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Sea squirt marine invader

Tasman Challenger enhances shellfish fishery
MAKING AQUACULTURE REFORMS WORK
Taking aquaculture education to the people



4



6



8

- 3** EDITORIAL
National search for marine invader
- 4** SEA SQUIRTS GO UNDER THE BIOSECURITY SPOTLIGHT
The sea squirt scare is a case study for the future
- 5** GREENSHELL MUSSELS TOP "FRIENDLY" SEAFOOD LIST
Consumers everywhere prefer sustainable seafood
- 6** SHELLFISH ENHANCEMENT IS A CONSTANT CHALLENGE
The Tasman Challenger surveys our shellfish beds
- 8** AQUACULTURE EDUCATION! TAKING IT TO THE PEOPLE
The people of the Far North learn special skills
- 12** NEWS
A look at what's happening in the industry
- 15** MAKING AQUACULTURE REFORM WORK
New legislation sets out a clear framework



ON THE COVER:
Sea squirts
cause havoc among
mussel harvests

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THE SEARCH for a marine invader

Biosecurity New Zealand has historically come under significant public criticism through its apparent inability to prevent unwanted aliens from becoming established in New Zealand. The painted apple moth is a classic example of how easily these critters can become established on land. It's even more sinister at sea.

Don Robertson, the general manager biodiversity and biosecurity of NIWA, is quoted as saying, "New Zealand coastal marine communities face challenges from a steady stream of arrivals from other parts of the world. At least 160 foreign species have already made their way into our coastal waters since the days of sailing ships. Some, such as the Japanese kelp and undaria, have spread widely, invading natural habitats and displacing native species."

Unfortunately, the marine environment is particularly susceptible to illegal marine invaders, with many recent new species finding a home and establishing themselves in New Zealand waters, in many cases to the detriment of our local biodiversity. While we recognise the success stories surrounding the arrival of the Pacific oyster, the same cannot be said for many other marine invaders that have established themselves.

These include undaria, the Japanese nesting mussel, Rangitoto crabs, the Tauranga sea lettuce, and the freshwater rock snout, to name a few. All of these species, once identified, have already established themselves to a level where in most cases we have to learn to live with them. As we know, this is totally unacceptable.

The fact that we are continuing to allow bulk carriers to arrive in our waters with contaminated hulls and ballast water is only asking for trouble. Until the government introduces legislation to prevent these types of ships from entering our 200-mile Exclusive Economic Zone, we will continue to be exposed to the risk of marine invaders.

In this modern day and age, international shipping companies can maintain clean hulls and treat ballast tanks, or exchange ballast water while en route on the high seas.

It would appear that the primary culprit is the arrival of converted bulk carriers in ballast providing cheap transport to service the log trade. Our aquaculture industry is far too valuable to be exposed to this kind of risk to provide cheap transport for bulk log exports. If these ships cannot comply with our bio-security rules, they should be prevented from entering

our waters, rather than giving them exemptions.

Foreign yachts are also a target. These international guests on arrival should have their vessels inspected, and if the hull is in a foul state they should be required to be slipped and cleaned at the owner's expense. It's no different to steam cleaning second-hand Japanese imported cars.

The clubbed tunicate, or sea squirt, is the most recent invader to be identified, and Biosecurity New Zealand must be acknowledged and complemented for its immediate and fast action. Since the sea squirt was first identified in Auckland's Viaduct Harbour and subsequently in Lyttelton, Biosecurity NZ has set up a task force dive inspection team to investigate many of our ports and harbours.

On a positive note, most of their inspections have turned out to be negative. Unfortunately, the beast has escaped from Auckland's Viaduct Harbour and established itself on the mussel farms in the Firth of Thames, and has now been identified as far north as Tutukaka. This is scary stuff, considering how close it is to the sensitive waters of the Poor Knights marine reserve.

On looking back, it would appear that the sea squirt was first spotted in Auckland's Viaduct Harbour as early as 2002 during the America's Cup campaign and was mis-identified at that early stage.

If this is the case, my comments of inspections of all international yachts at their port of arrival makes logical sense, and should be enacted as a cost-effective preventative measure, rather than the expensive reactive process we are having to go through now.

The mussel industry has spoken out and is giving its full support to try and contain the outbreak. It is therefore important that all aquaculture farmers remain alert and lobby their politicians to ensure Biosecurity New Zealand gets the necessary funding to protect our borders from future marine invaders.

In this issue, our cover features the sea squirt to assist in your identification process. Also included is an update on research, aquaculture training and reform work happening within our industry.

From all of us at New Zealand Aquaculture, we wish everyone the very best for the festive season, and may the New Year see our industry forge ahead.



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Sea squirts go under the BIOSECURITY SPOTLIGHT

BY LESLEY PATSTON



Biosecurity New Zealand is currently responding to the arrival in New Zealand of an exotic invasive sea squirt, the clubbed tunicate.

The clubbed tunicate is a potential threat to New Zealand's multi-million-dollar aquaculture industry, as it can establish itself on man-made structures such as wharf piles and aquaculture equipment, potentially smothering growing shellfish and competing with them for food.

