New Zealand Biosecurity Institute

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Protect

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New Zealand Biosecurity Institute

Working together to ensure New Zealand is protected from the adverse impacts of invasive species

NZBI CONTACTS

Alice McNatty
President

Nick Ward
Auckland/Northland

Heidi Pene
Central North Island

Rowan Sprague
Canterbury/ West Coast

Alfredo Paz
Otago/Southland

Jono Underwood
Vice-President, Membership, Web Manager & Top of The South

Diane Fraser
Secretary

Alastair Fairweather
Awards Co-ordinator

John Sanson
Biosecurity New Zealand

Alice McNatty	President		mcnatty@hbrc.govt.nz
Nick Ward	Auckland/Northland		Nicholas.Ward@mpi.govt.nz
Jono Underwood	Vice-President, Web Manager, Membership & Top of The South		jono.underwood@marlborough.govt.nz
Heidi Pene	Central North Island	027 2486447	heidi.pene@pestplants.co.nz
Duncan McMorran	Treasurer		duncan@connovation.co.nz
Diane Fraser	Secretary		dfraser@unitec.ac.nz
Jen McGowan	Lower North Island		jen.mcgowan@gw.govt.nz
Rowan Sprague	Canterbury/West Coast		rowan@nzwildingconifergroup.org
Alfredo Paz	Otago/Southland	03 211 5412/ 021 784 933	alfredo.paz@es.govt.nz

Other Officers

Chris Macann	Protect Editor & Archives Co-ordinator	03 349 9660	chrismacann@hotmail.com

Seconded Members

John Sanson	Ministry for Primary Industries	(04) 894 0836	John.Sanson@mpi.govt.nz
Alastair Fairweather	Awards Co-ordinator	027 280 7750	Alastair.Fairweather@waikatoregion.govt.nz

The New Zealand Biosecurity Institute can be found on the web at www.biosecurity.org.nz

SAFER, SMARTER RABBIT CONTROL

Rabbits have reached plague proportions in some areas and cost the country millions of dollars through lost production on farmland as well as through attempts to control them. Rabbits have a significant effect on the ecosystem and cause large areas of land to become eroded and native vegetation to change. When rabbits are seen active during the day this indicates a high population.

Pindone is a first-generation, slow-acting anticoagulant poison in a cereal-based pellet, designed for the control of rabbits in rural and urban areas. It needs to be consumed over several days to be effective, around twenty-one pellets need to be consumed by a 1.5kg rabbit before death occurs. It is important to keep the bait stations filled as death occurs 4–11 days after bait consumption. Very few rabbit carcasses will be found as rabbits return to their burrows to die.

Pindone Rabbit Bait must be used in bait stations. In cases where there is concern about bait being accessible during the daytime, the NoPests Multifeeder bait station can be closed off to stop nontarget species accessing the bait. If large areas need to be treated then consider using aerial or ground applications using a registered applicator, this will allow baits to be spread on the ground.

SMARTER THAN 1080

	PINDONE	1080
No Pre-Feed Required	✓	×
Stock Re-Entry Time	28 Days	90 Days
Dog Antidote Available	✓	×
Ground Application (CSL Required)	✓	✓
Aerial Application (CSL Required)	✓	✓
Bait Station Application Available to Public	✓	×
Pellet & Liquid Formulations Available	✓	✓
Rate per Hectare	Up to 18kg	Up to 15kg
No Clean Up Required. All Bait Consumed.	✓	×
Type of Vertebrate Toxic Agent	Multiple Feed	Single Feed

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From the Editor

NETS2021: It was just like the Olympics

Why is NETS like the Olympics? The answer lies within.

This issue acknowledges another successful NETS, with great attendance, so-to-speak.

Along with a great NETS2021, a number of organisations got behind the Biosecurity Week theme as well by organizing activities to link in with the theme "Always Adapting"

Other themes became clear as the week unfolded as well. Very clear themes were public engagement and therefor public licence, and the importance of emerging technology.

As well, those attending, if that's the correct terminology, heard that, in addition to the back country, New Zealand also has its front country. They learned also about cats and their scats, and the adventures of Eva Purron.

For me, one most memorable presentation among many, was all about fluorescing oospores, and a eureka moment which came with the option of a special song as well.

Read on, and continue celebrating the great work people of biosecurity are doing.

Chris Macann
Protect Magazine Editor

From the Presdient

Covid response is most certainly fluid and dynamic

I have been pleased with the feedback I have received about our virtual NETS2021 this year. It was pleasing to see how well supported it was and that branches organised gatherings in their areas.

In addition to the comments I made at NETS 2021, I would like to pay special thanks to Darion Embling and Sara Moylan who are finishing after serving on the Executive Committee for more than a decade.

Darion joined the executive committee in 2010 as Central North Island representative and became co-vice president in 2013, then president in 2016. He has continued to serve the Institute as immediate past president since 2019. He became president at a significant moment for the sector when the government announced its initiative to make New Zealand predator free by 2050, and released its draft guiding document for biosecurity until 2025.

Sara began her service on the executive as both co-vice president and Lower North Island representative in 2011.

I would also like to again thank Vivienne Lepper who has represented Auckland Northland branch since 2019.

Nick Ward is the new Auckland Northland representative. Nick has previously held positions at branch level.

I am pleased to welcome Jono Underwood to the position of vice-president. Jono has already done a great job as membership officer, website manager and the representative for the Top of the South branch.

We are all well aware that New Zealand's Covid response is most certainly fluid and dynamic, so thank you all for working through the various response levels and for working as part of the response itself. It's all part of who we are.

Alice McNatty
NZBI President

Legendary at plant identification:

Remembering Rob van Zoelen

"Robin" John Henry Robert van Zoelen, 11 April 1957 - 28 September 2021

Long-time institute member Robin van Zoelen passed away in September aged 64. Rob was a biosecurity officer for Tasman District Council, with 36 years of service in the sector. Rob had battled leukemia on and off for 12 years. He took early retirement in November 2020.

