MARINE FARMING ASSOCIATION
To Promote & Nurture Sustainable Marine Farming

APRIL 2022 NEWSLETTER

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IMPORTANT DATES

MFA ECSC Meeting
27th May 2022

AQNZ Board Meeting
1st June 2022

MFA Board Meeting
10th June 2022

Last day to submit Q3 audits
31st July 2022

MFA & MSOP Conference
26th August 2022

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GM's Comment

It's difficult to reflect on the past few months without a certain sense of doom and gloom developing. Whether it is inflation, invasion, climate change, labour shortages or the pandemic, the 'headwinds' as they are so politely described seem to be approaching gale force. That said, we remain fortunate to be tucked away in our little corner of the South Pacific as geopolitical tensions surge internationally.

On a more positive note, we have now entered the orange traffic light setting which sees the end of indoor gathering limits and prescribed social distancing. Things are looking up for the long overdue conferences and industry events that have been on hold for several years. There are also some positive signs in our export markets, with both price and volume for most formats trending in the right direction.

I'm also pleased to see a certain amount of momentum developing around addressing labour shortages in the medium to long-term; and around the development of an innovative OceanTech sector here in New Zealand. Our colleagues at AQNZ are doing some great work here. Both of these workstreams are critical to industry productivity, which needs to remain front of mind as we rebuild from the pandemic and work towards the aspirational $3b target set by the Aquaculture Strategy.

On the PMEP front, the Variation 1/1A Hearing Panel continue their deliberations and have issued a number of Minutes seeking additional information from submitters. Mediation on the wider PMEP is also ongoing with the 'transportation' topic addressed during March. MFA members should have received a detailed PMEP update from us mid-April. Please get in touch if you have not received this.

The final round of king shag banding and GPS tracking under the SIL Project took place in early March, with some 14 birds from the Trio's 'volunteering' for data collection duties. Mike Bell is currently working on the Year Three report and assures us there is no shortage of data. Watch this space for a number of scientific journal articles and some media coverage on the research findings.

The MFA Contestable Fund is now open and seeking applications. This $40,000 of seed funding is available to individuals or organizations willing to tackle some of the pressing issues for the Top of the South industry. Successful applicants will also benefit from access to the MFA network of industry contacts and support from our various committees. More information can be found on the MFA website.

Over the past few months we have been working with MDC to refresh the Smart+Connected Aquaculture Group. Going forward, each meeting will

have a central theme that up to six presenters will address. This approach draws on the success of the annual forum and we hope will entice a broader membership. Having just participated in the March meeting which focused on data acquisition and management for aquaculture, the new format looks as though it will be very successful. Please see the article on S+C Aquaculture for more detail on upcoming meetings.

The MFA work with schools continues, and despite the covid challenges we managed to get two groups of students out on the water in April, with more to come in May. These on water days are always well received by students and teachers alike, with many not even aware that aquaculture was 'such a big deal' in Marlborough prior to taking part! Thanks to the Marlborough Chamber of Commerce for also supporting the initiative, and to those industry members and researchers who did such a good job sharing their knowledge with the next generation.

Best of luck with managing Omicron both at home and in the workplace.
Ned.

Mussel Restoration Project for the Marlborough Sounds - April 2022 Update

Testing Mussel Recruitment

Background

Wild mussel beds once covered extensive areas of Pelorus Sound, but were dramatically overharvested in the 1960s and 1970s, leaving only around 3% of wild mussels. The Pelorus Sound Mussel Restoration Project has successfully trialled restoration methods for these lost beds and has restored over 50 tonnes of mussels. One of our key goals for this restoration project is establishing self-sustaining populations, which means we need new mussels to recruit into the mussel beds. However, recruitment is difficult to monitor efficiently without destroying some of the restored bed. Instead, we have designed and deployed a smaller-scale method to test whether recruitment is occurring locally, which should tell us whether we can expect our mussel beds to also recruit and grow!

The four experimental treatments we are trialling (clockwise from top left): Mussels and spat-laden seaweed, mussels without seaweed, no mussels and no seaweed, and seaweed without mussels.

The experiment is currently running at Double Bay (near Raetihi Lodge) and each tray is marked with a white float visible at low tides.

Experimental design

In mid-March we harvested wild seaweeds and hung them off a dock in Double Bay for two weeks. We have previously found this method to lead to good spat catches and had good luck this year as well with each seaweed sample catching hundreds of spat (both blue and green mussels). At the end of those two weeks we brough 24 small trays out to Double Bay and filled them each with large rocks. Additionally, half of the trays each had 20 mussels (extras from a prior restoration effort) placed on top of the rocks. Finally, half of the trays (six with mussels, six without) each had a piece of the spat-laden seaweed strapped onto a rope suspended above them. All 24 trays were brought into the water in Double Bay and placed 2 m from one another in about 1 m of water depth on the low spring tide.

Looking forward

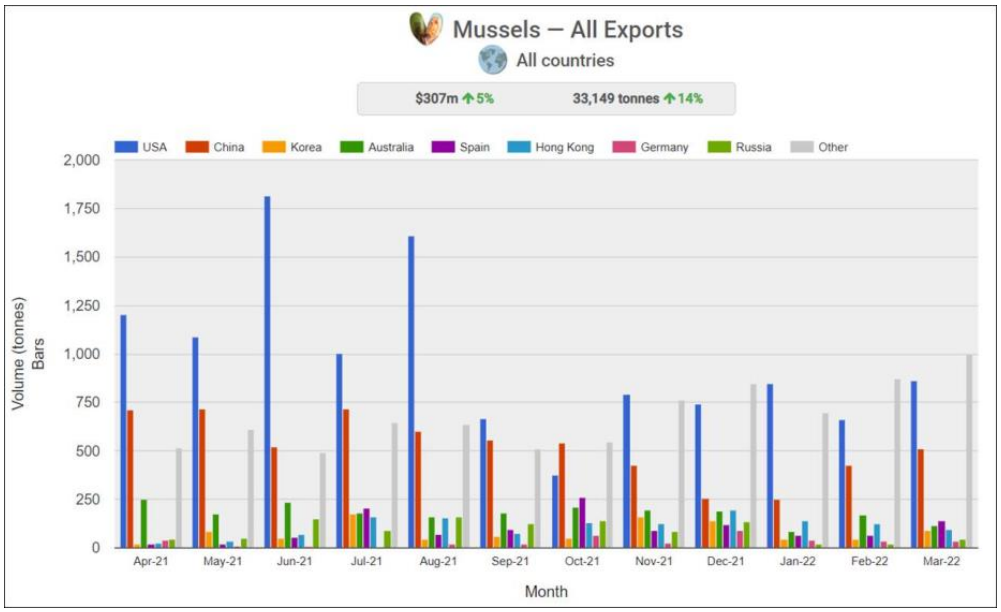
We will take half of the trays out of the water after one month and then take them back to the laboratory to look for any new mussel recruits. Then another six weeks later we will check the last of the trays in to see whether new recruits survived long enough to grow. This data will help us see whether recruitment is occurring in Pelorus Sound and whether it can be improved with the presence of other mussels or by artificially seeding the area with spat-laden seaweed. Ultimately this should tell us a lot about what we can expect for our restored beds and what they may look like in the future!

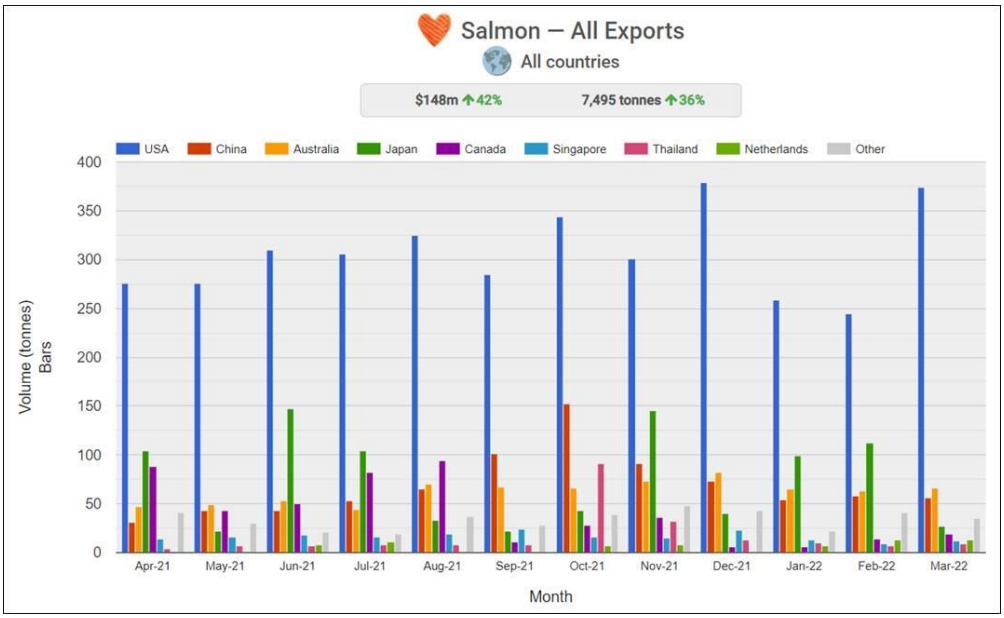
I hope this has provided an interesting look into some of the work going on in the area and I will continue to update with more information and results! As always if you have any comments or feedback, please feel free to reach me at ttoo112@aucklanduni.ac.nz!