The organism was discovered in Auckland's Viaduct Basin and in the port of Lyttelton in September. Since then, an urgent surveillance response team has progressed, set on determining where the sea squirt is, and isn't present.

Biosecurity New Zealand's senior marine advisor, Brendan Gould, says it needs to know how widespread the organism is before any appropriate course of action can be planned.

As of November 29, the organism had been found to be widespread throughout the Hauraki Gulf as far north as Mahurangi and down into the Firth of Thames at Kaiaua and in Wilsons Bay, Coromandel. It had also been detected in small numbers at Tutukaka in Northland, and at a marina in Lyttelton Harbour, just outside the port.

The nationwide surveillance programme is targeting locations regarded as being high-risk for the presence of the clubbed tunicate because of their proximity to known infestations, the volume of inward vessel movements, or their proximity to high-value areas such as aquaculture or sites that are rich in biodiversity.

The National Institute of Water and Atmospheric Research, which is undertaking the surveillance work on contract to Biosecurity NZ, is coordinating teams of researchers and divers at the 25 locations being checked.

Individual site visits involve visual searches from wharves and structures at low tide, as well as from a boat, followed by an underwater inspection by scuba divers. The divers are swimming along a wharf, jetty or pontoon at a set depth, with two divers operating at different depths to ensure good coverage.

As well as the national surveillance programme, Biosecurity NZ is asking the public, especially marine users, to keep an eye out for sea squirts and report any suspected finds to its free number, 0800 80 99 66.

Background material about the sea squirt has also been widely distributed, especially to marine users and groups with an interest in the ocean environment.

"We'd like to hear from anyone who sees what they suspect to be this sea squirt. Boaties, marine farmers, divers and people walking around our coastline and ports are our eyes out there, and we hope they'll report finds to our 0800 number," says Brendan.

The agency is also taking advice from world experts on this organism and its impacts on the environment and aquaculture. This technical advisory group will answer a range of questions to help plan the response.

Brendan says the huge information-gathering task will ultimately enable Biosecurity NZ to identify the most appropriate action to take against the sea squirt. "In the meantime, there is another vital contribution people can make.

"Keeping boat hulls clean and free of fouling is the key to this. Regular cleaning and the use of anti-fouling treatment will greatly help contain the spread of the sea squirt."

He says the current sea squirt incursion is a good example of the scale of the task facing those involved with marine biosecurity.

"Good marine biosecurity is the prevention and reduction of the risk of new introductions to New Zealand waters. Once marine pests invade, they are extremely difficult to detect and costly to control, given the scale of our coastline and the vessel movements around it.

"But for as long as international vessels visit New Zealand, it is inevitable that some introductions will occur, meaning there will always be a need for monitoring and surveillance," he says.

New Zealand's marine biosecurity system is considered one of the most developed in the world, but it is still very much in its infancy, which illustrates just how new the discipline is globally.

Biosecurity NZ is currently developing a comprehensive marine biosecurity system that is underpinned by the collection of baseline knowledge of what species exist at our busiest and therefore high-risk entry ports and marinas. The current sea squirt incursion was detected partly as a result of this baseline surveying.

The organisation is also targeting several locations with a lot of vessel traffic to look for selected high-impact organisms.

Passive surveillance is also a major part of Biosecurity NZ's marine work, says Brendan.

"Biosecurity New Zealand cannot look everywhere, which is why we have to target high-risk sites, and rely on the public and those industries familiar with the marine environment to broaden our coverage."

See www.biosecurity.govt.nz/seasquirt



GREENSHELL MUSSELS TOP "FRIENDLY" SEAFOOD LIST

BY LORNA HOLTON, executive officer of the New Zealand Mussel Industry Council

Global demand for quality seafood is soaring, and consumers everywhere are seeking consistency in quality, safety and availability of seafood at the right price.

In 2003, world aquaculture seafood production contributed about 40 million tonnes, or about 30 percent of total world fisheries production of about 130 million tonnes. A decade ago, aquaculture contributed 17 million tonnes, making it the fastest growing food sector in the seafood industry.

Greenshell™ mussel farmers recognise that environmental sustainability and business success go hand in hand. In order for mussels to be grown in New Zealand, farms must meet the stringent requirements of the Resource Management Act.

Extensive independent research is undertaken into how the environment affects new farms, including benthic surveys and phytoplankton monitoring studies. Environmental impacts are limited, and where they do occur they are mitigated.

Mussels feed on tiny, floating marine plants and animals that make up the "plankton". Many species living in the marine environment, including mussels themselves, are "broadcast spawners" releasing vast numbers of young into the water column. Microscopic plants, which make up most of the mussel's diet, can multiply at an incredibly rapid rate, especially in warmer spring and summer months.

Marine farmers have water quality and phytoplankton monitoring programmes in place that are operated in conjunction with major research organisations. Regular sampling of the water quality ensures that all harvested mussels are of the highest quality, meet international export and safety standards, and are ready for consumption.

