says Andy Elliot, from Wakatū Incorporation, one of the report authors and project co-development partner.

"This includes strong leadership and engagement to influence fit-for-purpose regulations, and developing high value species, bioactives and ecosystem services. This can be achieved through science, processing and market connection, recognition and respect for those who hold mātauranga, and valuing our resources unique to us as communities and regions through relationships, provenance and brand; and codesign and partnership from Government and aligned investors. This report sets out the challenge for this industry to achieve all this and become an exemplar primary sector – a seaweed sector we can all be proud of in twenty years' time."

Industry bodies are also involved. "A blue economy-based seaweed aquaculture sector will provide value to Aotearoa, generate local jobs, and help us move to a low emissions economy," says Dave Taylor from Aquaculture New Zealand.

"This report provides a solid foundation for a new sector focused on high value, low volume seaweed products that will be sought after globally. This focus fits with the values of our world-leading sustainable aquaculture sector. With

their support and aligned research, we are well placed to develop innovative seaweed aquaculture methods and products that improve our health and the health of our environment."

This report is part one of a comprehensive seaweed sector review. Upcoming reports will review the research and development of Aotearoa New Zealand's key seaweed species and groups, Te Tiriti o Waitangi/Treaty of Waitangi considerations, and environmental effects associated with regenerative seaweed aquaculture. The findings and recommendations from all the reports will inform the co-development of the seaweed sector framework.

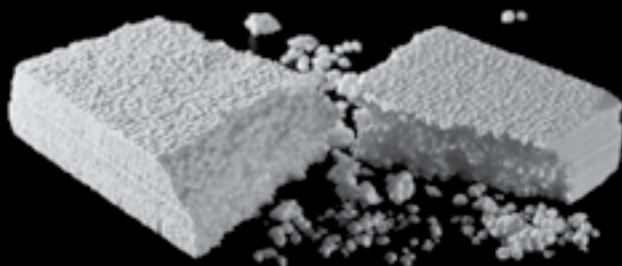
Download the report at: www.sustainableseaschallenge.co.nz/seaweed-report-pt-1

About Sustainable Seas National Science Challenge

Sustainable Seas is a 10-year research programme with the vision that New Zealand has healthy marine ecosystems that provide value for all New Zealanders. It has funded more than 60 interdisciplinary research projects that bring together around 250 ecologists, biophysical scientists, social scientists, economists, and mātauranga Māori and policy experts from across New Zealand. It is funded by MBIE and hosted by NIWA. For the latest research, tools and resources, sign up for the newsletter: www.sustainableseaschallenge.co.nz/newsletter

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Working together during a pandemic

Dan Bolger

In recent years, employers have become increasingly mindful of their responsibility to keep their people safe and well. Covid-19 has added an extra level of awareness and complexity to this responsibility.

The Government's Covid-19 response is focused on protecting us all. However, this response acknowledges that essential businesses – including fishing and aquaculture businesses – should continue to operate wherever possible through all Covid-19 alert levels. This is an important factor for the ongoing wellbeing of both individuals and our economy.

Being here before means that our 'readiness' for a Covid-19 lockdown is better, but there is a range of new challenges thrown into the mix this time. This is a new game and, as a result, we are dealing with different issues this time around.

To that end, we have been very pleased to work with Seafood New Zealand to develop the different guidelines needed for managing the highly transmissible Delta variant at sea. We also worked together on advice for the seafood sector that would ensure its workers could transit internal boundaries, and work is ongoing to ensure that we are all ready to adapt when things change again.

While I am pleased that this collaborative approach is working well, I do want to acknowledge the focus and response to this serious situation that Seafood New Zealand and the sector have shown. Your empathy for the businesses within the sector and mindfulness of people's wellbeing and safety is commendable. I also acknowledge the many people across industry and government who have worked hard over a short period of time to ensure the resilience of seafood businesses during this lockdown.

Please remember that we are here to support and work with you to implement Covid response solutions quickly. The Covid-19 decision cycle has become part of our operating rhythm, with decisions made by Cabinet being rapidly translated into assessments and analysis of what that means for our operating systems and for the seafood sector.