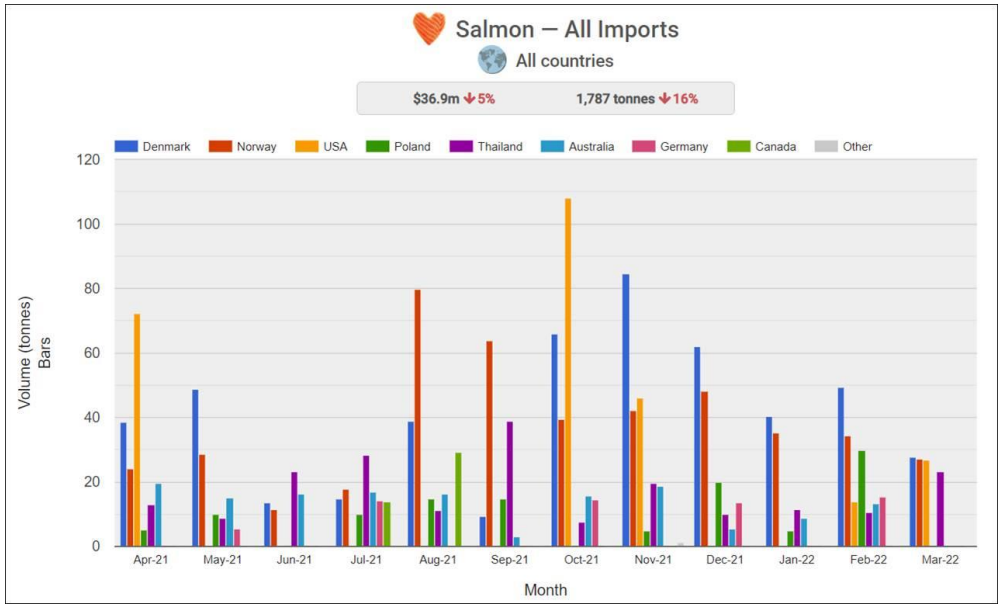
Cheers,

Trevyn Toone, Ph.D. Researcher, University of Auckland (based in Nelson)

AQNZ Export Data







Marine Biosecurity Update

At the TOS Partnership meeting in March, Chair Guinny Coleman outlined what she saw the next decade bringing.

So what will the next decade bring?

Pressures can be expected to increase. There are many new organisms in the top of the North Island that are yet to reach us. Lower water temperatures have protected us from some in the past but that is changing, increasing our risk profile. One third of all identified marine pests around the world were never recorded as a pest anywhere else. Our next worst marine pest may be quite unknown yet.

All this points back to control of vectors. The work of the Top of the North on pathways management is very welcome. We need to build our ability to quickly respond and coordinate responses around the country.

New science and tools could be a big help. We have already trialled environmental DNA. Cawthron is continuing to develop this for passive surveillance. Deploying this and other tools could give us better early detection and perhaps confidence about pest free areas that we need to preserve.

Some of the pests already spreading in the region will have adverse effects that need to be managed. The clubbed tunicate is on mussel farms already. How this will affect the industry is not yet clear.

It will be important to sustain the Partnership through changes to local and central government structures. This is where the broader community, particularly our Treaty partners will be important. If the work is widely valued it will not be lost as things change.

Peter Lawless

Karen still sees fresh potential for greenshells

Five years into her role leading 330 people across Kono's food division, most of whom work within the greenshell mussel operation, Karen O'Brien still sees huge opportunities ahead for marine farming.

"I continue to be blown away by the potential. It's still very much a young industry."

She came into Kono after twenty years in the dairy industry. While she'd always enjoyed mussels, moving to the heartland of greenshell mussel production provided a revelation.

"The quality of the mussels grown across Te Tau Ihu just blew me away."

As a food technologist, she wants to see if that freshness can be delivered the world over.

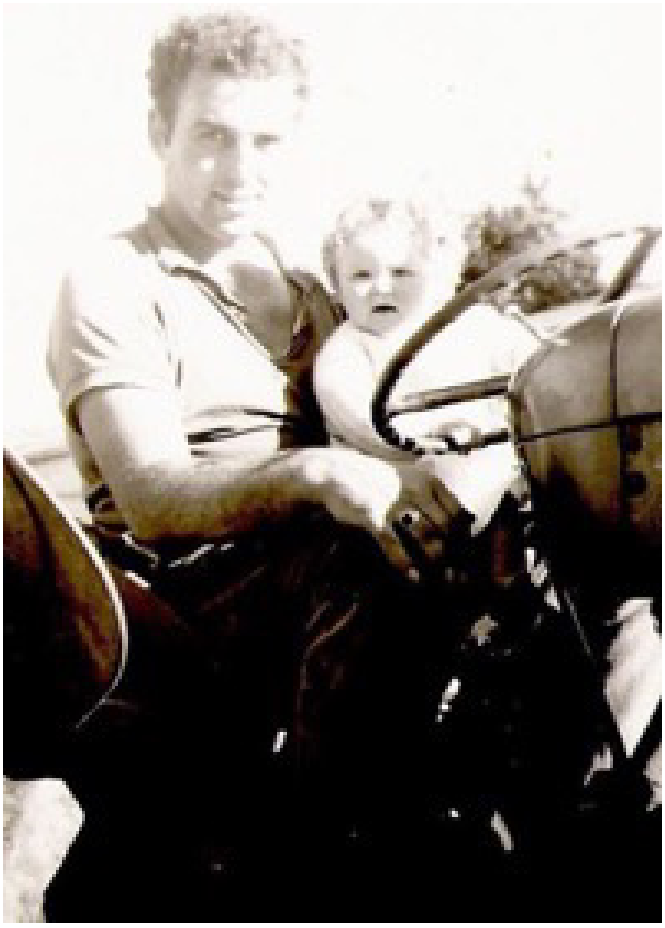
"If we could capture the fresh quality in every mussel, we'd never meet demand."

Kono uses the industry standard frozen half shell as it's exporting vehicle but whereas most companies focus wholly on food service, 25-30% of Kono's greenshell are sold into retail outlets utilising a consumer-oriented trays pack format.

"We try to get as close as we can to the end customer."

Smile and say cheese – Karen tends to avoid the camera but here she is presented with an award for her cheese-making at Puhoi Valley

Greenshell mussels are a staple in Karen and Chris's household – this is her take on a red curry – "with coriander and anything else we have in the kitchen"



Karen has rural roots – here with her dad on his tractor

Karen believes mussel producers need to continue innovating to be able to contribute their share of the $3b by 2035 target the Government has set for aquaculture as a whole.

"We are still struggling as an industry to connect with our growth strategy. I still have great hopes and the foundations have been laid."

As someone who grew up in rural Taranaki including some teenage years on a farm, Karen knows about fattening lambs or producing beef cattle and thinks most Kiwis have some understanding of what's involved.

"People understand farming on the land because they can feel it, touch it and smell it. They can generally tell if the animals are in good shape or not."

She says people looking at a marine farm wouldn't have a clue about the state of the crop.

Part of the challenge for the industry is educating people about how mussels are produced and how they deliver high-quality food with only a fraction of the environmental footprint of land-based farming.

When overseeing cheese production at Puhoi Valley and earlier for Fonterra in Taranaki, the answer to more demand was to ask for more tankers of milk.

With mussels, a lack of spat can mean problems with supply in two years'

time. The impacts of Covid-19 on demand have meant farms carrying mussels beyond the size that some markets prefer.

"There are just layers of complexity involved in producing greenshell mussels."