The end result means that consumers can be assured that New Zealand Greenshell mussels are grown in an environmentally sensitive manner that benefits the health of the oceans and provides opportunities to improve the growth and sustainability of seafood businesses.

Last year, the American environmental agency Blue Ocean Institute ranked New Zealand Greenshell mussels at the top of its list of eco-friendly seafood. The mussels gained a score of 3.45 out of four following a rigorous evaluation by the institute's leading environmental scientists. Five key criteria - operational risks, the ecological "footprint" of feed, pollution, risk to other species and effects on sensitive coastal habitats - were used to determine the rating, the highest for any seafood listed in the Blue Ocean Institute's guide.

Farmed mussels often top conservation group's seafood choice lists because they are filter feeders, require clean, healthy water to grow in and are proven to have a limited impact on the environment.

New Zealand is a small country competing in a huge, global marketplace, and Greenshell mussel farmers need all the help they can get to maintain the international reputation of their product.

The US-based Seafood Choices Alliance also listed farmed

mussels as one of their "Sweet 16 best seafood choices for 2005". The alliance is made up of members representing over 40 leading agencies, including Greenpeace and the World Wildlife Fund. As a small industry, it's a real achievement to have the alliance rank Greenshell mussels so highly.

New Zealand's position is supported by good farm management practices and continuous research. The marine farming industry has some of the highest environmental hurdles to overcome in order to grow mussels in New Zealand marine waters. To have the quality of Greenshell mussels recognised worldwide is a major coup for this industry.



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LEFT: The **Tasman Challenger** on site in the bay during an oyster survey

BELOW: Looking aft on the large work deck, gallows and dredge



Shellfish Enhancement A CONSTANT CHALLENGE

BY KEITH INGRAM

On a recent visit to Nelson we were fortunate to meet up with the crew of the *Tasman Challenger* while they were doing the annual oyster biomass surveys.

Contrary to some popular beliefs, Nelson's dredged oysters are natural to Nelson. Although they are of the same family as their Bluff cousins, they were never reseeded from the southern waters of Foveaux Strait.

The pre-season surveys are required to establish the biomass prior to allocating the total allowable catch and total allowable commercial catch.

The *Tasman Challenger* is owned and operated by the Challenger Scallop Company and is skippered by Paul Botica and his crew. The make-up of the crew may vary from time to time, depending on the task in hand, says Paul.

"We cover the Marlborough Sounds, Tasman and Golden Bays. Besides oysters, our main work is on behalf of scallop enhancement and the reseeded of wild-caught spat."

Science providers, in this case the National Institute for Water and Atmospheric Research, have the contract to monitor the research. The position, length of tow and other data is all recorded.

Oysters are collected in much the same way as scallops, and while there is some mixed catch, the depth of the fisheries basically gives some target separation.

Peter Horn, NIWA's scientist aboard the *Tasman Challenger*, said the oyster survey was randomly computer-generated, with each tow being 0.4 of a nautical mile and taking about seven to eight minutes. When surveying scallops they are weighed and sorted according to size into three categories, under 60mm, under 90mm and over 90mm, in much the same way as oysters.

The spat is collected in spat bag and Christmas tree ropes, which are the same as mussel spat ropes, in late November. These are hung from long lines and are laid as a combination to ensure a measure of success, in case one method gives a poor return.

Spat harvesting starts in March, and the bagged spat, once recovered, are reseeded as primary spat. When the mussel

Christmas tree ropes are recovered, the scallop spat has already dropped and settled on the sea floor.

The ropes are recovered and the spat is sold to the local mussel industry. The secondary spat that dropped from the mussel ropes is dredged around mid-June. By this time the small scallops are around the size of a 20 to 50 cent piece.

These small scallops are recovered by using a special cod end over-sleeve fitted to the dredge. Once recovered, they are quickly transported to the designated area to be seeded. While en route, the deck freight of shellfish is protected from the sun and kept wet and cool by a constant spray of salt water.

"Generally we are looking for around 100 to 150 million shellfish as primary spat, and another 100 million as secondary spat," says Paul.

The company has a number of spat collecting farms. "Because we rely on natural spat settlement, poor spat years can have an impact. But generally the management process helps soften the hollows, preventing the boom-bust scenario these fisheries can be plagued with."

Russell Mincher, the chief executive of Challenger Scallops, said the first lesson learned was the variation of scallop seasons. Enhancement could not completely resolve the variability problems and was just one of the tools to manage a fishery. "The focus must remain on management," he said. Other tools include rotational fishing, which is the key element to the survivability of the fishery.

The *Tasman Challenger* works all-year-round, although in quiet periods they look for additional work to prop up the budget. Scallop enhancement borders on aquaculture, but is not classed as aquaculture in the true sense, and the collected spat is grown on the seafloor along with any wild shellfish, and harvested during the season along with the wild fish.

