



THE UPDATE

Captain's Blog



Planning for paua's future

China has become by far the world's biggest abalone/paua producer through massive subsidised investment in the fishery.

The annual harvest, all farmed, has rapidly risen to 140,000 tonnes, about 85 percent of the world's total production.

New Zealand's share is minuscule at around 700 tonnes but it is largely wild caught and commands a premium, returning about \$60 million in annual export earnings.

China barges in seaweed to feed the abalone, often from hundreds of kilometres away, and if the water becomes too warm, whole farms are uplifted and moved north on a special vessel, the biennial Australasian Abalone Convention in Hobart was told earlier this week.

Australia's production is about four times that of New Zealand at 2900 tonnes, both farmed and harvested across thousands of kilometres of coastline across five states - WA, SA, Victoria, NSW and Tasmania.

New Zealand's sole paua farm is the Moana-owned Oceanz Blue at Bream Bay in Northland, which produces about 50 tonnes of "cocktail" sized fish.

This country has taken a conservative approach to managing the paua fishery across eight commercial areas, with voluntary shelving of catch where it was thought stocks were under pressure, Paua Industry Council (PIC) chief executive Jeremy Cooper told the 115 delegates.

Peak paua was nearly 30 years ago with landings of 2000 tonnes. The industry has stabilised around current levels and is slowly rebuilding.

"We know that each of our fisheries can produce more and stay healthy if we implement good management," PIC chair Stormalong Stanley told the conference.

However, there are significant challenges, including ocean acidification, warming waters, sedimentation and loss of habitat.

PIC science officer Dr Tom McCowan detailed the monitoring of paua stocks following the 2016 Kaikoura earthquake and the development of a fisheries plan for a future, limited re-opening.

There are also regulatory demands, with every diver required to automatically download all catch, effort and location data on a daily basis to Fisheries NZ from October 1.

Cooper detailed the huge investment - along with some kiwi ingenuity - the industry has made over more than a decade to capture harvest data.

"At one stage we were the biggest purchasers of non-lubricated condoms in New Zealand," he said, explaining they were used to keep data loggers watertight that were worn by divers.

Cawthron Institute physiology team leader Dr Norman Ragg, known for quirky presentations, said he represented the voice of abalone - "a small, fragile animal that supports our livelihoods".

He said a marine heat wave in the 2017/18 summer had raised surface sea temperatures by 3.7 degrees C, unparalleled in 150 years of records.

The impact of heat lowering oxygen content and water movement on an individual paua, which he named Brian, could effect mucous production needed for crawling, fixing to rocks, waste removal and food availability.

Remedies could include kelp habitat restoration, careful reseeding and relocation and minimising additional metabolic burdens caused by sedimentation, pollution and coastal acidification.

Fisheries NZ senior fisheries analyst Mark Geytenbeek added to the Kiwi contribution to the conference, analysing the different Chinese and Japanese approaches to aquaculture and enhancement of abalone stocks following a study tour last year.

Moana Project kicks-off

A multi-million dollar ocean forecasting project officially launched in Ōpōtiki this week.

Led by MetOcean Solutions scientist Moninya Roughan, [the Moana Project](#) sets out to address the lack of information available to measure, monitor and predict how ocean warming will affect New Zealand waters.

"The Tasman Sea is warming at one of the fastest rates on Earth, up to three times the global average. The research from the Moana Project will help understand the impact this

has on our kaimoana (seafood) and in terms of species movement and abundance,” Roughan said.

The project will combine mātauranga Māori with science.

Zebra-Tech is developing high-tech, low-cost smart sensors which will be deployed throughout New Zealand’s exclusive economic zone with support from the commercial fishing fleet. The sensors will collect data that feeds into real-time models used to observe ocean temperatures and predict changes.

Iwi partners Whakatōhea will provide their traditional and contemporary oceanographic knowledge and experience in aquaculture.

“This has never been done before. It’s like crowdsourcing but to get a huge amount of ocean temperature data,” said Roughan.

The ocean forecasting model will bring in historical and new data focused on New Zealand waters.

Industries and forecasters currently rely on models that reach a 10sqkm resolution and satellites operated by other countries.

“We’ve been missing fine-scale resolution, and these models haven’t been attuned to New Zealand coastal ocean characteristics,”

The Moana Project will enable a more detailed picture of 5skm blocks – a level of resolution that other countries have yet to achieve.

Connectivity of marine species and how larvae are transported around the ocean will also be investigated.

“That’s important because we want to know where these larvae are coming from, where they are going, how their populations are sometimes linking together, and how this all might change in the future as the ocean warms,” Roughan said.

The project has received \$11.5 million in funding over five years from the Ministry of Business, Innovation and Employment. Victoria, Auckland, Waikato and Otago universities, NIWA, Cawthron Institute, Seafood New Zealand, Deepwater Group, MPI and regional councils are also on board.



MOANA PROJECT

Revolutionising ocean forecasting to underpin New Zealand's blue economy

Greenshell mussel benefits substantiated

New Zealand's native Greenshell mussel (*Perna canaliculus*) has been used to successfully reduce osteoarthritis symptoms.

The prevalence of metabolic-associated osteoarthritis (MetOA) is on the rise globally and is expected to be exacerbated by obesity and the ageing population.

Cawthron Institute, together with Massey University scientists, tested how including Greenshell mussels in the diet might affect the progression of MetOA.

Flash-dried greenshell mussel meat was fed to four discrete groups of rats with a predetermined presence of osteoarthritis over 13 weeks. The rats were fed one of four diets:

1. Normal control diet (ND)
2. Normal control diet supplemented with Greenshell mussel (ND + GSM)
3. High-fat, high-sugar diet (HFHS)
4. High-fat, high-sugar diet supplemented with GSM (HFHS + GSM)

Rats fed the HFHS diet had higher markers of MetOA than rats fed the control diet. When GSM was included, markers significantly reduced and cartilage degradation of the knee joints improved.

“This finding provides further evidence that GSM is protecting against osteoarthritis, and in the absence of changes in inflammatory markers suggests that GSM's effects may be localised to the cartilage microenvironment,” the study said.

Greenshell mussel's high omega-3 content is thought to be responsible for the anti-inflammatory, anti-arthritis benefits.

The results validate the preventative effects of Greenshell mussels against MetOA in rats. Further study is needed to confirm the benefits to humans.

News

The Government is moving to cut the complexity involved with re-consenting existing marine farms by creating a consistent set of rules across the country. Cabinet has approved policy provisions for the drafting of a National Environmental Standard for Marine Aquaculture (NES). The proposed NES seeks to:

- Provide a more efficient and certain consent process for managing existing marine farms within environmental limits
- Implement a nationally-consistent framework for biosecurity management on all marine farms.

The NES will go to Cabinet after drafting for a final decision in early 2020.

"The NES cuts red tape by standardising rules nationally for renewals of existing marine farms," Environment Minister David Parker said. "This achieves the right balance for industry and councils." Currently, each regional council has its own set of rules for managing replacement marine farm consents. Fisheries Minister Stuart Nash said the goal is to make it easier for councils and the industry to operate under a single set of rules for existing farms. "The new rules are in line with best environmental practice and are expected to encourage more investment in operating sustainably as well as driving innovation and growth."



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