Dan Bolger, Deputy Director-General Fisheries New Zealand.

With the changed nature of Covid, we are anticipating a changed operating state of our own for the foreseeable future. Where once we would prioritise face-to-face meetings, we now expect to find alternatives to asking people to gather together or travel around the country.

This does not mean that we will put important consultations or meetings on the backburner. Fisheries New Zealand has already been adapting its engagement approaches for some time now, from pre-consultation work that helps shape fisheries management proposals, through to online forums to bring together people who can't be in the same physical location. These processes will continue to evolve to meet the changing environment we work in, particularly when there is a need for people to socially distance and be safe.

The road ahead may look different as we continue to navigate remote working and the virtual world when needed but keeping in touch and working together will always provide benefits.

For now, please keep safe.

Kia haumaru te noho ki a koutou.

Dolphin protection and applauding industry leaders and the new wave

Doug Saunders-Loder

I recently travelled with Tom Clark from Fisheries Inshore NZ and Mark Geytenbeek from FNZ, up the south east coast from Invercargill to Christchurch meeting fishermen in Invercargill, Port Chalmers, Timaru and Lyttelton to discuss the upcoming consultation that Fisheries NZ intend to release in respect of the Threat Management Plan for Hector's Dolphins.

It was anticipated that this consultation would have been out by now but delays with Covid-19 lockdowns and disruption throughout the country has clearly pushed that back.

It was a whistle stop tour over two days, that ended abruptly with the announcement that the country would be thrown into lockdown.

Whilst we deal with major uncertainty about recently released Government reforms and deal with continued erosion of property rights, it was pleasing to make a couple of really important and in my opinion, positive observations.

Ministry for Primary Industry's approach to the Threat Management Plan for Hector's Dolphins has been positive in terms of coming up with more meaningful management measures than were experienced on the west coast of the North Island in respect of Maui's. The reason for that is clear and is a reflection of the significantly higher population of Hector's dolphins as opposed to Maui's. There's no question about it, fishermen along the South East coast of the South Island have been significantly affected and experienced closures that drive them further away from their traditional grounds. Government's approach to transitioning fishermen through this process has also been inconsistent and unfair.

However, an approach that rightly recognises the science and accepts that low levels of mortality are unlikely to unduly affect the population is a more pragmatic approach than the outright exclusions that have existed elsewhere. The development of a Catch Response Framework that encourages steadfast reporting backed with mitigation and management of the problem is a much better approach and something we should welcome.

The second positive observation I made was of the many young fishermen that attended those meetings and contributed towards the debate in a professional and meaningful way. Wherever I go I hear continued claims about the fact that there are no young fishermen coming through. However, I've noticed throughout the country that there are many more younger fishermen than people think and I'm



Doug Saunders-Loder is president of the NZ Federation of Commercial Fishermen

convinced that the perception is much worse than the reality. There is no doubt that we are going to see further rationalisation of our inshore fleet over the next decade. That's not a good prospect at any level but let's get behind the young men and women that are there and ensure that we encourage them positively wherever we can.

A real example of an industry couple that encourages the young ones was recognised recently at the Annual Seafood Stars Awards. Our very own Richard and Jean Kibblewhite received a gong for Longstanding Service. They have been involved in the commercial fishing Industry since 1987 and operate seven boats that harvest wetfish and crayfish. Richie has over the time helped 12 young people in the Industry to obtain their tickets including his own daughter Elle, who ran a crayfish boat for them out of Porongohau. Ritchie continues to do an outstanding job every year as the auctioneer (for the Shipwreck Relief Society fundraiser) at Federation Conference and this year he managed to draw \$54,000 out of those there.

Other key people that received awards and that are well aligned with the Federation include Carol Scott for Longstanding Service also. Carol is the CEO of the Southern Inshore Finfish Management Co. Ltd but is also a longstanding member of the federation executive. She works tirelessly each year on our behalf to deliver conference and is my rock in terms of managing a lot of the administrative burden that we need to address.