Which is interesting, as Environment Waikato has just vetoed previously granted resource consents for spat enhancement trials by the Coromandel Scallop Management Company, saying that it is an aquaculture activity. It would now appear that given the Nelson legal interpretation, the Environment Waikato decision could well be wrong. If so, who will compensate the



The skipper, Paul Botica, remains in command and plots the survey positions as completed



The crew at the sorting table

Coromandel fishers for this bureaucratic stuff-up?

Local quota holders hold both scallop and oyster quota, says Russell. "We have up to 42 fishing vessels fishing 32 quota licenses. Special considerations are given to recreational fishers who can take a daily bag of 50 scallops," he says. "It is important that everyone speaks the same science language. We are fortunate that recreational fishing groups have been brought up to speed and now understand the management processes, and are now making a meaningful contribution towards management and therefore are sharing in the benefits," he says. Phytoplankton blooms are important to good scallop years. Benthic algae and detritus is the main food source, so it is vitally important to have nitrates in the water to feed the phytoplankton.

"Clearly we can assist mother nature so far, and equally our

greatest threat to these fisheries is not the fishermen, but rather the threats of urban runoff and urbanisation are our greatest risk. That's something the local authorities need to remain mindful of and do something about.

"These local officials and politicians fail to recognise that our aquaculture and near-shore enhanced fisheries have the greatest potential to deliver new jobs to many needy communities. Instead of making it more difficult, they should be making it easier, and concentrate their efforts on providing better protection of the marine environment from the poisons of the land dwellers."

The Challenger Scallop Management company is just one example where the community can provide support and benefit in the long term. Jobs, ready access to good seafood and a clean environment, make it all worthwhile.



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AQUACULTURE EDUCATION

– taking it to the people!



Students sample toheroa on Ninety Mile Beach as part of their ecology studies for NC Aquaculture

New Zealand's leading tertiary marine educators, who have won numerous national awards, are again leading the way with their aquaculture courses, and the way they deliver them.

There are the papers Bay of Plenty Polytechnic offers within the marine diploma and degree pathways it delivers, there's the National Certificate offered in Kaitaia in conjunction with the Te Aupouri Maori Trust Board. And then there are the research trips staff and students are undertaking all around New Zealand and overseas.

Aquaculture specialist Paul "Max" Maxwell is the man BOPP placed in the Far North after the mussel spat innovator Chum Murray basically said, "Get your arses up here and train our people," says Paul Kayes, the head of the School of Applied Science.

"So we did. We met with the Te Aupouri board and a few months later, in February 2004, signed a memorandum of understanding with them to deliver the aquaculture programme from their facilities. The fantastic thing is that the programme went according to plan, and in November 2005 the first 23 students graduated in a ceremony held in Kaitaia. One hundred percent success. We had a huge commitment from the people, and right to the top within Far North iwi. The Te Aupouri board and their chief executive, Stephen Allen, have been superb to work with," says Kayes.

The Far North was the ideal place to launch a general seafood programme with a special focus on aquaculture.

The region is the major source of spat for the Greenshell mussel industry and has the best water in the country for growing oysters.

It is also the landing point for many of the premium wildfish species harvested from the water surrounding the northern tip of New Zealand. The processing operations that service the fishing and aquaculture activities make a major contribution to the local economy, providing jobs and income for many residents.

The success of the National Certificate Seafood in Kaitaia is a combination of enthusiastic and dedicated student personnel, a desire from iwi to develop the economic opportunities for the seafood industry in the "real Far North", and support from the existing aquaculture and processing operations in the region. This success has led to a surge in the planning and development of a range of small and medium-scale businesses based on the sustainable management of the rich store of seafood resources.

The NC Seafood/Aquaculture content is made up of six modules: aquaculture legislation, biology and hatchery techniques, aquatic health, repairs and maintenance, microbiology and biochemistry, and personnel requirements.

The aquaculture legislation module provides an overview of the New Zealand and global aquaculture industries, up-to-date developments in New Zealand's aquaculture legislation reform, and the preparation of consents and permits for establishing a land-based or coastal aquaculture operation. The programme also investigates the impacts of aquaculture



Walter Waitai demonstrates oyster farm construction methods with NC Seafood students on a work experience field trip in Parengarenga Harbour



Students check the condition of mussels during an NC Seafood mussel farm field trip to Houhora

development on Maori, and the procedures for successful consultation with stakeholders.

The biology and hatchery techniques module has a hands-on approach to studying the biology of the key species produced by the New Zealand aquaculture industry. Students learn about the anatomy and life cycles and ultimately the eating qualities of mussels, paua, oysters and finfish.

The repairs and maintenance module focuses on systems and system components for land-based recirculation and flow-through systems, and the setting up of sea-based systems.

There is a strong interest in developing localised hatchery systems in the Far North to service the oyster-growing operations in the Parengarenga and Houhora Harbours, and a source of local production of kingfish juveniles for supply to the Parengarenga kingfish farm. The will of the locals in the remote and isolated rural communities is to create further aquaculture opportunities to grow more high quality seafood products and create jobs, economic and community development.