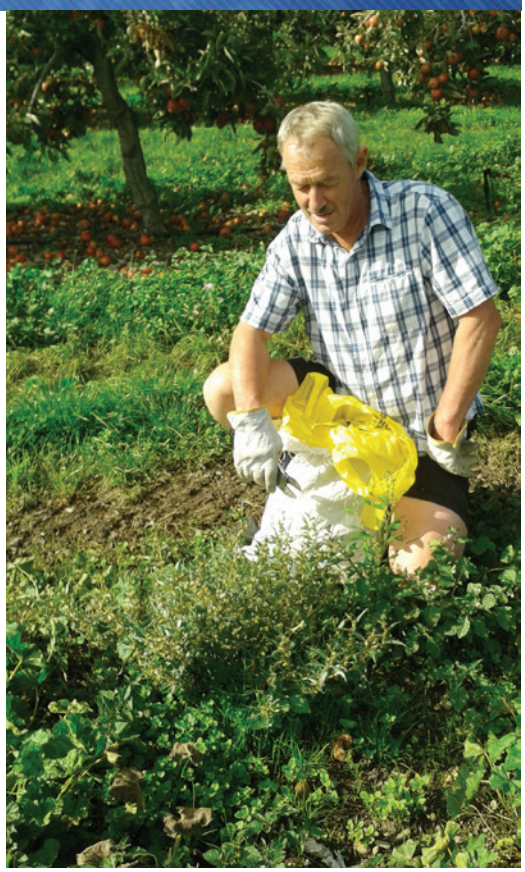
Rob completed a Diploma in Agriculture at Lincoln College in 1980. He then worked for the Ministry of Agriculture and Fisheries in Alexandra for almost two years where he was involved in pastoral advisory work with farmers, field crop advisory work particularly around plant health, soil testing, quality assurance including seed certification, and weed, pest and disease control.

Following this, Robin took up roles in local government, initially as a noxious plants and hydatid control officer for Waimea County Council. Following local government reorganisation his employer became the Nelson Marlborough Regional Council and finally the Tasman District Council, and his position became a biosecurity officer. He truly loved his work, particularly dealing with pest plant issues and was well respected by community and colleagues.

Over the course of his work, Robin was instrumental in identifying new pest plant sites in the Tasman Nelson Region including African feather grass, Johnson grass and nassella tussock. He was legendary at pasture and grass identification, and his knowledge in this area will be greatly missed.

He played an important role for spartina control in our region. When he started, there were heavily infested beds of spartina in our estuary systems and Rob spent many long days hand spraying out on the estuary.

With the advent of new herbicides and the use of helicopter spraying, we are now down to the last few isolated individual plants.



Rob and Bathhurst bur

As part of Robin's work, he was also involved in speaking to community groups and schools, sharing his knowledge, and educating people about pest plants. He also enjoyed supporting community groups involved in some of our region's earliest predator control programmes, all aimed at improving biodiversity. Robin particularly enjoyed catching up with colleagues at our local NZBI branch field trips, NETS events and other national training courses.

Farewell Rob, we will all miss you.

Ken Wright, work colleague for 14 years.

Lynley Hayes, a Science Team Leader with Manaaki Whenua – Landcare Research, who worked with Robin for three decades added her thoughts.

Robin was a fantastic supporter of weed biocontrol activities in New Zealand for 36 years. He thoroughly enjoyed all aspects of the work from releasing, monitoring, and reporting on the progress of weed biocontrol agents, to organising "swapsies" with other regions, and speaking to community groups and schools about this work. Robin told me many times that the weed biocontrol work was where he felt he could make the biggest difference and leave the greatest legacy.

It was always fun going out in the field with Robin. He was delighted that the agents he released against ragwort, nodding and Scotch thistles, had led to substantial declines in these weeds.

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Rob with nassella tussock

He was also excited to see in-roads being made into broom and tradescantia due to the agents released more recently against these targets. It is shame Robin did not get to see agents released against banana passionfruit (he was the NBC project representative for this project for a number of years) or to get to release the new mite against another of his old arch enemies, old man's beard.

He was a patient man, a quality you certainly need when working with biocontrol. We also really appreciated being able to tap into Robin's excellent memory about how weed problems in the Tasman District had changed over the last four decades, and the excellent photos he took and shared.

Thanks Robin for all you did to support our work at Manaaki Whenua - Landcare Research. You will be missed.

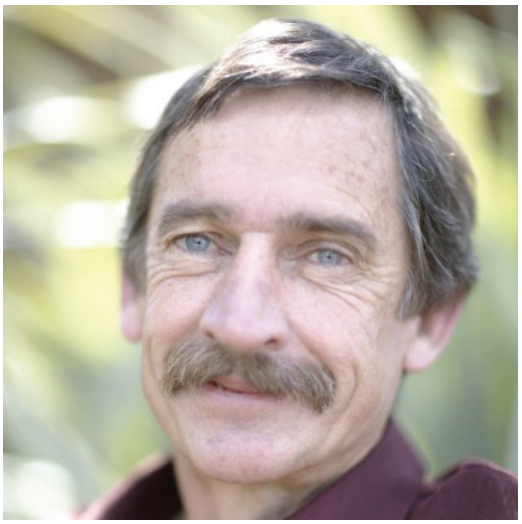
A great man in bird conservation: Thanks David Butler

Top of the South branch, earlier this year, acknowledged the passing of a great ally of the Institute's work in the Tasman district. David Butler was a major driving force behind the area's Brook Waimārama Sanctuary and was chairman of the Trust for 15 years. At NETS2010 in Blenheim he hosted a visit to the, then, proposed sanctuary. He occasionally spoke at branch meetings, about his predator work in the Pacific Islands. "He was certainly a great man in bird conservation," said branch member Ken Wright.

David died in December last year aged 67.

Diving a huge part of his science life: Remembering John Clayton

Former NIWA aquatic weed scientist John Clayton passed away in August aged 71 after a long illness.



John Clayton

Here is an extract from a tribute penned by his colleagues:

John joined the Ministry of Agriculture and Fisheries in 1978 after a two-years as engineering scientist at the NZ Electricity Department. He worked in the Aquatic Plant Section dealing with aquatic weeds, an issue for John that was 'front and centre' throughout his career, and one that he became the national go-to person and world-leading expert on.

John led the MAF Aquatic Plant team in 1985 and he was instrumental in ensuring his team became part of the National Institute of Water and Atmospheric Research (NIWA), in 1992. At NIWA, John continued his leadership role both as programme leader and principal scientist, aquatic plants, which became the freshwater biosecurity team in 2004. John retired in June 2016 but continued to hold an emeritus position at NIWA.

