



# THE UPDATE

## Captain's Blog



### **Just enough Bluffies to kick-start the season**

The exclusive member only Wellington Club was this week offering one Bluff oyster for \$20.

However, the first of the season's delicacy did come with a glass of champagne.

The high price and the special event reflect the excitement the famed Foveaux Strait wild oysters generate.

And with the proposed catch well down this year, Bluffies will be in even higher than usual demand.

The license holders have agreed to limit the catch to 7.5 million oysters, just half the Total Allowable Commercial Catch of 15 million.

Last year was also fished conservatively, with about 10 million oysters landed on the same TACC.

The owners of the 12 vessels fishing the wild Strait waters will assess the state of the fishery at the end of the month and push the catch towards a 10 million total if warranted.

An Auckland restaurateur contacted Barnes Oysters general manager Graeme Wright last week ahead of the March 1 opening to order 200 dozen.

He planned to fly down to Invercargill with a group of 30.

Wright told him no deal.

He did not want to feature on the front page of the Southland Times for supplying Aucklanders before locals.

“I’d get my testicles kicked.

“Southlanders are very passionate about their oysters.”

In any event, the weather was too rough, with a 40 knot westerly.

It was not until Sunday that the fishing began in earnest and the Barnes factory in Invercargill’s Spey Street began opening on Monday.

Barnes is a co-operative of eight companies that includes major players Skeggs, Sanford, United and Independent.

Bluff-based Urwin’s has just sold its oyster quota to Skeggs and its rock lobster and finfish holdings remain in play.

Barnes has about 65 percent of the catch.

Ngai Tahu Seafoods is the next largest player.

The Foodstuffs supermarket chain also has a small holding.

Despite the caution being shown, Wright is optimistic about the state of the industry, if not the world’s biggest wild flat oyster fishery then certainly its roughest.

There is no sign of the bonamia ostreae disease that has destroyed the farmed oyster industry on Stewart Island and in the Marlborough Sounds.

The wild oysters are infected with a different strain of bonamia – exitiosus – which is not harmful to humans and is at low levels this season.

Catches have fluctuated wildly over the years and were at 15 million for six years up until 2002 when ever present bonamia struck.

At that time NIWA estimated mortality of mature oysters was as high as 90 percent – around 1.2 billion shellfish.

That halved the catch for five years before it slowly built back up until 2014 when the disease caused as much as 30 percent mortality.

Oysters are slow growing in the cold Strait waters and are around nine years old when harvested.

Recruitment is sporadic but has been strong for the past two years.

The baby oysters, or “wings”, often attach to mature oysters, which have to be returned to the sea, but that is a good problem to have.

Like spawning, the weather can be equally fickle.

Last year it blew so hard in April the boats could only get out on six days.

“They know it’s a nice day when I’m aboard,” Wright said.

“Graeme doesn’t do rough days.”

As for the price, it has been held locally at \$25 a dozen.

The season ends on August 31 but most of the boats have tied up by then.

The highlight of the season is the Bluff oyster festival on May 25, which has again sold out.



A wild Foveaux Strait flat oyster with a number of healthy juveniles attached.

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## Tasman sea puts the heat on fisheries

The Tasman Sea is heating up, with seawater temperatures exceeding the 90th percentile for months on end, two years in a row.

Receding kelp forests, algal blooms and disruption to fisheries are just some of the effects of warmer waters – and it's a sign of further things to come according to scientists.

It was New Zealand's third-hottest summer on record, with NIWA reporting that Tasman Sea surface temperatures were 1.5 degrees Celsius above the average for the time of year.

Australia reached record-breaking temperatures too, with heat limiting ocean mixing and an absence of clouds allowing solar radiation to warm the Tasman Sea to greater depths than usual.

"A marine heatwave began affecting the Tasman Sea in December, with sea surface temperatures 2–3 degrees Celsius above average," said Andrew Marshall, a senior research scientist at the Australian Bureau of Meteorology.

Fisheries are already feeling the effects.

"The effect on marine ecosystems, fishing and aquaculture industries can be devastating, including killing off kelp forest and corals," Marshall said.

A recent paper published in the *Nature Climate Change* journal reiterated this, finding that marine heatwaves had negative impacts on virtually all "ecosystem services" such as seagrass and plankton - essential elements needed to support fisheries.