Amy Moore, daughter of Craig and Penny Jones of North Beach Fishing in Greymouth and keeping with my theme of promoting young people in the industry, received the Young Achiever category. Amy has been instrumental in driving the creation of a Seafood Academy within the High Schools on the West Coast. Amy has also been working with federation to develop a series of social media resources aimed at enticing more young people into the seafood industry. Amy has also been appointed to represent the industry upon the newly formed MPI Food and Fibre Youth Network.

We are certainly well served by some outstanding people and our deepest congratulations go out them all.

Seafood Star Awards: Celebrating revolutionary ideas, sustainability, industry heroes - young and old

Janan Jedrzejewski

A young rising star, a company revolutionising oyster farming, and a long line of industry leaders who have been the backbone of the seafood industry over decades have all been recognised at this year's Seafood Star Awards.

The awards, now in their sixth year, were to be presented at the 2021 Seafood Industry conference in Nelson, which once again was put on hold due to Covid. There were three categories this year; Future Development Innovation, Longstanding Service, and Young Achiever.

The Young Achiever award was scooped by Amy Moore, who is from a highly respected fishing family. The daughter of Craig and Penny Jones of North Beach Fishing in Greymouth, Moore has been instrumental in beginning a Seafood Academy with all high schools on the South Island's West Coast and working with the Federation of Commercial Fishermen to make a series of mini documentaries to entice more young people into the seafood industry.

This year, Moore was selected to represent the seafood industry on the newly formed Ministry for Primary Industries Food and Fibre Youth Network, promoting the positive side of the seafood sector.

Aaron and Debbie Pannell received a Future Development Innovation award for FlipFarm, which semi-automates almost all oyster farming tasks as well as providing an ideal growth environment, extremely efficient biofouling treatment, predator protection and ease of use, wrapped up in a system that is fun to use - and even harder to break.

Talley's received an innovation award for their new TempGuard cardboard box. Developed in collaboration with packaging company Sealed Air, Tempguard is an alternative to polystyrene containers – 180,000 of which end up in landfills every year. Their new box allows fish to be carried in unrefrigerated vans without deteriorating, is 100 per cent kerbside recyclable, and its padded format absorbs pack condensation, while also providing cushioning and protection of the product.

Tempguard also arrives flatpacked on a pallet and is only 14mm thick, allowing for a reduction in carton size. This

makes it more efficient to transport and getting more cartons on a pallet means lowering the carbon footprint.

There were a total of seven recipients for the Longstanding Service award.

Denver McGregor joined the seafood industry in 1991, working his way up from a production operator to Quality Controller and then into the management of quality and food safety for New Zealand King Salmon (NZKS).

During this time, McGregor has ensured NZKS and its products and processes are at the forefront of innovation and technology when it comes to food safety. In 2018, McGregor was the first in the seafood industry to pioneer a listeria strategy programme, to better understand listeria monocytogenes, its occurrence within the NZKS manufacturing environment, and find proven methods to control it. This programme has allowed McGregor and his team to identify 19 different strains of listeria. McGregor has been sharing his knowledge and findings with the wider industry in the hope other organisations can still benefit from the tools he has developed.

Talley's operations manager Andy Smith has been a passionate advocate for the both the New Zealand and international fishing industry since he started his career back in the 1970s. He has developed a reputation for his ethics, standing by what he believes in. In his 40 plus years in the industry, Smith has made long standing and valuable contributions, notably, over two decades spent as a participant and industry delegate, supporting New Zealand government's contributions to the CCAMLR toothfish fishery and his significant involvement as an operator and advisor in the development and ongoing sustainability of orange roughy fisheries.

Long game players, Richard and Jean Kibblewhite, are fishing legends who have been involved in the commercial fishing industry since 1987. Their company, Splashzone Ltd, currently owns seven vessels, covering wetfish and crayfishing operations. Richard Kibblewhite has helped 12 young people in the industry obtain their tickets, has given

freely of his time for many years, and done an outstanding job as auctioneer for the Shipwreck Relief Society fundraiser, this year raising \$54,000.