He loved field work and getting underwater certainly gave John a great understanding of lake ecology, the impact of invasive plants and how submerged plants act like the 'canary in the coalmine'.

Biosecurity Week 2021: always adapting

Here is a news item prepared by the NZBI to promote Biosecurity Week this year:

New Zealanders have proved that they are able to adapt when the stakes are high enough, but what about when the stakes are not as immediately obvious?

That's the challenge to all New Zealanders posed by key biosecurity sector group, the New Zealand Biosecurity Institute.

The Institute this week launches Biosecurity Week, a week of awareness about biosecurity and highlighting ways New Zealanders can help the work of the people that work in the sector.

The theme this year is "Always Adapting".

Institute president Alice McNatty said New Zealanders have clearly shown that they are able to adapt to Covid 19 when it comes to social distancing, mask wearing, and curbing international travel.

She said other ways to adapt to other biosecurity threats need not be as onerous.

"We are asking people to look at ways they can adapt their actions to help prevent the arrival and spread of all unwanted pests.

"The growing network of predator free community groups promoting the use of traps in back yards has shown the way New Zealanders have adapted their approach to protecting wildlife from predators.

"We have also adapted our behaviour with regard to kauri dieback in the way we now interact with these trees."

Ms McNatty said the "Clean-Check-Dry" messaging has seen people adapt their thinking and actions when enjoying the country's waterways, and boaties are adapting to not only think of the weather report but also what hitchhiker invasive marine pest their boat might be carrying to a new location.

"People have begun to adapt their gardening and pet keeping practices, particularly regarding disposing of garden weeds and desexing pets."

She said people are beginning to adapt to carefully check whether anything might have stowed away inside their overseas mail or baggage.

"Farmers are also adapting their practices regarding on-farm biosecurity and livestock movements."

Ms McNatty said community websites and apps like Weedbusters, iNaturalistNZ and Find-A-Pest are helpful to get information on any organism that may be unwanted. Regional council, Department of Conservation and Ministry for Primary Industries websites are also helpful.

The week of awareness activities coincides with the Institute's annual conference which for the second year in a row will be held on-line.

"Every year Institute members spend thousands of hours controlling or managing the risks to the economy and the environment from the effects of invasive species.

"This is work which costs the country hundreds of millions of dollars each year through control, research and border control budgets. This money is coming out of all New Zealanders' pockets," Ms McNatty said.

NETS

Another celebration of the work we do: NETS2021

Institute members gathered again for this year's Covid-affected NETS2021, this time in groups across the country and alone. It was, in terms of a virtual meeting, a great success. In Christchurch about 20 members gathered for the AGM and a catch-up afterwards.

Class of 2021. Christchurch-based members take part in the Annual General Meeting.

The Christchurch contingent met at the Arts Centre, once Canterbury University, in the historic Rutherford Lecture Theatre where Ernest Rutherford himself once studied. It was an interesting combination of the old and new. Cell phones and iPads on the desk next to ink wells. Few there assembled knew what the holes in the wooden desks were for.

As first speaker **Dan Tompkins** said: It's like the Olympics; you can see no one, but everyone's watching.

The mobile phone and ink well.

Predator Free 2050: what's in the pipeline?

Dan Tompkins (Science Strategy Manager Predator Free Ltd) spoke on how to keep the new tools and innovations for Predator Free coming out to 2050:

He said new tools in the immediate term are encouraging. He emphasized the need to be inclusive. There are lots of scientists out there not part of programme yet. He said it was important to encourage and bring them along to keep the pipeline of ideas flowing.

Brett Butland (Senior Project Support Manager, Predator Free Ltd) spoke about proof-of-concept predator eradication projects at landscape scale. He said breakthrough science is needed to transform the mission with new tools to make eradication and defence possible. He said each project is different and ambitious. There is a lot of uncertainty, and a partnership-based approach is best in order to share the risk and joy at the end of it, he said.

Olivia Rothwell (Research and Development Project Support Manager, Predator Free Ltd) spoke on how to manage good quality data in order to make good management decisions. She said it was important to implement standards. One simple example among many was to establish a protocol for recording dates. She said predator control data standards won't establish data collection protocols or solve data quality problems.

Michelle Crowell (DOC Threats Manager, Southern) said innovation was important and building public confidence in new technology such as aerial dropped traps, lures, detection devices, smart cameras and drones was important. She said developing a PAPP toxin (para-aminopropiophenone) in sausage form rather than a messy paste was also new. She said cats, stoats and other carnivorous mammals are highly sensitive to PAPP. She said birds are less sensitive so there is some selectivity.

Helen Blackie (Senior Principal Biosecurity Consultant, Boffa Miskell) spoke about inedible solid-state long-life lures, a long-life lure dispenser, and the Spitfire toxin delivery systems which squirt toxins onto fur so it is ingested when grooming.

Patrick Garvey (Landcare Research) spoke on getting the last 5%. He said catching the uncatchable rogue is difficult and costly, so it was important to understand how better to target them. To do this he is using the four fs of animal behavior: fighting, fleeing, feeding and fornication, and looking at traps as predators themselves, and what an animal may be averse to.

He said tests on live animals before and after control operations allow comparisons of the general population with individuals that survive, to see what differences there may be, and why they may have survived, whether it be surviving a trap, a sub-lethal dose, or detecting human odors.

Pest animal management

Henk Louw (Wellington City Council) spoke of integrating community trapping in urban spaces with large scale predator control projects. He said a key was social license for community superheroes to operate. He said the groups have great resources amongst them; engineers, builders, event coordinators, scientists, tech experts. In a few short years the numbers have grown from one or two groups to around 50 groups in two categories; reserve trapping groups and backyard trappers, over two broad projects; Predator Free Wellington (urban), and Capital Kiwi (rural).

Rosie Gerolemou, (University of Auckland) spoke about how community pest control groups generate social capital and how members of community conservation groups have better social networks, reciprocity and cooperation. She added that there are benefits beyond conservation.