She's enjoyed that challenge and with it, the approach taken by Kono's owners, Wakatu Incorporation.

"It's been super-pleasing working within an organisation with the same value set. It's always more than just the commercial aspect."

Karen spent her first 12 months in the job improving her Te Reo and cultural appreciation and also worked alongside Kono's then CEO Rachel Taulelei until she stepped down last September.

"Rachel was not just inspirational, but she provided plenty of opportunity for professional and personal challenges as well. Her passion for the Wakatu whanau and the New Zealand seafood industry is just legendry and sets a very high standard for others to follow."

Karen's role, while centred on mussel on water and processing operations also extends to the Annie's fruit bar operation produced in Marlborough.

She's now very settled here with her husband Chris, originally a chef who later also worked in the food industry, who now oversees process improvements at the Wither Hills winery.

Looks like there's plenty of marine farming still ahead of her to help the industry achieve its potential.

Brendon Burns

MFA Newsletter Stories

If you have a story that you would like to see published in our newsletter, please forward it to info@marinefarming.co.nz for consideration.

Our newsletter comes out every two months – February, April, June, August, October, and December.

MARINE FARMING ASSOCIATION
To Promote & Nurture Sustainable Marine Farming

SEED FUNDING OF UP TO $40,000

Applications are open for aquaculture-based innovation projects. The fund is available to all New Zealand residents, citizens and those studying at New Zealand tertiary institutions.

The Marine Farming Association (MFA), supported by the Environment Committee and the Research, Development and Technology Sub-committee, are offering a contestable fund for those interested in developing products or services for the benefit of the aquaculture industry and MFA members.

Research priorities include,

- Spat retention
- Spat health
- Maximising the value of existing farmed species
- Addressing emerging issues
- Restoration of marine habitats and ecosystems
- Communicating the benefits of aquaculture
- Advancing restorative aquaculture practices
- Reducing plastic use
- Reducing vessel noise
- Minimising light spill
- Working towards zero waste from marine farming activities
- Recycling and repurposing marine waste, tools and equipment
- Supporting the industry to adapt to climate change

Greenshell Mussels

King Salmon

Pacific Oysters

Find out more at www.marinefarming.co.nz

Improving the resilience of mussel farms against storm events

A storm in July 2021 badly damaged some mussel farms in Tasman Bay (top of the South Island, New Zealand). Several screw anchors were completely dislodged and the backbones they were holding down became entangled with others. It is suspected this resulted in a domino effect causing additional backbone anchors to fail. Aquaculture NZ, MPI, the Marine Farming Association, MacLab NZ, Clearwater Mussels and Te Atiawa Trust commissioned Cawthron Institute together with Oceanum Ltd to undertake a wave and engineering modelling exercise. We sought to identify why some Tasman Bay farms failed during the July storm (yet were fine during the likes of Cyclone Gita in 2018). We hoped to identify aspects of mussel farm design and farm operations that can reduce peak forces on screw anchors in longline farming systems.

To put the July 2021 storm into the context of previous events in Tasman Bay, Oceanum Ltd used high resolution 'wave hindcast' modelling to recreate the hour-by-hour wave conditions at the farm site for the last 43 years. This technique uses historic offshore wave and regional wind data, together with information on bathymetry, tides, currents, and topography, to estimate the wave parameters of significant wave height, peak period and wave direction at the farm site. It is a well-established discipline and model results have shown very good agreement with measurements at many locations around New Zealand.

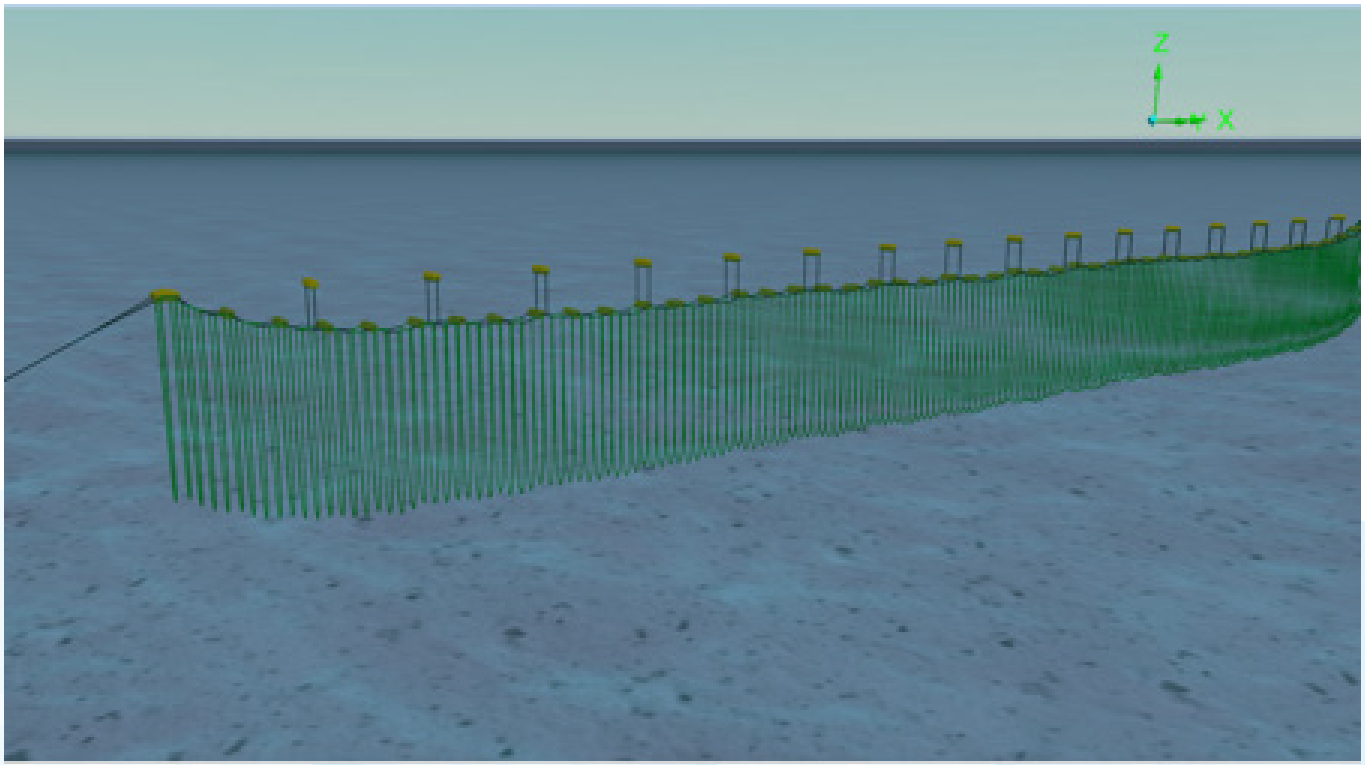


Figure 1. 3-D structural model of the Tasman Bay farm in still water

Results from the wave hindcast were curious in the sense that the storm that caused such undue damage was by no means a freak event – rather, a 1-in-7-year event with significant wave height of 3 m. The largest storm on record, Cyclone Fehi, passed over the farm in January 2018. Despite significant wave heights of 3.3 m, the farm suffered no damage. Tidal conditions were similar during both storm peaks, so what was different?