Carol Scott is the CEO of Southern Inshore Fisheries Management Company, a company which represents the interests and rights of quota owners throughout the South Island and Taranaki. Scott has an extensive career in the commercial fishing industry in both Australia and New Zealand, with a background in fisheries management, science and research, policy and marine planning, environmental management, fishing gear, and flume tank technology. Scott is now a member of a number of technical and community-based industry working groups.

George Clement was instrumental in setting up the Deepwater Group 15 years ago, drawing together the majority of deepwater quota holders. His achievements include overseeing science-based stock assessments, gaining MSC certification for major species including orange roughy (once a byword for overfishing), and having a disparate industry speaking with one voice on policy and interaction with Government and the regulators. The

Deepwater Group is a success story to which Clement is a key contributor.

Lesley Campbell has led FishServe since 1999 and has driven a relentless pursuit of efficiencies and modernisation over the past 22 years. Most recently, she has overseen the comprehensive rebuild of the original IT systems that are the foundation of the QMS and the transition to electronic reporting. The result of these efforts are services that are both better and cheaper to the industry. From the implementation of the systems to support the introduction of the 1996 Fisheries Act, to setting up FishServe Innovations New Zealand, to implementing electronic reporting, Campbell has led the organisation through significant change.

And the seventh deserving recipient of long service recognition is Tom Clark, a fisheries management consultant for Fisheries Inshore New Zealand (FINZ). Clark has a great depth of knowledge of commercial fishing, can reel off facts and figures at any time, and convert complicated policy into comprehensible briefs quickly and accurately.

Congratulations to all our winners.



Aaron & Debbie Pannell



Amy Moore



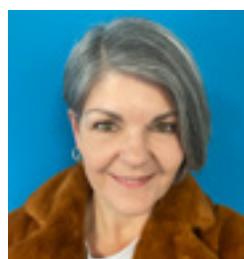
Andy Smith



Carol Scott



Denver McGregor



Lesley Campbell.



George Clement



Talley's Tempguard



The Kibblewhites



Tom Clark

Snapper at the Galley

Tim Pankhurst

It is snapper all the way at the Market Galley at the Auckland Fish Market.

The lunchtime special is classic fish & chips, in this case beer battered snapper at \$16.90.

Or there is crispy skin-on snapper fillet served with halved cocktail tomatoes, rock melon slices, spring onions, coriander and dressing at \$22.90.

There are burgers too. The fish burger is, of course, crispy snapper served with melted cheese, shredded lettuce and tartare sauce.

If it is a cold day, the seafood chowder – prawns, fish, squid and mussels – may be more in order.

It is a busy place and the service is suitably streamlined.

There is a queue to order and an electronic disc is provided to handily buzz when the meal is ready for pick up at the other end of the counter.

Tomato sauce, vinegar, salt and pepper, plastic cutlery and napkins are all self service.

The courtyard has ample seating, bathed in sunshine with a gentle breeze on a spring day.

Tables are being constantly cleared and cleaned by a friendly attendant.

This is a cruisy setting, one to take your time over, with the lure of cold tap beer and wines at the The Wreck bar opposite the Market Galley.

The Galley is owned and operated by Savor Group, founded by Lucien Law and Paul Robinson, who operate eight hospitality businesses in Auckland.

For seafood lovers, the market is fish heaven.

There is an oyster and mussel stall and the Sanford & Son fishmongery under cover behind the Galley is filled with different species of assorted flavours and textures and prices plus live crayfish.



Snapper classics – fillet and fish 'n' chips.

Whole fish are on sale too with a complimentary filleting station for those who are smart enough to utilise the whole fish and want it expertly prepared.

Fishing vessels tie up at the wharf a surfcast from the market across Jellicoe St and the waterfront cafes and bars.

There can be few better settings to appreciate the bounty of the sea.



Streamlined service and self help to condiments.