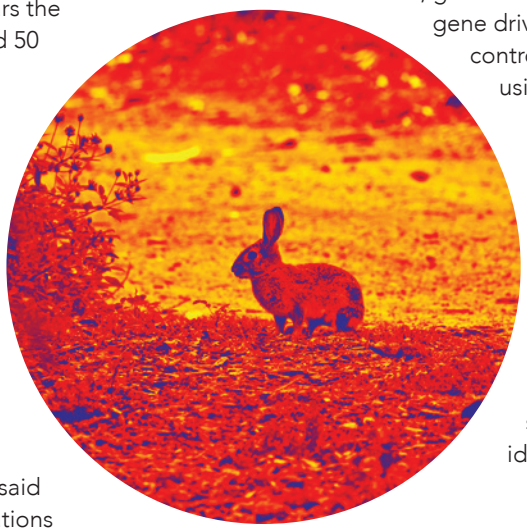
Dave Carlton (DOC) presented an update on deer management and control in the back country and the front country (city fringes) and in traditionally deer free areas of Northland, Coromandel and Taranaki. He said a single national plan won't work and that regional solutions with stakeholders need to be in place. He showed graphic pictures of understory loss in the Raukumara Ranges, and of areas of reforestation likely due to deer control.

In a related session Reuben Harland (GWRC) spoke about the challenges of urban deer control which involved night shooting and thermal imaging. He said monitoring involved using photo points and recording complaints.

Al Glenn (Landcare Research) spoke of using camera trapping and GPS collaring to estimate population density and detection probability of feral cats, on Auckland Island in particular. Participants heard about the adventures of Eva Purron. He also studied cats and their scats to see what they had been eating. He noted that 500 m spacing for ongoing trapping and monitoring by cameras and traps was a most likely the maximum for effective results.

In a related session Cathy Nottingham (University of Auckland) asked the question: If we increase vegetation and improve landscape connectivity, are we encouraging pest animals too? In particular her ongoing research concentrates on feral cats on farms. Feral cats are of major interest because they have caused a number of extinctions and they carry toxic plasmosis. Using GPS tracking and sampling gut contents she hopes to find an answer.

Phil Lester (Victoria University) managed to demystify the technologies of double stranded RNA, genetically modified bacteria, and gene drives in a session on genetic control methods for pest control using varroa as an example.



Sam Haultain (Taranaki Regional Council) tested the idea that unmanned aerial vehicles equipped with thermal imaging cameras have the potential to enable easy and effective rabbit monitoring. Spoiler alert: significant issues were identified.

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Contemporary Biosecurity Challenges

Kaeden Leonard (Northland Regional Council) spoke of the complex and technically challenging large-scale marine incursion response to Mediterranean fan worm. He said the chance of eradication was not high but the effort was not wasted because the response limited recruitment on hulls, as well as the potential for spread.

Lawrence Davenhill (Greater Wellington Regional Council) spoke of the challenges of aquatic and wetland weed management where there were generally limited herbicide options because of public perception and EPA monitoring requirements

He mentioned yellow flag iris in Parangarahu Lakes where physical removal meant lower environmental impact and no monitoring requirements but it was labour intensive and there was a risk of fragmentation. He said Senegal tea was incredibly hard to get rid of in this way because workers need to make sure to remove all plant material. He mentioned other methods including knapsack spraying, drilling and helicopter control.

Jenny Long (Department of Conservation) spoke about the Island Biosecurity Improvement Programme. New Zealand has 700 islands over one hectare in area, 400 of which are pest-free to some degree, meaning one or more targeted pests had been eradicated. She said biosecurity measures have to be tailored to each island. For example, on frequently visited Somes Island in Wellington Harbour, public messaging, baggage and clothing inspection, and surveillance are the appropriate methods. Whereas in the sub-Antarctic, where reliance is on the Defence Force for transportation, key measures are: ensuring vessels are pest free, rigorous quarantine on the mainland and before going onto island, as well as taking pest detection and controls on each trip.

Catch it, snap it, report it was the catch-cry of Steve Pawson's (University of Canterbury) address on the Find-A-Pest surveillance tool that enables identification of images from a mobile phone to understand if they are of a potential biosecurity risk. It is also a monitoring platform for known plant pests. it is a general surveillance tool not a specialist targeted tool. It can be two-way link to community groups also.

Michelle Archer (Place Group) reflected on recent historical koi carp incursion responses in Waikato's Lakes Karapiro (June 2019) and Whakamaru (June 2020). Waikato is the country's hot spot for koi. Continuing education and advocacy are the best method. Surveillance includes using e-DNA sampling as well drones. She said Mercury Energy modified its hydro-generation practices to eliminate the risk of spread.

Pest Plant Management

Norm Mason (Landcare Research) spoke about sleeper pests, and asked whether climate change will wake them up? He said sleeper pests are a post border time bomb. He said factors waking them up could include a lag phase, landscape changes, and human-led exposure. Case studies he mentioned included: Chilean needle grass, Argentine ants, root rot pathogen in tree crops, red eared slider turtles and tomato red spider mite.

Angela Bownes (Landcare Research) brought viewers up-to-date with current and new targets for weed biocontrol. The National Biocontrol Collective was formed in 2002. It is made up of 14 organisations (DOC, regional councils, district councils) which contribute annually to biocontrol research on prioritised weeds. Some research is also co-funded by MPI Sustainable Food and Fibre Futures (SFFF), previously known as the Sustainable Farming Fund.

Among the plants at various stages of research are: moth plant, lagorosiphon, banana passionfruit Darwin's barberry, Japanese honeysuckle, wild ginger, nassella tussock, woolly nightshade, Chilean needle grass, Chilean flame creeper, old man's beard, Sydney golden wattle and yellow flag iris.

John Sanson (for Sherman Smith, MPI) presented an update on wilding conifer control. He said consistent funding is making a significant impact, and with more than 3 million ha of survey monitoring and 2 million ha of control activities, containment by 2030 is considered achievable. He said health and safety are key components of the programme with a lot of risks to manage.

Some Canterbury branch members get together after the AGM. From left: Robin White, Sara Thwaites, Rowan Sprague, Jemma Hippolite, Terry Charles, Beth Williamson, Laura Williamson, Sian Reynolds, Chris Macann.

Graeme Bourdôt (AgResearch), spoke about evaluating the weed risk of multiple species. A key factor for assessing risk was whether it is a weed elsewhere in areas with a similar climate to New Zealand.