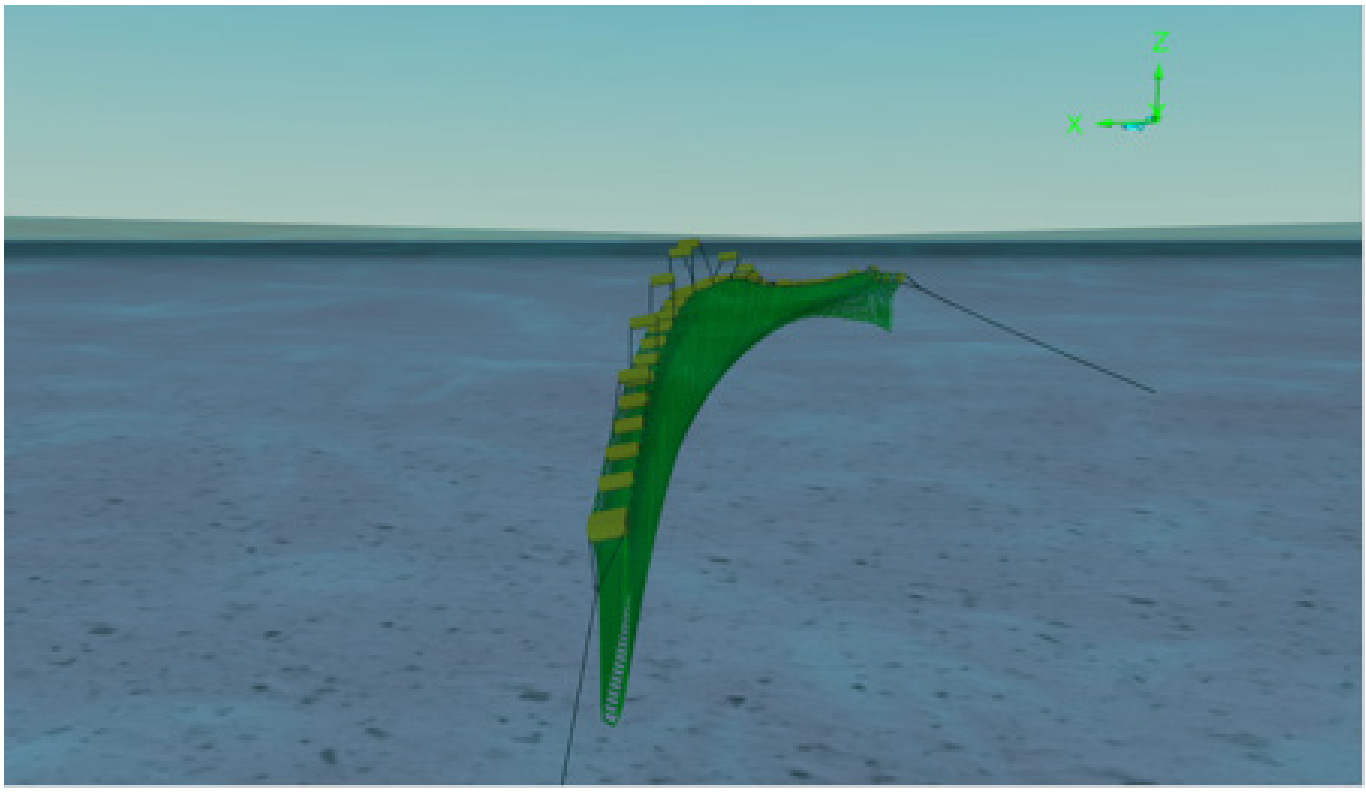


Figure 2. Looking down the backbone of the modelled farm during the July 2021 storm event

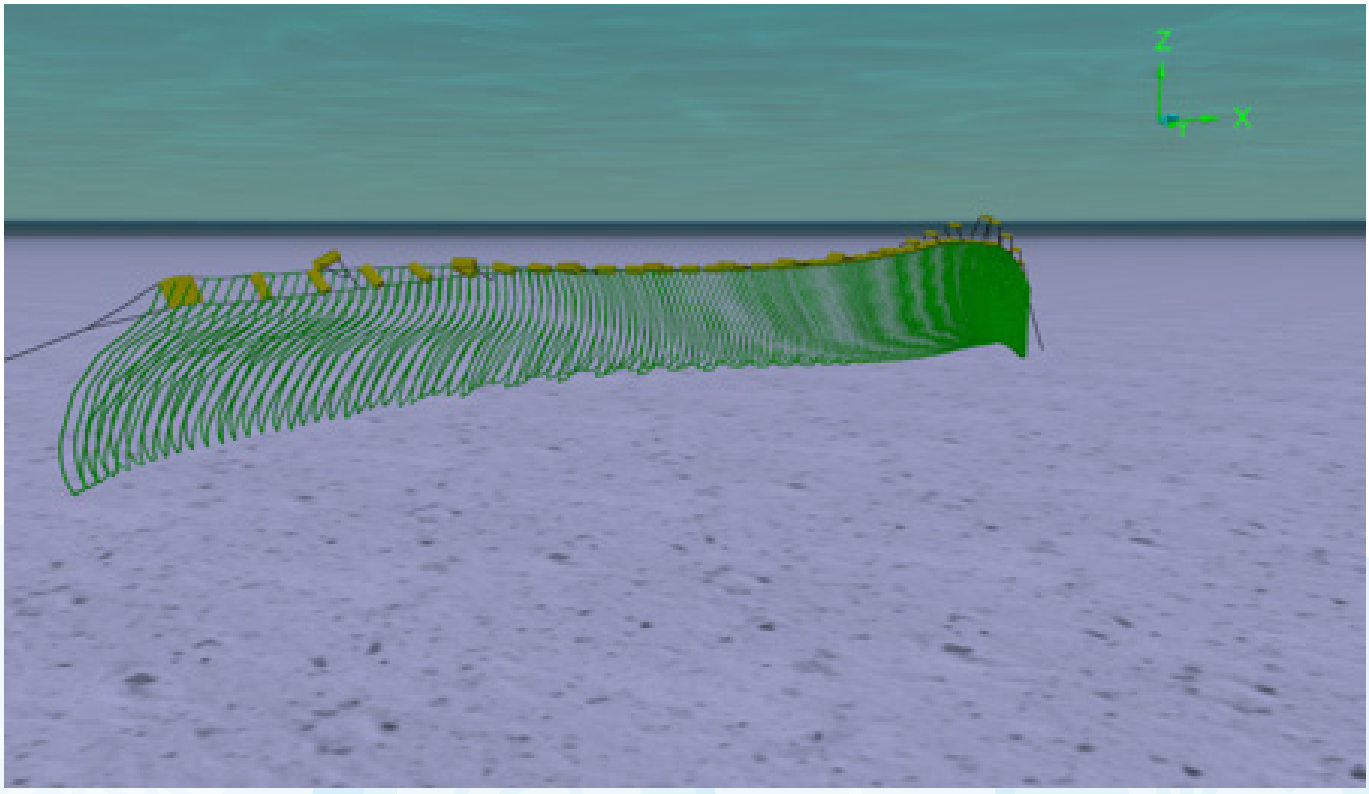


Figure 3. Looking across the backbone of the modelled farm during the July 2021 storm event

Using the wave data supplied by Oceanum, Cawthron Institute built a 3-D structural computer model of a Tasman Bay farm using the Orcaflex ocean engineering package. This model works by breaking flexible structures (such as a mussel farms) into a network of thousands of connected points called nodes. By applying the physics of force and motion at each node, the model can predict the deformation of the structure under waves and currents in-time and supply detailed information on forces and motions for every node. With the farm fully loaded with mature crop (as it was at the time) and using the July storm data, the model predicted a peak force of just over 15 tonnes hit the upstream anchor during a rogue wave (shown in Figures 2 and 3).

On top of replicating the storm event, over 400 additional simulations were completed that tested aspects of farm design such as backbone orientation, warp ratio, buoyancy, backbone length and dropper spacing. Other simulations tested adding moorings, adding flexible sections of rope and adding dampening floats (buoys attached midway along a warp). The Tasman Bay farm was heavily loaded with crop at the time of the July storm event and findings from this work suggest that this was a contributing factor towards anchor failure.

A common issue observed during the modelling was that changes to the farm that reduced anchor stress often caused the backbone to sink closer to the seabed. Additional design tweaks were then required to remedy this such as by increasing the warp ratio. By cumulatively increasing backbone length, increasing warp ratio, adding a 3 m bungy segment to the anchor warps, and rotating the farm; anchor stress was reduced by 40% while crop was simultaneously increased by 30%. In summary, this work showed that besides using stronger anchors, simple changes to longline farming systems and farm management can improve resilience to high energy storm events.

Malcolm Smeaton, Cawthron Institute

Obituary – Lloyd Owen

"You'd go to work everyday with your mates – what could be better."

That's the way Hugh Owen remembers working for over 50 years with his late brother Lloyd, who passed away in January. The pair, widely known as the OBros, devoted much of their working lives as marine and auto electricians to servicing Marlborough Sounds marine farmers, among whom they made many friends.

At 76, Hugh is still working in Owen Brothers Marine Electrical (not so much now he says, all the fun has gone) and Lloyd, at 82, was there until he began to become unwell last July.

Lloyd's wife Marie met him in the late 1950s when she was 16 and they married a few years later.

Lloyd did an adult electrical apprenticeship at Safe Air. After a few years Safe Air did one of their many restructures and Lloyd, having no children, took redundancy, as men with children were kept on.

He and Marie bought the R D Foley electrical business with a friend and his wife, though they'd already made arrangements to travel to the UK where Hugh was already located.

Both Lloyd and Hugh worked for Jack Brabham who at the time was the Formula One World Champion. They had a great time and learned a lot and it cemented a life-long love for the pair of motor-racing.