The NC Seafood qualification is focussed on developing student understanding of the principles and processes of micro-algae, live feeding and juvenile production of key New Zealand aquaculture species, so that there will be a pool of knowledgeable personnel to draw from when these are initiated and developed.

The Parengarenga kingfish farm provides an opportunity for student work experience with a massive recirculation system.

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We are looking for a tertiary qualified person to manage the grow-out process of our paua. This starts with receipt of stock from the nursery and finishes with a marketable size animal.

The position reports directly to the Chief Executive and is part of the senior management team.

The successful applicant will be responsible for the management, training and development of a team of 10. The role is responsible for the systems and procedures in the specialized areas of grow-out management. This includes such things as animal health, growth rates, food usage, data collection etc.

Preferably the person will have experience and a tertiary education in a relevant field. They must be a team player, consultative, innovative and be passionate about aquaculture.

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Students discover microbiology and conduct mussel spat counts on seeded mussel ropes from Whangape Mussel Spat Catchers Ltd

and to practice a range of skills from plastic welding to sanitation provides significant real-life and applied learning. Back in the classroom, student groups construct and maintain their own "fish farm" for the duration of the programme, and in doing so they learn about the ups and downs of water quality management. It is an ideal method of developing the skills in risk management that are so important to the aquaculture industry.

A major focus of the programme is maintaining the high quality and value of aquaculture seafood products. There is a strong focus on the microbiology and biochemistry of seafood products to ensure students understand how and why seafood products spoil, and how to minimise spoilage to ensure a premium product is delivered to the market.

The role of the NC Seafood has been significant, in that it has provided an important knowledge of the basics of aquaculture planning, preparation and development, information that often makes up the bulk of consultant reports to start up businesses.

NC Seafood/Aquaculture is developing a growing body of personnel who can "talk" the language of seafood quality and production, and communicate their plans and ideas effectively.

Professional specialists like consultants and science providers will still have a crucial role in growing the industry in the Far North, but training and teaching students at the "coal face" will ensure that they receive real value from the professional specialists.

The rapid growth and development of both land-based and

offshore aquaculture operations has led to a real shortage of motivated, knowledgeable and skilled personnel to take up roles in this sunrise industry. One of the key goals of the BOPP NC Seafood is to prepare a steady stream of personnel to take up opportunities within the growing industry.

Maxwell believes that developing knowledge and skills at the coal face is the key to providing developers and investors with the confidence to back aquaculture opportunities that have been planned for the Far North and other areas of New Zealand. To put it another way, it is a case of training creating confidence and momentum, lending a sturdy shoulder to the aquaculture scrum that is driving development.

MARINE DEGREE

The Bay of Plenty Polytechnic has been a leader in diploma and degree-level marine education since it launched the Certificate in Marine Studies, which was then based in Whitianga, in 1991. And with this year's revamp of aquaculture legislation highlighting the need for a sustainable industry, the aquaculture modules contained within the marine studies programme have again evolved to ensure the programme delivers competent graduates.

The polytechnic maintains a basic on-campus facility containing tanks and pumping systems so they can teach students how to set up, maintain and break down systems. "But the best learning occurs when the students go out to farms to complete their research projects," says aquaculture tutor Daniel Sharp. "With students working at the Bream Bay Aquaculture Park, South Island salmon farms and public aquaria around the country and of course overseas, many get into really decent aquaculture jobs," says Daniel.

The group leader, Dean Tully, backs this up. "You have to make education real-world, and reduce unnecessary theoretical work no-one remembers the next day. We have a philosophy here - from the environment to the lab and to the classroom. If you haven't seen a crayfish and studied it while on a scuba dive, don't try to teach crayfish biology in the classroom. Students must be able to contextualise their learning."

Small groups of students create recirculation systems to ensure they understand not only water chemistry, biochemical and biophysical requirements, but also the hardware and plumbing needed to set up and maintain systems.

Students are also in charge of managing the systems for the modules that highlight differing species' needs. These species include snapper, flounder, seahorses, paddle crabs, sea cucumbers and sea eggs (kina), as well as a variety of subtropical display species, all of which students catch and transport to ensure they understand their life cycle.

Once the initial module of aquaculture systems and design is complete, students undertake aquaculture nutrition and feed, which explores the feeding requirements of species along with inoculation and the cultivation of algae and live feeds.

Artemia and rotifers are the subject of inter-student competitions to see who can grow the quickest and largest invertebrates to stock their display tanks and feed to seahorses. Kina are also studied in relation to artificial spawning techniques that may be applied to generate successful larvae, allowing students to research potential

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artificial spawning techniques and then apply them first-hand.

With the future growth of aquaculture and aquaculture sciences, the Bay of Plenty Polytechnic is looking to further expand its educational and employment avenues by developing degree-level courses that will produce potential employees who are ready to work in the industry with a wide range of technical and practical skills.

Concept plans for an aquaculture facility that will incorporate recirculation systems, display aquaria and research areas have been developed. The goal is to ensure students are ready to enter the industry with excellent knowledge and skills, and who are highly motivated, adaptable, hardworking and enthusiastic.