Bill Dyck (Biological Heritage National Science Challenge) spoke about his report on plant biosecurity science preparedness in New Zealand. Key among the recommendations for improvement are a need for a compendium of skills, and opportunities for further collaboration.

Illona Keenan (Wellington City Council) had an appeal regarding changing community behaviour to achieve weed control in urban spaces. She wants to know what everyone's up to across the country. She said Wellington is doing well regarding community groups. There are 160 community groups in the Wellington area including pest trapping groups, all doing incredible mahi.

Fiona Thompson (DOC) spoke about the unwanted plant organism sea splurge along New Zealand's western coastline and her study on how far it disperses on land. She reported that it spread further than expected but that seedbank removal was hopeful as a method of control.

Unitec students Zac Wilcox-Brown and Jade Matthews reported on their and other students work monitoring results from tradescantia leaf beetle releases in the Auckland region in 2011. Spoiler alert: it's good news for the future spread of this biocontrol agent.

Matauranga Pest Management

Symon Palmer (Victoria University) asked whether pests were part of early mātauranga? He answered using lessons from whakataukī and early ethnographic texts. One reference he noted compared the caterpillar to earthquakes. It is clear Maori had pests, and controlled them, he said. "He iti mokoroa e hinga puriri - the little mokoroa bug fells a puriri tree"

Tame Malcolm (Te Tira Whakamātaki) noted there are huge overlaps with science and mātauranga which he described as a knowledge system based on traditional as well as contemporary knowledge, passed on to generations using stories and narratives. He said having an understanding of the value of the species being protected is the important first step in beginning to talk about pest control.

Te Amohaere Ngata-Aerengamate (Victoria University) evoked the mana of Tane Mahuta and the creation story, in an update on her studies of the efficacy of commercially available disinfectants versus the efficacy of kanuka, which has anti phytopthera compounds, and has been used for centuries by Maori. Oospores which are responsible for the long-term survival of the pathogen are challenging to kill in the lab. She shared her eureka moment when the oospores fluoresced red, meaning they had died in the lab. That's why I love science; it's exciting. Molecular microbiology is highly focused on one organism whereas mātauranga Maori has a holistic view of all organisms and the entire ecosystem. There is a power in using both, she said.

Feedback and numbers tuning-in live or later showed how popular the sessions were. It's not the same as an in-person NETS but the Institute did well to cover the span of its members important work and to enthuse all who were part of it with renewed optimism.

All about real space and real time:

Sam Stephens and Juliet O'Connell win the Dave Galloway Innovation Award

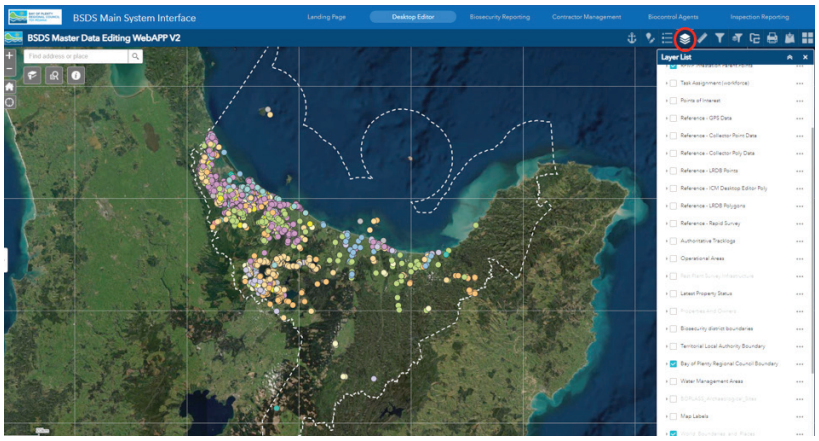
Sam Stephens and Juliet O'Connell from Bay of Plenty Regional Council have won the Dave Galloway Innovation Award for the development of the Biosecurity Spatial Data System (Geopest).

The Challenge:

In 2017, Bay of Plenty Regional Council (BOPRC) adopted an 'all of Council' database for storing and viewing data. Despite the aspiration to create a central point for all data, it became increasingly obvious that the database was not fit for purpose, particularly for biosecurity data. A number of issues from the excessive time required to input data, inaccuracies in data being entered, and issues with extracting data to analyse success against programme objectives were regularly encountered. The system became a continual source of frustration for both staff and contractors.

The Solution:

In 2020, Sam Stephens attended a conference presentation about effective spatial data collection and analysis. **It was a light-bulb moment for Sam and he became inspired about the potential of this type of system to revolutionise the effectiveness and efficiency of the biosecurity team's reporting and planning.** Sam begun conversations with Juliet O'Connell, a biosecurity officer with a GIS background and the concept of Geopest began. In the last 18 months, Sam and Juliet, have managed the development of the Geopest project. Working with developers from Ethos Environmental the first stage of the project - the pest plant module, was launched in January 2021. Amongst other features, the module allows real-time logging and tracking of pest plant infestations and surveillance track logs.



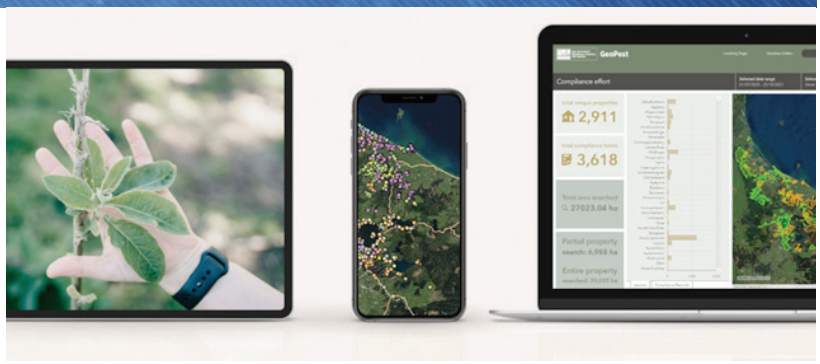
WebEditor, where staff and contractors can enter, edit and view data.

Dashboards have been developed for contract managers and programme managers to view and analyse detailed spatial data and filter to suit based on reporting requirements. Sam and Juliet have also worked to develop a biocontrol module for the storing and analysis of biocontrol releases and monitoring.