A menu dominated by Auckland's favourite fish.

Scandinavian Rimmets Cured Salmon



Image: Stephan Baumberger

This dish, from chef and restaurateur Jeffrey Scott Foster, is reminiscent of his time in Denmark – a place he called home for 18 years. Currently the head chef of the Rutherford Hotel in Nelson, this Scandi-style offering was due to head up the menu at the Seafood Conference.

Foster explains that the salmon is the real hero here. “Rimmets” is the method of curing by using salt and sugar to drain the water from the salmon, while still retaining a softer, fresher texture (as opposed to the dryer “Gravad” curing method). This dish works best with smoked cream cheese but adding a dash of liquid smoke to the plain version will do in a pinch.

Ingredients

For the Cured Salmon

1 Salmon Fillet, skin on and pin boned
(1.5-2 kilo)
300g Caster Sugar
300g Flakey Salt
50g Crushed Fennel Seeds
25g Crushed Coriander Seeds

For the Smoked Cream Cheese

50g Smoked or plain Cream Cheese
50g Crème Fraiche
10g Cream
Salt, Pepper and Lemon Juice to taste
Few drops of liquid smoke (optional)

For the Rye and Beer biscuit

200g Danish Rye Bread
70ml Dark Beer
1 egg
150g Flour

Method

To cure the salmon, line a tray with cling film and lay the fillet on the cling film, skin side down. Evenly spread the crushed coriander and fennel seeds over the salmon and gently rub into the flesh. Combine the sugar and salt in a bowl, and then cover the salmon flesh again with this mixture.

Wrap the cling film around the salmon, apply a little pressure with a tray on top and allow to cure for 24-36 hours in the fridge.

Wash the salmon and dry it in the fridge for

one day before using.

Blend the smoked cream cheese, add the crème fraiche and blend until smooth. Then add the cream, salt, pepper, and a squeeze of lemon and pulse blend until mixed thoroughly. Keep Cool until serving.

Cut the rye bread into small pieces and cover with the beer and leave overnight to soak. Next day, squeeze the excess beer from the bread and place bread in a food blender with the knife attachment. Add the egg and flour and blend into paste. Leave to rest for one hour and the Roll out very thin, using extra flour, if needed. Cut into small round pieces with a cutter, place onto baking paper and bake at 140° for 12-16 minutes.

Economic Review

of the seafood industry to June 2021

Welcome to the latest update on the economic performance of New Zealand seafood. This edition provides provisional data for the year to June 2021.

KEY RESULTS FOR THE PERIOD:

- Total export value and volume is down slightly when compared with 2020.
- Exports of rock lobster have bounced back to pre-COVID-19 levels.
- Seafood exports are now the seventh highest traded commodity, however this is mainly due to other commodities increasing significantly.
- Export value to our three main trading partners has increased when compared with 2020.
- Spain saw a drop in export value of 59% due to a significant reduction in squid exports.

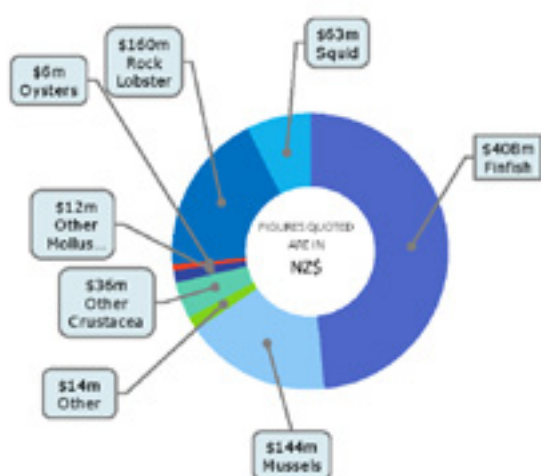
EXPORT STATISTICS

EXPORT NZ\$FOB*

All figures in this section are based on export data provided by Statistics New Zealand and analysed by Seafood New Zealand for the year to June 2021.

Seafood exports to the end of June 2021 totalled NZ\$843 mil with 119,407 tonnes exported.