But it's not just about the students. Two marine studies staff, Keith Gregor and Daniel Sharp, recently met an Australian sponge exploration team to dive in the Northern Territory to search for suitable sponge species to cultivate. The Australian-backed project aimed to locate wild-stock species that could be used as bath sponges or for applying cosmetics.

"The diving was often in supposedly crocodile and shark-filled waters. Being Kiwis, we struggled to believe the Aussies who, however, didn't really dive - they left it to us," said Daniel. "The visibility was so poor you could say it didn't matter. We couldn't see too far away!"

Once useful sponges were located, preliminary sea trials were conducted to establish their survival and growth rates. Sponges that were durable, resilient to tearing, had no presence of silica spicules (internal scaffolding of sponges

which are like glass fibre) and could soak up large volumes of liquid in relation to their size were deemed worthy of trialling.

Once all these factors were present, the team met local communities of aboriginals to establish interest in the potential for self-sustaining sea farms in remote areas only accessible by light plane or by a two-day journey in a four-wheel-drive utility through the outback.

A small selection of sponges showed positive results, with growth rates reaching 200 percent over a three to six-month trial, thanks to the care of the aboriginal communities tending the sea farms.

"We're lucky," says Kayes. "We get excellent support and advice from our Maori community and have a number of committees where we meet. Maori have a significant role in the future development of the seafood industry, and a training institution such as ours can't do much that's effective without working closely with them. Some of our programmes, for example the aquaculture programme in Kaitaia, are 100 percent Maori with nearly 100 percent success rate - brilliant."



Cory Rawiri prepares glass to construct a student "fish farm"



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CAWTHRON APPOINTS NEW CHIEF

The Cawthron Institute has appointed Gillian Wratt as the science organisation's new chief executive.

Ms Wratt is currently with the Ministry for the Environment, where she is the lead environmental negotiator for New Zealand Free Trade and Closer Economic Partnership Agreements.

Before that she was the chief executive of the New Zealand Antarctic Institute, where she led and managed New Zealand's involvement in Antarctica and the Southern Ocean.

She has also chaired international Antarctic government and tourism industry forums, and a Ministry of Fisheries' meeting of southern bluefin tuna fishing countries.

Gillian Wratt replaces the former chief executive, Graeme Robertson. She takes up her appointment in March 2006, and the acting chief executive, Danette Olsen, will continue in the role until then.



Gillian Wratt outside Scott Base

The chairman of the Cawthron board, Ian Kearney, says Ms Wratt's experience will be hugely beneficial to the institute. "Gillian has the special combination of science and management skills that make her perfect for the role."

KNOW THE ENEMY

Biosecurity New Zealand launched the Know the Enemy campaign in 2005 to alert all New Zealanders to the importance of border protection and the role each person can play in ensuring our biosecurity is effective. The first phase was launched in May this year and focused on eight pests and diseases.

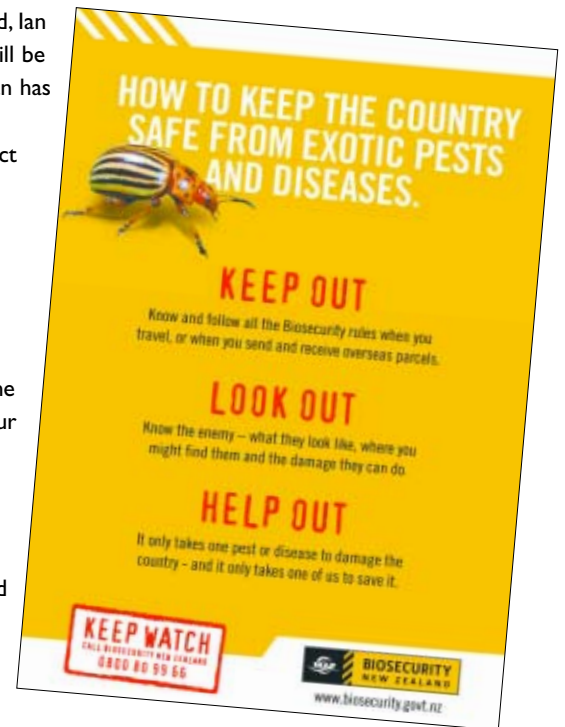
Phase two of the campaign, launched in late 2005, targets people living around the four main ports (and thus, pest entry points) - Auckland, Tauranga, Wellington, Lyttelton and nearby Christchurch.

The second phase focuses on a further seven species

- Asian gypsy moth
- Cape tulip
- Colorado potato beetle
- Salvinia (Kariba weed)
- BSE (Bovine Spongiform Encephalopathy)
- Equine influenza, and the
- Formosan subterranean termite

The campaigns include print and radio advertising and information leaflet mail drops to residents.

Next year the campaign will be rolled out to other parts of the country. Biosecurity New Zealand is also developing material for specific groups such as school children.



This campaign is about making biosecurity preventive rather than reactive. It's about spotting pests and taking action before expensive and inconvenient eradication programmes are necessary. Biosecurity New Zealand says it hopes farmers, gardeners, schoolchildren, boaties and all others who enjoy the outdoors will keep watch for anything that looks like an unwelcome visitor as they go about their work and play.