The system has created huge efficiencies in data entry, allows contractors to have accurate information in the field to guide their decision-making and day to day activities, live reporting by a number of criteria, and the use of accurate spatial information to make strategic programme decisions.

Other staff in the organisation have helped Sam and Juliet to develop and test the systems but ultimately Sam and Juliet are the drivers and continue to contribute a significant amount of their time to the project. They have both gone well above and beyond

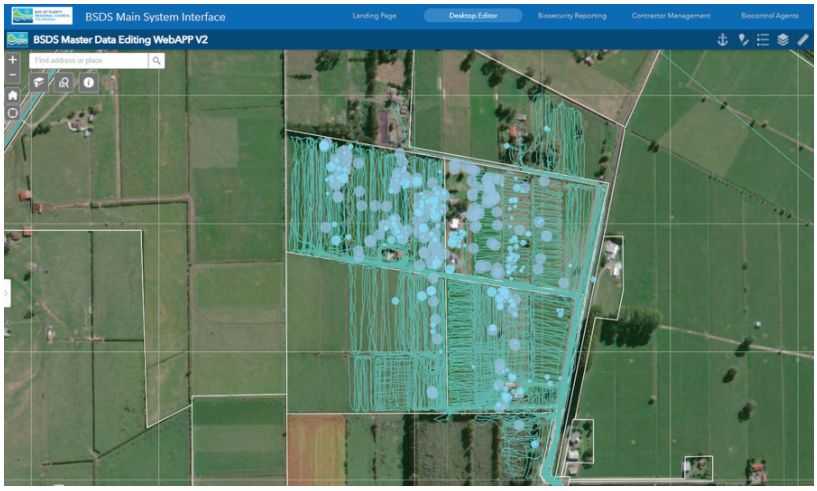
Data on the go. Dave Galloway Innovation Award winners Sam Stephens (right) and Juliet O'Connell.



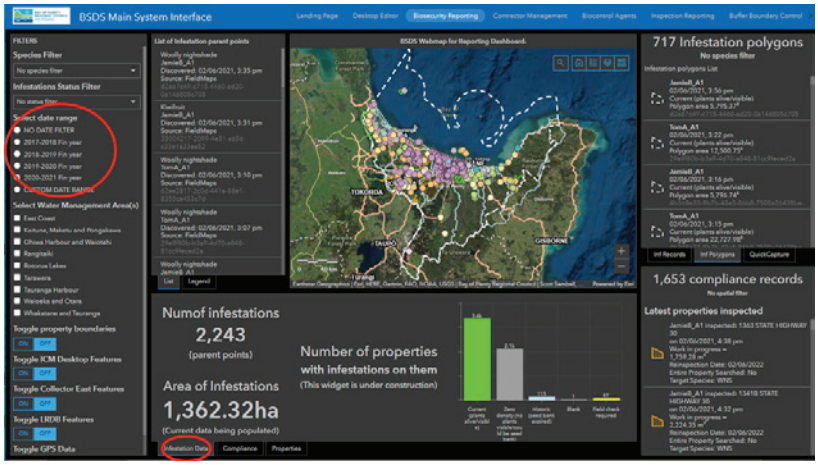
Live on a screen near you

what would normally be expected of them in their normal role.

The development and delivery of this revolutionary system is the result of determination and a visionary approach by Sam and Juliet. They were not asked to deliver the Geopest project - they had an idea, sold the idea to management, and pushed through to deliver an innovative solution.



Finer scale map showing fine scale 'Quick capture' points and Contractor tracks.



Version 1 Dashboard tracking live data – Note, these are currently being re-developed based on feedback from staff and managers.

Looking to the future:

Sam and Juliet remain actively involved in refining the live pest plant module while simultaneously beginning the development of the pest animal module. Future extensions planned include the development of aquatic and marine modules. They are currently working on a specific module to capture and store all eDNA data collected by BOPRC.

There has been a high degree of interest in the system by other agencies who have recognised the potential to create efficiencies and increase effectiveness of their own data capturing and reporting. Landcare Research has shown interest in utilising the database to help manage its biocontrol programme and other councils are already showing interest in adopting the Geopest system in its entirety.

The Dave Galloway Innovation Award

is named in memory of Life Member Dave Galloway. The Dave Galloway Innovation Award is designed to recognise innovation in biosecurity. It will encompass work carried out with both vertebrates and invertebrates, terrestrial and aquatic. This award can be presented to an individual, group or organisation. It was established in 2016.

For the Birds:

John Innes wins the Peter Nelson Award for Excellence in Vertebrate Pest Management

John Innes has won the Peter Nelson Award for Excellence in Vertebrate Pest Management.

John Innes releases a banded tui.

John Innes is a senior researcher (Wildlife Ecology) at Manaaki Whenua Landcare Research. He has made a significant contribution to vertebrate pest management within New Zealand over the last 40 years though his innovative and management-focused research into the into how introduced predators interact with native species.

John began his career in wildlife research with a study of ship rats for his MSc at Massey University in 1977. He then started work with the NZ Forest Service in 1980 leading research into kokako habitat use and diet. One of his first projects showed that kokako populations were not affected by aerial 1080 operations. At the same time, his research determined that predators were a significant factor in the decline of kokako, and that broad-scale control of ship-rats and possums on the mainland was possible and could reverse kokako declines. This research was the key to kokako populations recovering from the brink of extinction in the 1980's to over 2000 pairs today.

John was then transferred to the Forestry Research Institute, and then during the restricting of crown research moved to Manaaki Whenua Landcare Research. Over his research career, John has undertaken wide-ranging research including:

- Population dynamics, range sizes and behaviour of rodents in native forests and forest fragments;
- Density-impact functions for terrestrial vertebrate pests and indigenous biota;
- The biodiversity outcomes from predator control;
- Working closely with predator free sanctuaries to determine their effectiveness at excluding predators and ensure they remain predator free.

John's research has led to significant improvements in how conservation managers view predators and how predator control is undertaken in NZ.

In addition to his research, John has been closely involved in the annual workshops for national sanctuaries practitioners for 15 years. He has also served on DOC specialist advisory groups for kōkako, kakapo and takahē, and has worked also with kakī, pāteke and kiwi recovery programmes, as well as with tui and bellbird restoration projects in urban environments.

The Peter Nelson Memorial Trophy

is awarded annually by the NZ Biosecurity Institute to individuals or organisations, for achievement in Vertebrate Pest Management within New Zealand. It was established in 2005.