Their UK boss was Gerry Hones who later emigrated to NZ with his family and his son Mark Hones still lives in Blenheim. With Gerry's help they then built Formula Ford race cars, with Lloyd winning the internationally-open Dan Higgins Memorial Race two years in a row in 1976 and 1977. He also won the NZ Group N Rally Championship in 1990.

The brothers earlier return from the UK had come about because their mother was very ill. Lloyd went back to his business and his partner wanted

out. Lloyd was joined by Hugh and they changed the name to Auto & Marine Electrics Ltd, with Marie also working long hours in the business. After a while, Lloyd started working solely on the marine side doing the electrical installation of many new vessels at Jorgensen's and Morgan's boatyards in Waikawa and Picton.

The mussel farming industry was getting underway and they decided to concentrate on marine clients as Owen Bros Marine Electrical. In 2001, they sold the automotive side to Paul and Jackie Bugler who had worked for them for many years and the business continues to this day.

The brothers worked long days travelling to mussel farmers and sorting out electrical issues in harvest, servicing and supply boats. They didn't own a boat themselves. "We knew what it cost to run them," says Hugh.

They loved working in the mussel industry and made a lot of friends. Lloyd was very proud of his work, saying vessels and aircraft were very similar and the work had to be of a very high standard because if either stopped, you couldn't get out and walk home as you could with a motor vehicle.

They worked for many companies including Sanford, Clearwater, Talley's, Elaine Bay Aquaculture, Kono, Arista-Cat Mussels among others. Electrical installs were done on lots of new vessels and refits on older ones.

Despite the long days, the brothers always got on well. "We never had an argument. We never thought we were going for work – just entertainment," says Hugh. It was all a very enjoyable hobby for them.

Lloyd at the wheel of one of many vessels he serviced

They were notorious for their practical jokes. One example recounted in Lines in the Water involved industry pioneer John Pickering. The brothers tied up a coil of lashing on the back of John's ute to a Havelock lamppost before he set off to do a few jobs. He got to the wharf before discovering a near empty spool. "The air was blue as he retraced his journey through Havelock on foot, re-winding nearly a kilometre of lashing …"

Hugh says some other stories involving him and Lloyd still can't be told. "We did have some marvellous things done to us though."

Rob Pooley says his engagements with Lloyd would always start with a laugh even though it was highly likely it would have been at his expense.

"But I'm sure everybody in his life shared that wonderful elixir he delivered of a delightful sense of humour, that would on every occasion have us all cracking up."

He says the humour didn't detract from Lloyd getting any job done and engaging with everyone around him. "That always included our staff on the water and is something that we all held in the highest of respect."

OWEN, Lloyd William (L.W.): On January 5, 2022, peacefully at the Marlborough Hospice, in his 84th year. Dearly loved husband and soulmate of Marie for 60 years. Loved and respected brother and brother- in-law of Margaret and the late Ian Mitchell; Bob and the late Olwyn Patchett; Hugh and Jill; Megan and Larry Soloman; and Raewyn Owen. A loved uncle of all his nieces and nephews.

Messages to 19 Dunbeath Street, Blenheim 7201, or www.cloudybayfunerals.co.nz In lieu of flowers, a donation to the Marlborough Hospice (A/c No: 03 1369 036520700 Ref: Owen) would be appreciated.

Rob says Lloyd and Hugh were a close and admirable team providing service for marine farmers across so many years. "Lloyd was one of life's genuine good buggers and his contribution to our industry will not be forgotten by those of us who saw how hard he worked for us – and always with a smile on his face."

Throughout his life, Lloyd Owen touched so many lives; people seemed to be drawn to him.

His life was full of love, laughter and fun. He was larger than life itself. He will be sadly missed in the marine farming industry.

Brendon Burns

Calling all seafood stars

It's that time of year again – nominations are being sought for the Seafood Stars Awards run by Seafood NZ.

They celebrate innovation and excellence within the wider industry and are presented to those who have made a significant contribution.

The categories are F**uture Development Innovation Award**, Y**oung Achiever Award** (35 years of age or under), and **Longstanding Service Award.**

Nominations close on June 30 and winners will be announced at the Seafood Conference in Nelson (Covid permitting) in August.

Full criteria and and nomination forms can be found at www.seafood.org.nz/events or requested from Karen.olver@seafood.org.nz

Brendon Burns

Students get hands-on experience

Three groups of top of the South college pupils are again able to have hands-on experience of all the region offers in aquaculture, courtesy of a MFA and Marlborough Chamber of Commerce joint initiative.

Two groups of Marlborough pupils and their teachers were hosted aboard the industry vessel the Grey Heron in the Sounds in April, and in May the Nelson colleges get their turn.

In four groups, the students rotated around the cabin and bridge. NMIT tutor Craig Prichard and MFA office administrator Alex Henry guided students through the huge range of careers that aquaculture opens up.

Many of the students are marine science students so they were somewhat aware of the jobs on boats and research opportunities, but few had thought about the careers in quality assurance or health & safety, as hatchery technicians or even accountants.

MFA President and MFML owner Jonathan Large then tied the students up in knots.

He'd cut multiple lengths of rope and handed one to each student or teacher before taking them through the basics of tying the knots used to secure mussel lines to backbone ropes.

Meanwhile, Auckland University PhD candidate Emilee Benjamin took

Jonathan Large and MGC Careers Advisor Deb Martis enjoyed seeing her tied up by year 12 student Hana Berry

Dean Higgins couldn't be on board to outline his career so Alex brought a cut-out

students through what she has learned through her work on the MFA and SFF Pelorus Mussel Restoration Project. Her enthusiasm for aquaculture and mussels in general was obvious to all the students.

The vessel's twin 1000hp Caterpillar engines see it easily reach over 30 knots allowing the students to see a lot of aquaculture activity in the space of a few hours.

In less than an hour from Havelock, Grey Heron pulled up alongside a mussel harvester – on this occasion it was Masden Marine's Tasman Challenger, harvesting for Talley's in South East Bay.

A line was pulled up for inspection and Kris explained the harvesting process.

He also talked about the emerging use of clamp on float systems, floats designed to stay on the line, reduce backbone and float wear as well as reducing lashing use. "You can't physically tie a float to a backbone as tightly as the clamp grips" says Kris. "Plus, they are four times quicker to attach."

Emilee Benjamin showed them how to love mussels. From left MGC students Hana Berry, Holly Large, Tamara Livingstone, Jessie Jatjens, Emilee and Zoe Williams

On the bridge, Grey Heron skipper Kris Solly showed students the catamaran's sonar and radar capacities and other high-tech functions.

Jonathan says approximately 8m of rope is traditionally used to tie a buoy to a backbone line, so all of that is saved by using clamp floats.

Students also visited a Sanford farm at Richmond Bay where another line was pulled up and they were each given a chance to observe the marine life that calls a mussel farm home.

Jonathan also showed the students the art of opening a mussel and some were even game to try eating one raw.

Jonathan then boiled the kettle and blanched some undaria before letting people sample it, noting that seaweed dishes are very popular in many parts of the world.

Students also visited the NZ King Salmon farm at Kopaua. They were shown around by Charlie Park who started the tour with the hoppers on the feed barge. The barge holds 240 tonnes of fish feed when full.

The fish are fed up to five times a day depending on their size, with this monitored digitally from the nearby farm at Waitata Reach.

Charlie outlined how the three crew on the Kopaua barge worked 7 days on and 7 days off with a mix of activities including monitoring water quality, observing seals, diving to check nets andcleaning or fixing nets.

Once a month, the crew did a beach clean-up in the area.

Mason Henderson tastes a raw mussel

People start on salaries of around $50,000 with lots of opportunity and support to progress and learn new skills. Not bad considering the time off as well.

Charlie says life on the barge isn't all work – the crew are allowed to fish in their off-hours and some beaut snapper and kingfish are among the haul.

On the return journey, the students visited the king shag colony at Tawhitinui, which has been monitored as part of the MFA led King Shag Research Project. Jonathan explained that the three-year research project had shown that marine farms were not having a negative impact on king shag, in fact, the birds happily foraged around farms and preferred them as safe roosting sites for digesting their meal.

The students said the day had shown them the range of opportunities that

exist in aquaculture and at least one saw a career ahead.

"I quite like the idea of being in the dive team at NZ King Salmon,'' says Hayden Posa, a year 12 student doing aquaculture studies at Queen Charlotte College.

Jonathan Large says the point of hosting the students is to introduce them to the industry and seed the idea of a future career.