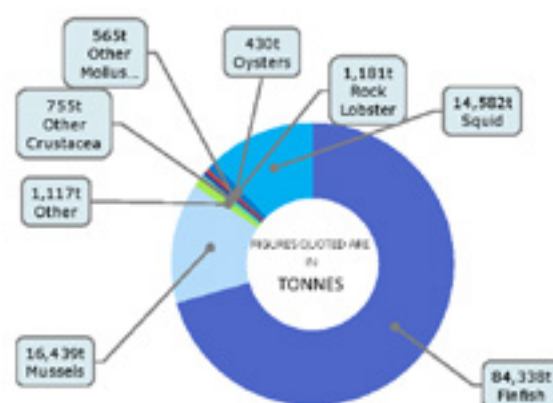
Export value (YTD to June 2021) = NZ\$843 mil



EXPORT TONNES

Finfish species accounts for 70 percent of export volume which is similar to 2020. Rock Lobster has bounced back to pre-COVID-19 volumes - with exports more than doubling.

Export volume (YTD to June 2021) = 119,407 tonnes



Source: Export data, Statistics New Zealand, Seafood New Zealand.

FOB = Free on board. The value of export goods, including raw material, processing, packaging, storage and transportation up to the point prior to loading on board ship.

EXPORTS BY COUNTRY

China, United States and Australia are still in the top three positions. All have seen an increase in export value. Poland has made it back onto the top 10 list due to an increased volume of hoki exports.

Top 10 Export Countries by Value (YTD to June 2021)

	Country	2021	2020	% Change
1	China, Peoples Republic Of	\$285m	\$262m	9 ▲
2	United States	\$142m	\$120m	18 ▲
3	Australia	\$114m	\$96m	19 ▲
4	Japan	\$32m	\$39m	-18 ▼
5	Thailand	\$20m	\$30m	-33 ▼
6	Canada	\$19m	\$22m	-14 ▼
7	Spain	\$18m	\$44m	-59 ▼
8	Poland	\$18m	\$8m	125 ▲
9	Hong Kong	\$16m	\$18m	-11 ▼
10	South Korea	\$15m	\$35m	-57 ▼

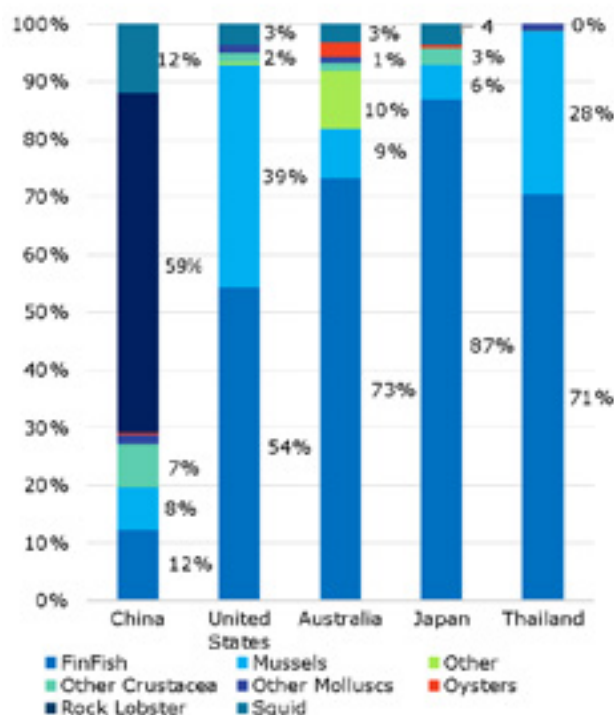
EXPORT VALUE BY SPECIES (NZ\$)

The export value of rock lobster increased by 80 percent for the year to June 2021. This was due to the significant disruption of exports to China in 2020. Hoki exports also increased when compared with 2020. Mussels, squid, orange roughy and tuna have all decreased significantly.