The trophy is a carved kokako standing on a limb above the skulls of small predatory mammals - a rat, a possum and a stoat. The trophy was designed and made by Mr Ray Weaver.

Connecting this year at branch level: President's Report - 2021

Alice McNatty

Earlier in the year, when there were still Covid-19 cases occurring in the community, the Executive Team made the difficult decision to postpone the in-person conference to be held in Christchurch for a second time, and instead hold the conference virtually this year.

This decision was made, as at the time, the risk of another lockdown or travel restrictions, during the conference was deemed too high to continue. I would like to thank the Christchurch NETS Organising Committee for the work that they have put in for a second year running, and acknowledge the persistence and determination of this Committee for their enthusiasm to hold NETS2022 in Christchurch.

I would also like to thank the Organising Committee of this year's virtual conference – the Committee has been made up of members from the Executive Team and conference organiser Kevin Collins. Thank you, Kevin, for the huge amounts of work you have put into organising this conference in a compressed space of time and keeping us all on track with the tasks at hand. Your skills have been immensely appreciated.

I would also like to acknowledge the important work that is occurring at the branch level, ensuring that, although NETS is not held in-person this year, that members are connecting at the branch level and networking.

I have heard of many innovative events and interactions occurring through the branches which is amazing to see.

Now I would like to acknowledge two executive members who are standing down this year.

Darion Embling is a dedicated, long-standing member of the NZBI and has been on the NZBI Executive Team for over 10 years as a branch representative, vice-president, 3 years as president and now as immediate past president. Darion's key focus as president, was to highlight the NZBI's role and the complex and varied role our members have managing invasive species across New Zealand. Darion did an exceptional job at showcasing the NZBI at a national level and was instrumental in progressing a number of key projects within the Executive Team, and streamlining the functioning of the Institute by incorporating new initiatives and suggestions. Darion, your knowledge, enthusiasm, and expertise on the Executive Team will be missed, however, we all know that should we require your assistance, you are only a phone call away.

Another executive member standing down is Vivienne Lepper who has been on the Executive Team as a branch representative for Northland and Auckland for 2 years. I would like to thank Vivienne for her hard work and enthusiasm over this time and I know she will continue supporting her branch.

Last year I had the pleasure of being on the judging panel for the New Zealand Biosecurity Awards organised by the Ministry of Primary Industries. The New Zealand Biosecurity Awards recognise and celebrate outstanding contributions to protecting our country. This was a diverse showcase of the work across New Zealand being carried out in the field of biosecurity and **it was impressive to see how many of the entrants and award recipients were NZBI members.** These awards further showcase the innovative and challenging work that is undertaken in the biosecurity sector. The increased visibility that these awards give, along with the those from the New Zealand Biosecurity Institute, further solidifies the importance of a strong functioning biosecurity sector within New Zealand and abroad.

Thank you for attending this year's NETS, in its virtual format. I am acutely aware that a virtual format will never replace an in-person conference where networking opportunities are more forthcoming. But I hope you are finding this conference valuable and I look forward to seeing you all, in person, at next year's NETS in Christchurch.

Alice McNatty
NZBI President

A good year despite a few bumps:

Secretary's Report 2021

Another year has rolled by, despite some additional bumps in the road. The nightmare of Covid lockdowns continued, although on reflection, we in New Zealand had the significant advantage of isolation and aggressive biosecurity management compared with the rest of the world. Zoom, Teams and other virtual platforms are now a normality.

I now feel, with the support of the Executive Team but particularly our esteemed president and, of course, Jono's computer tech skills, that I am getting to grips with the role as NZBI Secretary. I thoroughly enjoy working with the members of the team and am delighted that Alice agreed to continue her role as president, even with the additional challenge of the arrival of her son, Finn.

The first half of 2021 was a busy time with additional Executive Committee meetings for discussion and organisation of the virtual NETS 2021. I think you will agree that this has been an excellent initiative for NZBI members and has been very well organised by Kevin Collins and his team. I am sure we will all be looking forward to the 2022 face-to-face NETS in Christchurch.

As you will hear later in the meeting, Jono, Heidi and I have been working on governance guidelines to accompany the NZBI constitution. This is a supportive and adaptive document to provide information, clarity and transparency for the executive and general members of the NZBI in the details of processes within the Institute. This will be valuable information for current and future NZBI executive teams.

It has been great to see members using NZBI as a mechanism for circulating job vacancies with 47 vacancy notices being sent to members over the past year. I encourage everyone to so in the future.

I have enjoyed the last year within the secretary's role and the interactions with our NZBI members. Good luck to everyone in the upcoming year.

Diane Fraser

NZBI Secretary

Boat owners are getting the message

How much do Auckland boat owners know about marine biosecurity? And does this translate to improvements in practice?

Auckland Council has now released the results of its second annual boat owner survey. The good news is it shows significant improvement in terms of understanding and uptake of marine biosecurity principles, which translates directly to better protection for our coastal environments.

Over summer, nine marine outreach ambassadors were stationed at eight marinas and one boat ramp in Auckland. A 'biosecurity trailer' also toured the facilities.

While the programme is primarily about education, it was also an opportunity for Auckland Council to learn more about boat users' and public knowledge of marine biosecurity, and the behaviours they engage in.

The marine biosecurity trailer at the boatshow.

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1,889 individuals were surveyed. Here below are some of the survey highlights:

- 83% of respondents said that they are aware of marine biosecurity.
- 3% felt they had moderate knowledge and 12% felt they had expert knowledge. This was significantly improved on the year prior when 34% felt they had moderate knowledge. Moored boat owners had particularly high knowledge.
- 47% of respondents said their marinas kept them informed and contributed to their knowledge. Others attributed their knowledge to the boat show, signage, friends, outreach staff and the internet.
- Only a small percentage of boat owners clean their boats less than once a year. 46% clean annually, and 29% every six months. Most use haul-out facilities. Cost was seen as the biggest barrier to boat cleaning, with around 29% suggesting it was a challenge for them.

Ahoy: From left are: Hamish Lass (Bay of Plenty Regional Council), Kaeden Leonard (Northland Regional Council), Waata Papalii-Smith (Ministry for Primary Industries), Sarah Carley (Ministry for Primary Industries), Stephanie Hay (Auckland Council's Outreach Team) and Kathryn Lister (Northland Regional Council)

At the boatshow.
The future of biosecurity perhaps?