"It's great to see how much they enjoy the onwater days and I'm sure we can only benefit from showing our young people what we do and how much we have to offer."

Brendon Burns

Grant is getting dropped

Grant Boyd's job – managing floating (and farm) development for Sanford – hasn't exactly prepared him for his next challenge; jumping out of an aeroplane.

He is picking up the mantle from Sanford colleague Ted Culley who two years ago raised more than $30,000 for the Graeme Dingle Foundation's Marlborough operation which he has long supported along with Sanford which is a major sponsor.

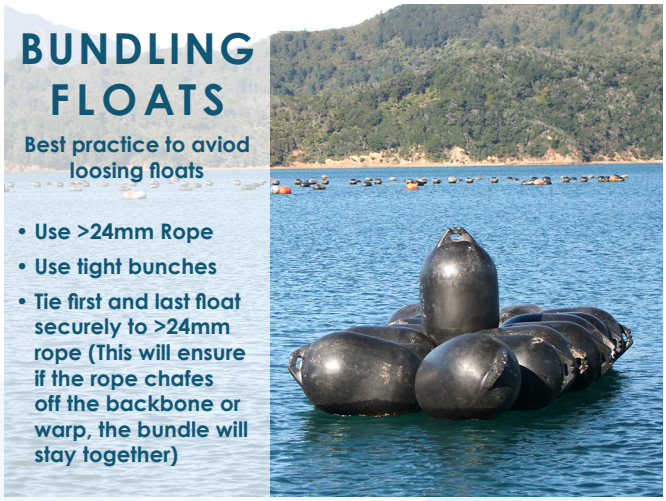
MFA President Jonathan Large was also part of that year's jump but couldn't match Ted's total, raising nearly $6,000.

Grant has set a modest $5,000 target for his part in Drop for Youth 2022 and to date has raised more than $700 in pledges. However, he might yet lift that considerably as it's not the first time by any means he's contributed to the Graeme Dingle Foundation. In 2016, he and then Sanford colleague Zane Charman raised more than $30,000 for the GDF Marlborough by kayaking across Cook Strait.

Grant is also a keen supporter of the Foundation's programmes in Marlborough like KidsCan which positively engages with over 50% of Marlborough kids every week and Career Navigator which helps young people into work and careers.

All funds raised by Grant's jump will be used to cover programme delivery costs within the Marlborough region.

You can support Grant here. https://givealittle.co.nz/fundraiser/grant-boyd-sanford-drop-for-youth-2022



What happened to the Provincial Growth Fund?

If you ever wondered what happened to the Government's $3b Provincial Growth Fund – or have an aquaculture project you think might benefit from such funding – there's a new opportunity with local input and advice.

The Kanoa Regional Economic Development & Investment Unit took over from the PGF in 2018 and last May a Regional Strategic Partnership Fund (RSPF) was created to further boost regional economies.

The aquaculture industry is now being encouraged to consider applying to the new fund with ready advice available to top of South applicants from local, experienced business-people.

Pete Coldwell, Marlborough's Chamber of Commerce General Manager is one of the four top of South people charged with helping potential Kanoa fund applicants determine if they have a viable application. The others are Ali Boswijk, who is Pete's counterpart at the Nelson Chamber, Marlborough District Council Economic Development Manager, Neil Henry and Fiona Wilson, Chief Executive of Nelson's Regional Economic Development Agency.

Pete says the group provides advice to potential applicants on whether they've got what it takes to bring together a case with the potential to secure Kanoa funding.

"If you can show you've got a game-changer and a well-developed business case you are in with a chance. It can't be a back of the fag packet exercise."

During its time, the $3b Provincial Growth Fund supported around 75 applicants across the top of the South to a total of around $115m. That included the support given when Covid-19 hit two years ago. The PGF funded some 'shovel ready' projects including an $18m grant for the Whale Trail cycle initiative from Picton to Kaikoura, $3m for the Flaxbourne irrigation scheme a $3.79m loan towards the cost of the NZ Wine Centre at the NMIT Blenheim campus.

Nelson projects did better earlier on with the PGF; the Cawthron Institute picked up a $6m loan for the National Algae Centre and the Nelson Artificial Intelligence Initiative got a $3.4m loan.

There was also the offer of substantial loan funding for the Port Tarakohe development but this was not picked up.

Pete Coldwell says the $3b PGF fund has now become the $200m Kanoa fund. He says there have been no aquaculture projects to date applying for any funding from Kanoa.

“Now is a good time to come forward.”

While there are more rejections than acceptances, Pete says if a project has potential, the Kanoa fund staff can and do recommend other avenues of Government support to viable initiatives.

Pete Coldwell is happy to take calls from anyone interested in potentially applying for funding from Kanoa. He can be reached on (03) 577 9575.

Brendon Burns

First phase of King Shag research concluding

Three years of research on King Shag supported by SIL, MFA and the aquaculture industry will soon wrap up after a final GPS tagging exercise in March.

MFA President Jonathan Large, whose vessel Sorcerer again hosted ornithologist Mike Bell over four days around the Sounds, says the indicative results are very encouraging for the industry and he hopes there will be continuing support for King Shag research.

"I believe we need to continue as an industry because we feel obligated to help look after these birds, especially as other agencies have pared back funding."

Mike Bell says his final report due by the end of June will provide the conclusions of the research but he says some things are clear.

"All the information we've got is that the population of King Shag is stable."

There had been some earlier suggestions that the species, found only in the Marlborough Sounds, was in decline.

Mike says the research puts that to rest. "We've gone from one of the least studied shags to the most studied in Australasia."

The research has included banding chicks and putting GPS trackers on birds from nesting sites in Pelorus and Queen Charlotte Sound and most recently at Kuru Pongi, the Trio Islands which sit north-west of the Chetwodes. Representatives of Ngati Koata within whose rohe Kuru Pongi sits were on board Sorcerer to bless the installation of trackers on 14 birds, with 13 successfully attached.

This was done at night when there was no moon, which provided less disturbance of the birds than earlier daytime capture and release strategies.

Analysis of the GPS data from across the Sounds shows tracked birds favour marine farms to rest on after feeding.

"If there's a marine farm nearby they will almost always pick that rather than going to land," says Mike.

The biggest risk that Mike sees to King Shags is climate change, with increasingly powerful storms washing away the bird's low-lying nests as well as creating even more sediment on the Sounds seabed.

Last July's storm event (that also led to widespread flooding in Marlborough) wiped out all of the nesting site at Duffer's Reef in outer Pelorus. He says sediment from such events doubly impacts on the King

Shags food supply; they are benthic feeders, mainly feeding on flatfish whose own food chain is also affected by sediment.

Disturbance of the notoriously flighty birds is another threat. Jonathan Large says they need better protection from boaties because coming close can cause birds to leave nests with young on, which seagulls will then scavenge.

“It could be as simple as having some 5kt buoys around the colonies in their breeding season (late autumn/early winter),’’ says Jonathan.

The research also show juvenile birds may move around between some of the seven King Shag breeding sites around the Sounds. Females don’t dive as deep as male birds but they dive for longer periods seeking food.

“In three years, we’ve learned a huge amount,” says Mike Bell. The banding and GPS tracking has provided a lot of data on King Shag roosting and travel patterns.

Their survival rates and breeding patterns remain a key area of interest. Only around a third of King Shag survive their first year although they may be able to live for 15-20 years or more if they get past this point.

MFA GM Ned Wells, who chairs the King Shag Working Group (KSWG), has confirmed ongoing industry support for King Shag research.

“The MFA has agreed to underwrite an additional three years of band resighting effort, which should capture important population data such as age of first breeding, juvenile and adult bird survival rates and inter-colony movements.”.

“It’s great to also have the Friends of Nelson Haven (FoNH) onboard and contributing funds to this workstream,” says Ned.