To do that, people must "know the enemy," and be prepared to take action by calling Biosecurity NZ when a possible biosecurity threat is found.

See www.biosecurity.govt.nz.

MARINE EDUCATION CENTRE TO SHUT

The Seafriends Marine Conservation and Education Centre in Leigh is to close because the Rodney District Council has disallowed any subdivision on the site.


"We have spent all our savings and earnings to the tune of \$2 million to save the sea and bring awareness of its plight to young and old," says Dr Floor Anthoni, who owns the centre with his wife, Maria. "We are facing bankruptcy unless we can sell a small part of our 10ha holding. This is where the public can help without it costing a cent."

The mayor of Rodney District Council, John Law, said the council was concerned about the visual impact of a further dwelling and associated buildings within the sensitive coastal area.

But Dr Anthoni says the subdivision in

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the area is allowed for, a 2ha plot of native bush had been set aside, and an ever-growing university complex was located at the edge of the sea.

About 3000 schoolchildren pass through the marine education centre each year for snorkelling, talks on marine ecology and to view over 100 species living in the centre's aquaria. The centre also includes a large library, a website and data on a range of marine issues, a café and snorkel hire.

The couple say they have spent \$2 million on the centre over 15 years, and have developed a business that is unique in New Zealand. But they need about \$500,000 to keep it going.

"We thought we would subdivide 2ha off the 10ha property, but have had a resource consent denied because we are in a coastal protection zone," says Dr Anthoni. "Neighbours have been allowed to subdivide, but they had native bush they could covenant as a condition of the consent."

Law says Seafriends falls outside the parameters to subdivide. "These people have done a huge job for the community, but that is not a criterion for a consent. If there was some way to find a compromise,

TUNA COMPANY GOES PUBLIC

Clean Seas Tuna has become the first publicly listed tuna company in Australia. The initial public offering of A\$18 million of shares closed on December 2.

The float has been fully underwritten by LCS Capital and the company will list on the Australian Stock Exchange from December 13. Some 18 million \$0.50 shares and 18 million \$0.50 converting notes were issued.

The funds will be used to support a new on-shore tuna broodstock facility at Arno Bay on Eyre Peninsula and to continue research and development. The immediate intent is to close the life-cycle of tuna from spawning to commercial sale.

Clean Seas Tuna says it is the only operator in the world with southern bluefin broodstock - some 150 of them. Australia currently has quota for around 37 percent of the 14,030 tonnes world quota. The fish on quota are captured and fattened for sale in offshore cages near Port Lincoln, and in 2003-2004 output was more than 9200 tonnes, valued at \$242 million at the farm gate.

The parent company of Clean Sea Tuna is the Stehr Group, which also farms kingfish and mullet. The Stehr Group is recognised as an Australian leader and international pioneer in tuna fishing and offshore fish farming.

See www.cleaneastuna.com.au



I would give it my full support."

He said the rules were too inflexible, and there should be some way to put more buildings on the land to make the business

more viable so that the service could continue. "We have to look at ways of enhancing these small business efforts."



Good training is the basis for successful aquaculture

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For more information and announcements of NIWA training courses, see our web page – www.niwa.co.nz

or contact **Melanie McKerchar** 0-3-343 7835
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The courses give access to a range of NZQA qualifications and course subsidies may be available through the Seafood Industry Training Organisation (SITO) for industry participants.

National Centre for Fisheries & Aquaculture
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NIWA's Mahanga Bay aquaculture facility

VIP-AC06



An oyster farm at Deadman's Bay on Waiheke Island
PHOTO: Owen Cox, MfE

Making aquaculture **REFORM WORK**

BY RIKI ELLISON, MINISTRY FOR THE ENVIRONMENT

The Aquaculture Reform Act completes the reform of the aquaculture industry by providing greater clarity about how aquaculture is managed in New Zealand. The new legislation, introduced in January 2005, aims to balance economic development, look after the environment, settle the Crown's Treaty obligations to Maori, and respond to community concerns.

The biggest change to the legislation was for the Resource Management Act 1991 to become the main legislation governing marine farming.

The Minister for the Environment, David Benson-Pope, welcomed this change, and said that bringing aquaculture into the RMA places regional councils and unitary authorities in the front seat. The Ministry of Fisheries now has the role of assessing

whether proposals for marine farms have unduly adverse effects on commercial, customary or recreational fishing.

"Bringing marine farming under the RMA sets us up to manage the demand for access to New Zealand's rich waters better, a demand that caused the old regime to buckle under pressure," said Benson-Pope.

To help implement these changes, a support package is in place for regional governments that includes the Ministry for the Environment, Mfish and the Department of Conservation.

Over the 18 months to June 2007, these agencies are working on a programme that ranges from providing guidance to councils on how to create new aquaculture management areas, or AMAs, through to developing national best practice consent conditions.