	Species	2021	2020	% Change
	Rock Lobster	\$160m	\$89m	80 ▲
	Mussels	\$144m	\$184m	-22 ▼
	Hoki	\$67m	\$57m	18 ▲
	Squid	\$63m	\$117m	-46 ▼
	Salmon	\$60m	\$48m	25 ▲
	Mackerel, Jack	\$37m	\$39m	-5 ▼
	Ling	\$25m	\$25m	0 ▲
	Orange Roughy	\$20m	\$27m	-26 ▼
	Tuna, Albacore	\$17m	\$28m	-39 ▼
	Snapper	\$16m	\$14m	14 ▲








Source: Export data, Statistics NZ*Salmon includes all exports of Salmon excluding Atlantic Salmon.

Composition of Exports to Top 5 Trading Partners (YTD to June 2021)



EXPORTS OF MAIN COMMODITIES

Exports of the main commodities for the year ended June 2021 saw an overall 1 percent reduction compared with the same period in 2020. Fish, crustaceans and molluscs decreased by 4 percent. All other commodities also saw a decrease except for Logs and Machinery which both saw significant increases.

	NZ EXPORTS OF MAIN COMMODITIES (NZ\$)	2021	2020	% Change
	Milk powder, butter, and cheese	8,587m	8,687m	-1 ▼
	Meat and edible offal	4,739m	4,866m	-3 ▼
	Logs, wood, and wood articles	2,817m	1,975m	43 ▲
	Fruit	2,310m	2,354m	-2 ▼
	Mechanical machinery and equipment	882m	747m	18 ▲
	Wine	792m	938m	-16 ▼
	Fish, crustaceans, and molluscs	756m	785m	-4 ▼
	Total Exports	31,594m	31,173m	1 ▲

Source: Overseas merchandise trade, Statistics NZ.

*Fish, crustaceans, and molluscs (excludes fishmeal & processed oils, powdered products)

Industry responds to Alert Level 4

Janan Jedrzejewski

The seafood industry again met the challenge of another Covid lockdown. It was business as usual— as well as suiting up with loads of PPE.

The virus was not going to disrupt essential operations at Westpac Mussels Distributors, with the crew continuing to process mussels at the Henderson mussel processing plant.

Meanwhile, The Sanford Auckland factory continued to donate to The Kai Ika Project - a total of 57 fresh snapper, hapuku and kingfish heads and frames. The team loved to see the “incredible supply of quality fish” and are working with the Papatuanuku Kokiri Marae in Māngere to share this donation out to local communities in need.



Donations of fresh snapper, hapuku and kingfish.



Pala from Sanford (left) and Val Teraitua from Papatuanuku Kokiri Marae.



Westpac crew in full PPE.



Donations headed to the Kai Ika Project.



The Westpac crew at the Henderson plant.



Westpac Mussels Distributors.



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BUT2, BUT7
ELE1, ELE7
FLA1, FLA2, FLA3, FLA7
GAR2, GAR3, GAR8
GMU1
HOR3, HOR7
HPB1, HPB5, HPB7

JMA1
KAH8
PAD
PAR1, PAR9
POR3
SCH1, SCH7, SCH8
SPD

SPE2
SPO1, SPO8
SQU1T
STN1
TOR1
TRE7
YEM1, YEM9

QUOTA SHARES FOR SALE

PAD5, PAD7
HPB1, HPB2, HPB7

GMU1
BWS1, MAK1, MOO1, RBM1, YFN1 - Offers

BOATS FOR SALE

5.05m Allenco dory - Honda 60Hp - 20Hrs, GPS/Sounder, Alloy trailer - \$25,000 + GST 7.5m alloy crab boat, 150Hp Volvo, Furuno

GSP, Sounder, VHF, Been in SOP - \$70,000 + GST 13.71m steel cod/cray, Doosan L136 - 118Kw - \$350,000 + GST

DOMINIC PREECE
Managing Director

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5295 MARKO GRP CRAY BOAT VG CONDITION