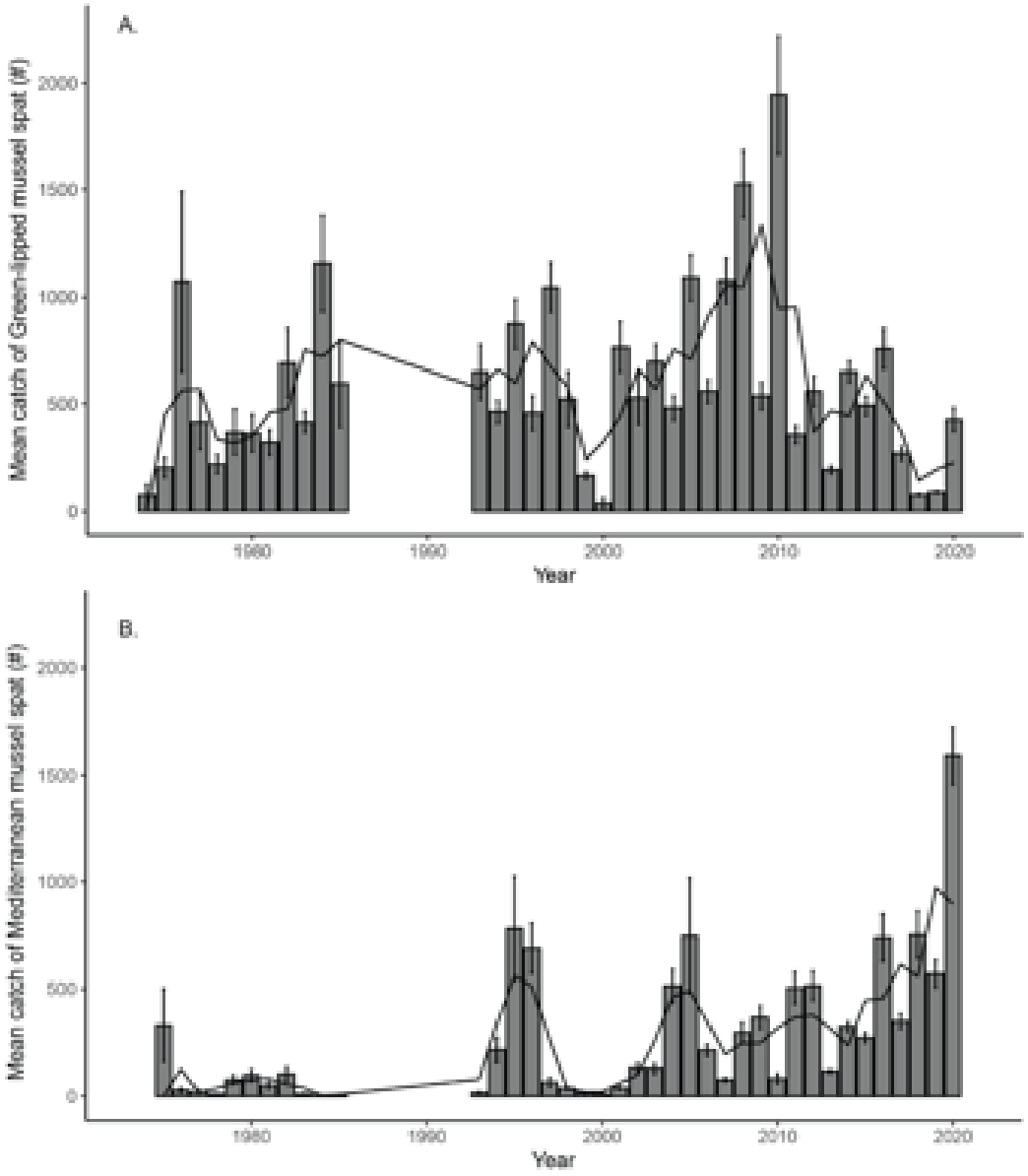
MFA is proud of what the SIL project and the wider KSWG has achieved and looks forward to working with the group to publish and celebrate the research findings.

Echoing that, Mike Bell adds: “It has been a very positive, and science focused working group, the best such group I have worked with.”

Brendon Burns

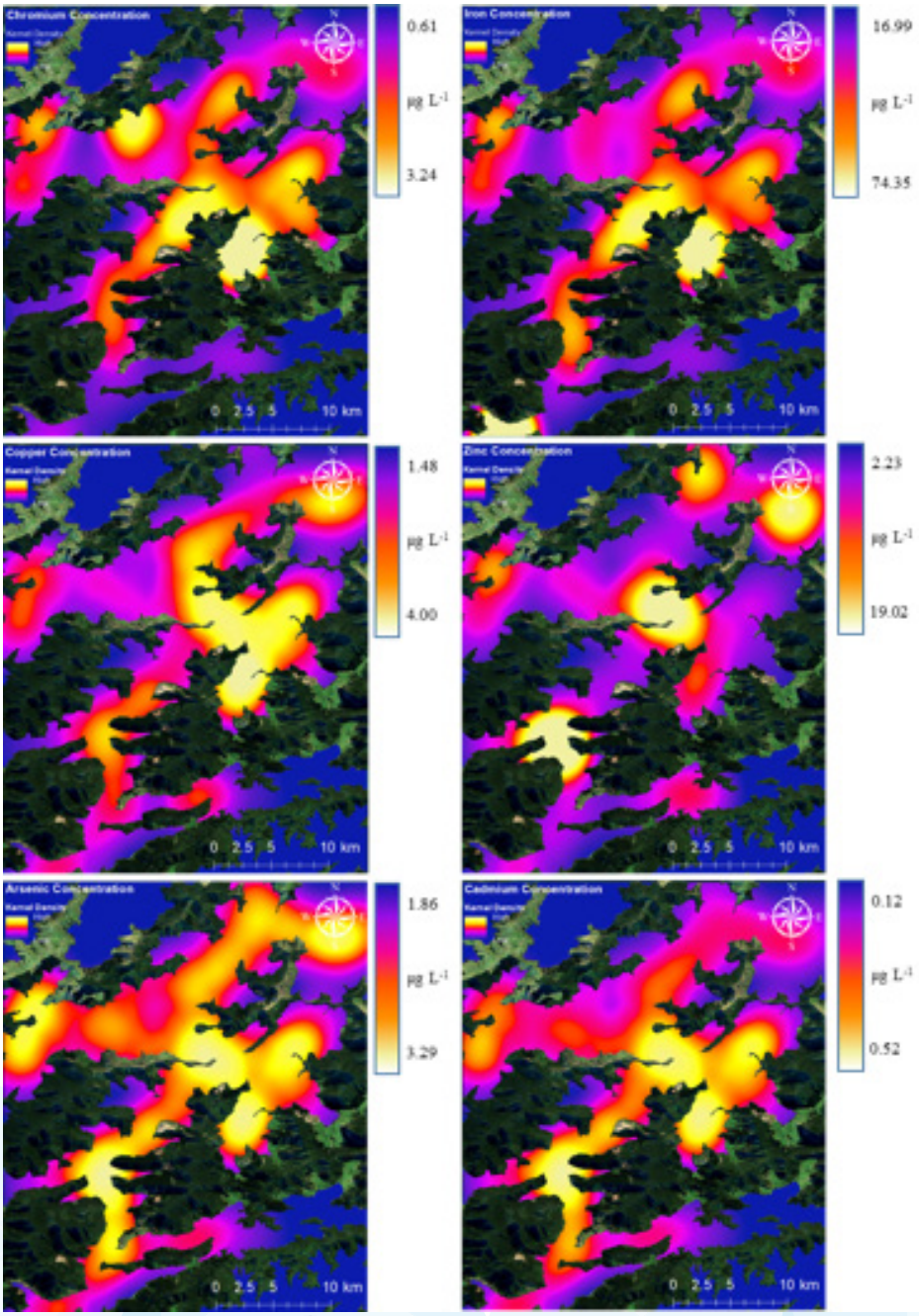
What is the cause of declining spat catches in Pelorus and Kenepuru Sounds?