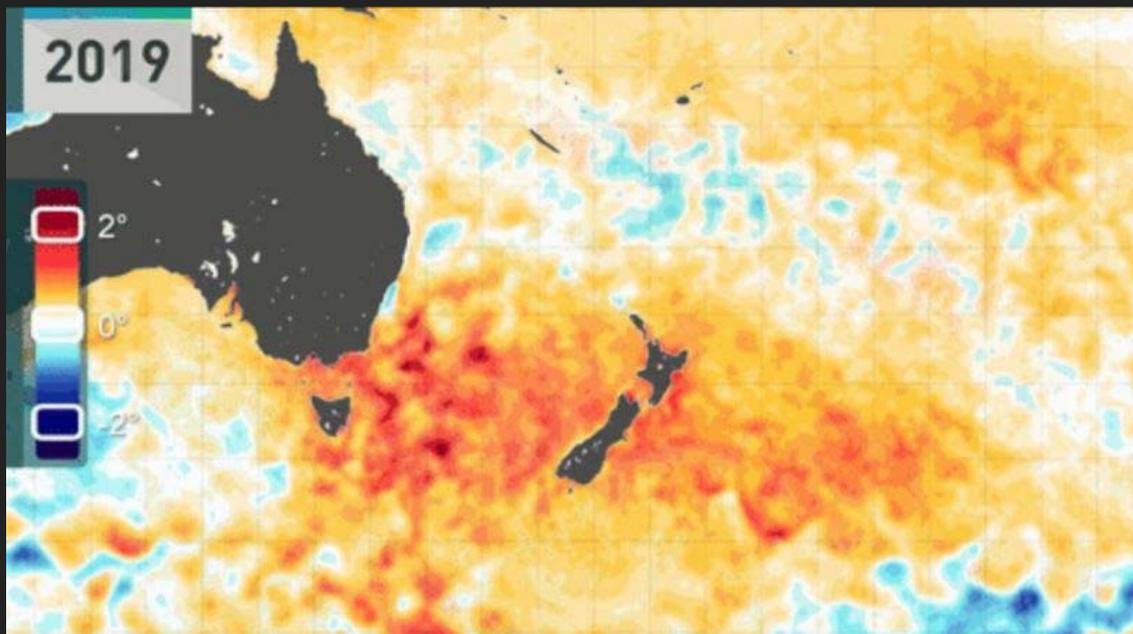
Ocean circulation specialist Moninya Roughan said last year's extreme event meant New Zealand fisheries suffered, resulting in a voluntary cut in quotas at the hoki deepwater fishery.

Aquaculture has experienced disruptions to its salmon farms and a higher mortality rate of abalone along the coast and species such as snapper and kingfish have been observed moving further south to cooler waters too.

Coastal fisheries in Australia are expecting a similar impact on their mussel, shellfish and oyster stocks.

With the ocean absorbing up to 90 percent of the excess heat produced by climate change, researchers are predicting a corresponding increase in the intensity and frequency of marine heatwaves in the future.

"We are likely to see these events occur more frequently, changing the seascape and causing species to move to different areas," said Marshall.



Changing sea surface temperature anomalies (conditions compared to average) in the oceans around New Zealand during the first two weeks of January 2019. Photo, NIWA.

## Squid serves up an alternative to plastic

A material made entirely from squid teeth could prove to be the ideal replacement for man-made fibres and plastics.

Scientists from Pennsylvania State University reviewed existing research using suckerin to fabricate materials.

Suckerin is the protein found in the teeth of a squid's tentacles and provides the teeth their strength. Researchers are describing the protein as having "remarkable properties" after finding it can create materials that are flexible, strong and elastic. It also has thermal, self-healing and electrical conducting capabilities.

"These materials, or biopolymers, have unique physical properties that are not readily found in synthetic polymers like plastic," explained lead researcher Melik Demirel.

Demirel and his team tested its applications and produced prototypes of fibres, coatings and even 3D objects. They found the materials they produced were biodegradable and an "excellent" alternative to plastics.

"Nature produces a variety of smart materials capable of environmental sensing, self-healing and exceptional mechanical function," said Melik.

With such a wide scope of possibilities, scientists envision the protein could be used as a biodegradable replacement for microfibrils and plastics.