Built 2000. GRP. L 17.5m x B 5.4m x D 1.7m
Scania DI16076M. 900hp. 352 HRS SINCE NEW
2 x Seawasp 12kVA gensets. Solar power
Gearbox ZF 2.29:1. 3 Station steering
Bow thruster. Fuel 4,800 litres
4 berths forward. Large dinette
Good electronics.
**EXCELLENT SEA BOAT
TOP CONDITION**

AU\$725,000



5270 TUNA TROLLER KAURI
L 10.2m x B 3.5m x D 1.2m
Kauri plank on hardwood
Detroit 4/71 130hp
TwinDisc MT906 3:1 g'box
Fuel 1100L. Water 120L
Ice Hold 3 ton 35-40 bins.
Tuna poles and gear
Survey valid 22 July 2022

\$55,000



5256 WESTERNER - LINER
L 17.6m x B 4.9m x D 2.8m
Main - Doosan 285kW
Aux - Cummins 67kVA
Onan 18kVA genset
20t ice hold. 4 berths.
Bottom & surface line gear.
Trawl winches available.
Survey 100 miles to 11/23

GOOD BUYING \$220,000



**5254 LINER BOTTOM &
SURFACE.** L19m x B5.6m
MAN D2566 MTE6 250hp
Aux Isuzu. Genset 60kVA
Fuel 10,000L. Hold 27 tons
Bottom & surface line gear.
4 berths. Galley. Air cond
Good electronics
Survey 100M. Expiry 2025
WELL PRICED AT \$295,000



**5232 LONG LINER,
TUNA TROLLER.**
BFG Autoline system
L19m x B6.4m x D2.75m
30 t fish hold
Cummins KT19 main
Fuel 22,000L. Offshore
survey to May 2025
A BIG 19M VESSEL

NEGOTIABLE



**5226 WESTCOASTER 60
LINER.** L18.636m x B5.95m
Main Cummins N14 400hp
Aux Cummins 35kVA gen
Fuel 8,000 litres
Hold 10 tonnes + 3t bait
32M tuna drum & spare
Survey to October 2022
VERY WELL PRESENTED
VESSEL

\$850,000



5266 LINE, TROLLER, POT
LOA18m x B5.5m x D2m
Built Carey's boat yard
Scania D512.TwinDisc 514C
Fuel 5,000 litres. 12/8 knots
3 x Fish holds = 11 tonnes
Good accommodation
Offshore 200 mile Survey
WELL PRESENTED & A
GOOD HISTORY \$450,000

5294 FRESH/FREEZER FACTORY TRAWLER

LOA 33.9m x B 8.15m x D 2.84m
Main Caterpillar 3612 18,000 hours since full
rebuild 2015. 2 x Volvo TAMD 162C-8 aux
2X Stamford 370kVA alternators
Hundsted VP propeller. Fuel 73,000 litres
Fish hold 120 tonnes either freezer or fresh
Freeze 12 tonnes per day. Factory deck
Major refit 2018. Survey to 30 April 2023

POA

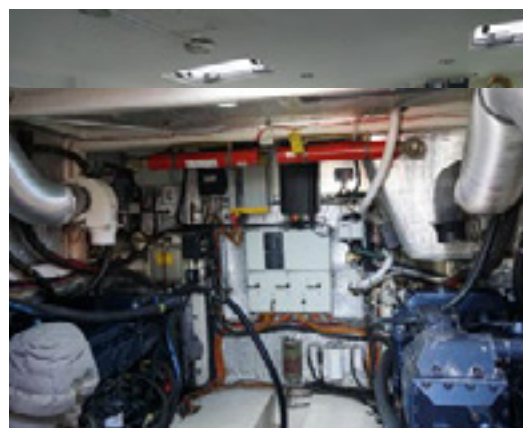


All prices indicated are plus GST unless otherwise stated.

150 VESSELS AT



Thanks for all the support so far in 2021. If you are interested in any of our programs make the effort to ask about the course guarantee. We will not cancel a course and can start for 1 person at anytime. Reach out and let us help you gain those MNZ licenses in a way that suits your lifestyle and fishing operation.



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