A period of earthquakes starting in 2010 coincided with increased reports from mussel farmers in the Pelorus and Kenepuru Sounds of declining commercial spat catches in the area. We analysed the last 40 years of green-lipped mussel and blue mussel spat settlement monitoring in the Sounds which confirmed there had been a marked decline in the settlement of wild seed green-lipped mussels since 2010. In contrast, settlement of blue mussels appears to have increased over this time. The



Annual mean catch of mussel spat (± S.E.) per 30 cm sampling rope in the Pelorus and Kenepuru Sounds for;A) green-lipped mussels, and B) Mediterranean mussels.The trend line indicates the three-year rolling mean of spat catches and clearly shows changes since 2010. Note that spat monitoring was paused between 1986 and 1992. Data provided by the New Zealand Marine Farming Association.

larvae of green-lipped mussels are known to be extremely sensitive to some dissolved heavy metals in seawater compared to blue mussels, and earthquakes can cause significant changes in coastal water chemistry, including the abundance of heavy metals. With the help of the Greenshell industry we sampled seawater from 84 locations throughout Pelorus and Kenepuru Sounds to measure the heavy metal content. We also attempted to raise green-lipped mussel larvae from eggs in seawater taken from six locations in these Sounds that were historically associated with high commercial catches of settling mussel larvae. We compared the growth of mussels in the seawater from the Sounds to growth in standard seawater used in a mussel hatchery. No mussel larvae survived in the seawater from the six locations from Pelorus and Kenepuru Sounds. Roughly 40% of mussel



Levels of six heavy metals (Chromium, Iron, Copper, Zinc, Arsenic, Cadmium) in the seawater of the Pelorus and Kenepuru Sounds, with higher concentrations as bright areas and lower concentrations as dark areas in units of µg L-1 for each metal.

larvae survived in the standard hatchery seawater using an identical larval rearing system. More than 90% of mussel larvae survived when grown with a heavy metal blocking agent added to the hatchery seawater. The average concentrations of some heavy metals in the seawater samples taken from the Sounds, (chromium, iron, arsenic and cadmium) were found to be higher than the concentrations in the seawater at the hatchery. A higher concentration of one or a combination of these heavy metals could be the cause of the observed decrease in the catch of wild spat of green-lipped mussels in these areas since 2010. This decrease in spat catches may also be due to unrelated causes, so further information is needed. The next steps for this study are to analyse historical measurements of heavy metals within mussel tissues taken as part of the shellfish quality programme, which would confirm any marked changes in heavy metals in seawater of the Sounds over the last 40 years.

If you have any questions or comments on this project, please feel free to reach out to Danny McDougall at dmcd582@aucklanduni.ac.nz

Danny McDougall, Trevyn Toone, Andrew Jeffs – University of Auckland

Marine Farm Compliance Audit Programme

Declarations are Due

30th April 2022

If you have not sent in your declaration for the 2nd quarter, please do so as soon as possible

ONE **DECLARATION FORM PER SITE**
DUE BY THE END OF EACH PERIOD

November, December, January	(1)
February, March, April	**(2)**
May, June, July	(3)
August, September, October	(4)

Council launches new strategy and other initiatives

After almost 12 months work, Marlborough District Council has now released its draft Marlborough Economic Wellbeing Strategy 2022 -2032 and is now seeking feedback. There's a substantive section on aquaculture in the strategy which notes it contributes 10% of Marlborough's GDP and 1000 jobs.

The strategy is to look for the opportunities in the region to help build economic resilience, including the development of the Maori economy, an eco-system where start-ups can thrive and grow side by side with established (international) businesses and support for new and emerging industries and their trials with technologies

Submissions are open click here until 9 May.

The Council has also launched several events to support economic growth starting with.

Marlborough Innovation Day 16 May 2022

An event for leading Marlborough businesses to showcase their innovative work. A chance to share and discuss the problems that are limiting your productivity and to discover the potential solutions within our local community.

Speakers include Andrew Kersley from Smart Machines on Productivity, Andrew Stanley from Sanford on Innovation and Catherine van der Meulen from Entrepreneurial Women with Purpose on Wellbeing

There will be a business speed-dating event following the speakers and a panel discussion – based on design thinking principles around problem discovery and customer journey mapping. This is from 2.00 – 6.00 pm with drinks and networking to finish. Email Dorien Vermaas to register your interest.

Future of Work Conference 2 June 2022

The highly successful "Future of Work" Conference showcases what the workplace of tomorrow looks like for local youth, inspiring them to be part of the region's future. Future of Work supports students

whether they're headed to university, into trades, or have no idea what they want to do after school

assisting all young people to discover a purposeful pathway into their future. Go to: www.bit.ly/FutureofWork22EOI

Techstars Start Up Weekend 17 June 2022

A first for Marlborough sees Council running the inaugural start-up weekend. A 54-hour event for anyone interested in entrepreneurship, problem-solving and finding out what it's like working on a Start-Up.

Pick up some new skills, meet a bunch of like-minded people, and get some serious wisdom into the Start Up ecosystem - all within one weekend! Here are more details.

Brendon Burns

You are invited to join Smart+Connected Aquaculture

Some considerable changes are taking place with the Smart+Connected Aquaculture group and MFA members are being invited to join.

S+C Aquaculture chair Brendon Burns says after six years of existence, the changes are designed to make meetings of wider interest, including to industry and MFA members.

"We are still regarded as one of the most functional Smart+Connected groups - but some of our early momentum has been lost."

"The group is supported by both Marlborough District Council and MFA and GM Ned Wells suggested we need to think about how we could widen our reach and improve the intelligence-sharing and networking opportunities that we provide."

"We've now agreed to focus on a monthly theme - essentially, mini-versions of the popular annual forum held each year in Havelock."

This month's Smart+Connected Aquaculture meeting had five presentations around the theme of Data Acquisition & Management for aquaculture. There were nearly 40 people taking part in the Zoom including some MFA members – more than double the usual attendance – with most just staying for the first hour to hear the presentations and ask questions.

The April meeting included:

1. Knowing when fish are at risk. Manolin scans hundreds of millions of industry data points every 15 minutes and uses machine learning models to predict early onset of disease. **Tony Chen, Co-Founder Manolin spoke to us from his base in Denver, Colorado.**

2. Using imagery to monitor mussel floats and Artificial Intelligence to analyse the data. **Ross Vennell, Coastal and Ecosystems Team Leader, Cawthron is working with Victoria University's Data Science for Aquaculture group who also joined the Zoom.**

3. Mussel App assists mussel farming operators with decision-making like best harvest time and helps optimise processes. **Ralf Klis, CEO and Founder of Mussel App sat in on the Zoom at the MFA offices.**

4. Integrating data acquisition and management across the various activities of Marlborough District Council. **Dorien Vermaas, who works in economic development at MDC presented this project.**

5. Ben Noll & Neleesh Rampal from NIWA presented on its new, once-monthly sea surface temperature update which draws on data from eight

international climate models and looks to the next six months.

Brendon says S+C Aquaculture group members have really got enthused, suggesting presenters and bringing in colleagues. He's invited all MFA Board members to join the monthly one hour Zoom with the next theme being on Innovation in Aquaculture. The same invite is there for MFA members.

If you'd like to be added to the group's data-base and get a Zoom invite for the May 11 meeting (11am-12 noon) and those beyond, please email Brendon – brendon.burns1@gmail.com

Marine Farming Industry - thanks for your support!

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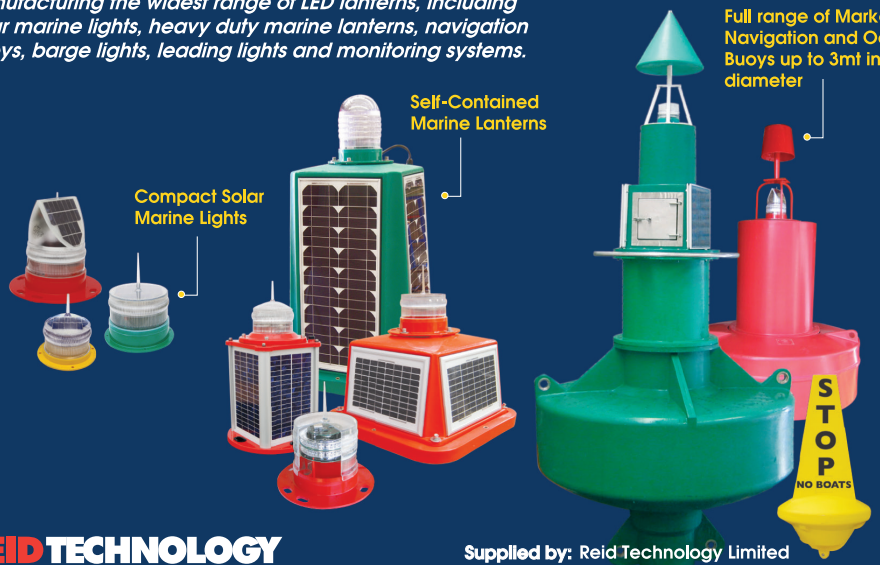

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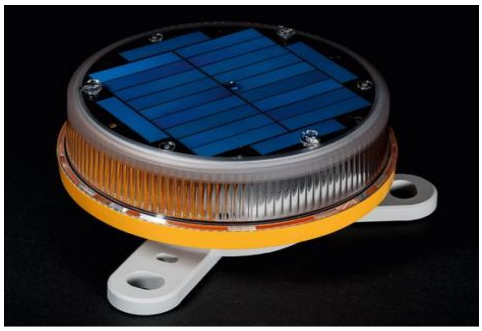

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