"Central government isn't telling councils what to do, but

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wants everyone to have a clear understanding of the new framework," Benson-Pope said.

To ensure the implementation programme is useful to councils and industry, the group running the projects includes aquaculture consultant Tom Hollings, John Willmer of the Seafood Industry Council, Graeme Silver of Environment Waikato and Kirsty Woods of Te Ohu Kaimoana. Part of their role is to report back to their constituents about what is happening nationally, and to bring any of their issues to the table.

Benson-Pope says a major factor in the success of the reform will be the ability of the aquaculture industry to build its relationships with councils and work to promote the value of aquaculture, and make sure adequate provision is made for existing and new aquaculture development. "We're doing this at a national level, and it also needs to happen at regional level."

The 14 projects in the national programme run until June 30, 2007. Some projects have already been completed. Project 4, a stocktake of what councils needed to help them to manage aquaculture, finished in 2004. Project 10, which looked at creating easily understood guidance for councils on the undue adverse effects test, was due to be completed in December 2005. Project 13 focused on transferring MFish records to councils.

WORK IN PROGRESS

PROJECTS 1 AND 2 INTERNAL MATTERS

These involve coordinating the senior officials group who oversee progress in putting the reforms into place and coordinating the implementation programme.

PROJECT 3 EVALUATION OF THE REFORM

The aquaculture industry made it clear that it wants good monitoring in order to achieve what the reform sets out to do. This project will develop ways to measure the reform's success in achieving its objectives. Industry representatives will be consulted over draft measures early in 2006.

PROJECT 5 COMMUNICATIONS

This project is about maintaining good communication with councils, the aquaculture industry and other players, such as iwi and hapu. Information sheets explaining the aquaculture reforms are available on the Ministry for the Environment website. See www.mfe.govt.nz

PROJECT 6 GUIDANCE AND POLICY PROJECT

A best practice guide is being developed about how to plan existing and new AMAs. Councils and industry will be consulted over this. Options for managing experimental aquaculture are also being explored.

PROJECT 7 FISHERIES AND CONSERVATION INFO

This project, managed by the Department of Conservation and MFish, brings together expert information for councils to use to assess the potential environmental effects of a new AMA.

PROJECT 8 ALLOCATION METHODS

This project works with councils on methods for allocating space, and ensures the Minister of Conservation's power of direction is explained.

PROJECT 9 COASTAL CHARGING

This is to help councils work out fair and equitable charging options. Understandably, coastal charging is of concern to the industry. Industry representatives have been part of the

Auckland Regional Council's consultation for a proposed plan change that will allow charging. Environment Bay of Plenty has also released a discussion paper and a draft charging regime, and aims to notify a plan change in March 2006.

PROJECT 11 REGISTRY AND ADMINISTRATIVE FUNCTIONS

MFish has consulted widely with industry on the aquaculture register and record-keeping requirements. It is working to make this process as simple and as cost-effective as possible.

PROJECT 12 CONSENTS

A draft set of nationally consistent consent conditions has been developed as a guide for councils. This set of conditions could be used by councils to sit alongside any conditions the council may have specific to its region, the site or the individual application. In addition, several regional councils and unitary authorities are considering setting bonds as a consent condition, to cover the risk of cleaning up any farms that are abandoned or derelict.

PROJECT 14 PROCESS INTERIM AMAS

MFish is establishing procedures to process interim AMA decisions. Members of the central government implementation team are able to discuss the implementation projects and any issues arising from them. Meetings with councils and industry people help it stay abreast of issues, understand council and industry perspectives, and ensure the implementation projects deliver useful outcomes.

For further information, contact Riki Ellison,

see www.mfe.govt.nz or email riki.ellison@mfe.govt.nz,

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KNOW THE ENEMY #21

SEA SQUIRT

The Clubbed Tunicate Sea Squirt (*Styela clava*) poses a potential threat to New Zealand's aquaculture industry – it can blanket oyster and mussel lines, suffocate growing shellfish and compete for space and food.

It's a tough, leathery club-shaped organism that can grow up to 160mm long. It has an elongated cylindrical body on top of a stalk and can be brownish-white, yellowish-brown or reddish-brown. It settles on wharves, docks, boat hulls, mooring lines, buoys, and aquaculture structures. Anything in the water that is not covered in silt or coated with anti-fouling paint is at risk.

KEEP OUT. To help stop the spread keep your boat hull clean of bio-fouling. Frequently clean hulls and equipment paying special attention to:

- the hull, keels and stabilisers;
- intakes and outlets;
- propellers and shafts;
- rudders, rudder shafts and casing, rudder recesses; and
- anchor chains, ropes and bouys.

Always check and clean your hull before leaving your home port. Regularly apply anti-fouling paint to your hull.

LOOK OUT. Call 0800 80 99 66 if you have a suspected finding.

HELP OUT. With your help we can stop the spread of this sea squirt. Your boat and equipment can carry this harmful enemy but with a careful cleaning routine you can prevent this sea squirt spreading around our coastline.



Photo courtesy of Cawthron Institute



www.biosecurity.govt.nz



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