Initial ideas include using suckerin to manufacture protective clothing, wound dressings, wearable health monitors and even implantable devices for biosensing and biodetection.

"Importantly, these biopolymers are sustainable and can be engineered to enhance their physical properties."

The proteins are grown in a lab using genetically modified *E. coli* bacteria, meaning production is efficient and avoids depleting the squid population.

"The process is based on fermentation and uses sugar, water and oxygen to produce biopolymers," Demirel explains.

Work is currently underway to scale-up production of the materials and to make the process more affordable – currently costing a minimum of \$100 per kilogram to produce.



The teeth of a Squid's tentacles which are formed in part by a protein called suckerin.

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## Aquaculture Week mussels-up once more

Aquaculture Week is set for round two and organisers say it will be bigger and better than last year's premiere event.

A pop-up event in Blenheim will open the week on Thursday (March 14), followed by Mussel Appreciation Day. The main event, the Mussel and Seafood Festival, will take place in Havelock on the Saturday.

Mills Bay Mussels will demonstrate skillful mussel shucking and Havelock will host a field day for those interested in learning more about the marine farming industry.

A variety of Marlborough restaurants, bars and cafes are lined up to showcase mussels in a range of dishes. Delicacies from Omega Seafood, NZ King Salmon and Paradise Oysters will also be on offer.

For more information or to register your interest, email [info@marinefarming.co.nz](mailto:info@marinefarming.co.nz) or visit the Aquaculture Week Facebook page.

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## News

Findings from New Zealand researchers have environmentalists pushing for a ban on bottom trawling, likening its impact on seabed wildlife to the destruction of kauri forests, *Stuff* reports. However, an industry representative said the findings were incomplete. NIWA have been studying the Graveyard Seamount for 15 years, a group of undersea hills on the Chatham Rise, to shed light on the long-term impact of bottom trawling deep-sea habitats. Three of the 28 seamounts have been closed to fishing since 2001 and others continue to be fished to varying degrees. The result has been termed a 'natural experiment' for measuring the impact of bottom trawling through a comparison of the biodiversity on each seamount. The research found no evidence of recovery 15 years after trawling had

stopped, suggesting it could take decades for the coral forests to return. "After 15 years, we're not seeing any clear signs of recovery of the seabed fauna on the hills," said Dave Bowden, a NIWA marine ecologist and co-author of the research. "The message is that once these coral and sponge communities have been fished and knocked down, we can't expect to see them back again." Deepwater Group chief executive George Clement acknowledged the deep sea fishing industry had an environmental impact but said it needed to be weighed against the need to feed people. He said there was no data to show whether the seamounts had similar amounts of seabed fauna before trawling, meaning it was difficult to infer how much of the lack of coral was due to trawling. "What we do know is that not all of these underwater hill features have coral and where corals do occur they most often are patchy in distribution and do not cover the entire area of the hill. Some of these hills have no coral and others have a lot – with variations often found between hills very close together." Clement said New Zealand's deep-sea fishing industry is world-leading on environmental matters and large areas containing seamounts were already protected from fishing. "We have set ourselves the goal of being trusted as the world's best managed deepwater fisheries and we have an international reputation for this," he said. "All food production necessitates some environmental change. We have a duty of care to ensure that we get the balance between utilisation and conservation right. Neither of the two extremes - locking it all up, or not taking sufficient account of the conservation requirements - are acceptable."

Fisheries New Zealand is more than halfway through its consultation period on proposed changes to the blue cod fishing regulations. The proposed changes were identified as priorities through the early engagement processes which ran during the development of the strategy. Public consultation opened on January 29 and Manager of Inshore Fisheries Steve Halley encourages anyone with an interest in the fishery to have their say. "Blue cod is the most popular recreational finfish species in the South Island, and the third most popular in New Zealand. It's a unique, iconic New Zealand species that is important to tangata whenua, commercial fishers, recreational fishers, and environmental groups. "The changes are designed to address the decline in blue cod abundance that we have seen in localised areas, and to improve the consistency of the blue cod fishing regulations nationwide."

For more information and to have your say visit [www.fisheries.govt.nz/bluecod](http://www.fisheries.govt.nz/bluecod).  
Submissions close 5pm, March 26.

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