What does this mean for marine biosecurity?

Senior Marine Biosecurity Advisor Samantha Happy explains: **"Education is our first defence against marine pests.** This increase in knowledge means that more boat owners are aware their boats can potentially carry unwanted hitch hikers with them on their travels. This helps protect our islands and special bays, not only within Auckland but further afield too. It's an indication that the programmes are working."

Contributed by the upper North Island marine biosecurity group.

Not just survive but thrive:

Towards Predator-Free Taranaki's Community Champions

Thanks to inspiring films such as Fight for the Wild and first-hand experience in the bush, citizens across New Zealand are increasingly aware of the dire situation facing our native wildlife and want to do something about it.

Community champions Denise Rowland and her two helpers checking traps.

It is common for people at any presentation I give to know the main predators and different types of traps used to catch them. Towards Predator-Free Taranaki's urban programme is working to leverage this passion to achieve our predator-free goals by empowering citizens as community champions.

These community champions may be a diverse group, but all are strong supporters of the goals of the programme and want to do something about it. Some of them have been volunteering to check traps in local reserves in the city and others have only been trapping in their backyard. Some of them are retired, others work full-time, and there's even one intermediate school student. Regardless of their experience, they are united in the fact that they want to do something to help us eradicate predators in New Zealand.

We are providing them the tools and resources to act and rallying their friends and neighbours to the trapping effort.

There is no one-size-fits all approach for the community champions because no two people are the same. Some are outgoing and have heaps of time on their hands, while others work full-time and can only help in odd hours. It's all good to us, we are there to support them in whatever ways they want to work.

This community champion programme is still in its infancy and is often changing. Some of the work done by these champions includes passing out flyers to neighbours, knocking on doors, hosting a neighbourhood party, or creating a neighbourhood trapping group. All the champions sell traps, share the "how to's" of trapping, and help to unravel the mysteries of using Trap.NZ to record trap checks and catches.

We will achieve a predator-free Taranaki through widespread support of the goals of the programme. These community champions are inspirational leaders for the rest of the community to follow and get behind. Their efforts help make trapping predators part of our normal routines thereby allowing our precious native wildlife to not just survive, but thrive.

Community champions from left to right are Shelley Prestney and Janet Murdoch with Marion Prestney and Mike Murdoch after hosting a neighbourhood party to get more members of their community trapping, and to create a local trapping group.

What you don't see:

A brief history of collaboration on marine pests

Contributed by the upper North Island marine biosecurity group.

In recent years marine biosecurity has climbed higher up the list for policy makers, environmentalists, and the marine industry. Today there are education programmes and surveillance and compliance frameworks supported by various legislation designed to protect our coasts from non-indigenous species, particularly those that are highly invasive.

But it hasn't always been that way. It took the arrival of Mediterranean fanworm (*Sabella spallanzanii*) on the scene to bring six councils and agencies in the upper North Island together to form what is now a highly regarded collaboration representing the home bases of 70% of New Zealand's marine vessel fleet.

Greg Corbett

Greg Corbett, now biosecurity manager at Bay of Plenty Toi Moana Regional Council, started his biosecurity career in the 1980s working on pest control in the agricultural sector and was one of the first, through a role with local government, to develop marine biosecurity as a discipline here.

He explains that a collective initiative in the upper South Island (called the Top of the South Biosecurity Partnership) was getting traction, and that Northland and Bay of Plenty regions were actively working to manage high-risk species, but these were isolated efforts. Then Auckland's Waitemata Harbour suffered a serious incursion of Mediterranean fanworm and in 2013 it was found to have made its way to Tauranga and Whangarei Harbours.

"It quickly became obvious what would happen if we waited a few years. They already understood that well in the North and **the urgency drew councils into thinking about it more seriously.** It became clear we needed to work with our neighbouring regions to manage this," he recalls.

In Tauranga, Greg said it was increasingly obvious that boats were arriving from their travels with marine pest hitchhikers onboard. "We had stood up a marine biosecurity management plan to respond to that, but at that point it was non-statutory."

Ultimately these incursions became the catalyst for what is now the Top of the North Marine Biosecurity Partnership - a collaborative effort between Northland Regional Council, Auckland Council, Waikato Regional Council, and Bay of Plenty Toi Moana Regional Council. Gisborne District Council and Hawke's Bay Regional Council came onboard soon after and the Ministry for Primary Industries has since been joined by the Department of Conservation.

The collaboration is a counterpart to the Top of the South Marine Biosecurity Partnership and the Fiordland Guardians. With New Zealand at the forefront of marine biosecurity globally, those involved in all three efforts have had to build their expertise and skills relatively quickly.

Greg explained that while his own expertise was in terrestrial biosecurity, he was fortunate to have a colleague, Hamish Lass, who had studied marine science and had good practical skills in surveillance and incursion responses thanks to his work in freshwater biosecurity. Today the pair continue to work together, with a regional team to support their work programme including contracted specialist divers, who also deliver dive surveillance work across some of the neighbouring regions too.

"That put us on a strong footing to be able to respond to those initial incursions of both fanworm and *Styela clava* – an invasive species of sea squirt."

The time was right, and the councils engaged strongly, collaborating on a wide range of approaches including surveillance and monitoring and eradication when necessary. There is also a programme of advocacy and awareness raising, including the development of a shared brand, 'Clean Below? Good to Go' to promote the marine biosecurity message to boat owners with a shared online resource for boaties, marinepests.nz, at its hub.

"The secret to progress was around information sharing, getting intelligence on vessels, and techniques to manage pests. **We knew we couldn't do nothing, and we had to build an understanding at operational level.**"

Over time the councils involved have also progressed policy. Initially this came from the individual regions, in the form of Pathway Management Plans, a tool enabled by an amendment to the Biosecurity Act.

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To date, there are only two operational Pathway Management Plans; being in Fiordland and Northland, and both are marine-based. Now the creation of a shared approach, called the Draft Clean Hull Plan (formerly Inter-Regional Marine Pest Pathway Management Plan) is being developed across the four northernmost regions. The four regions aim to make rules simpler and easier to enforce, replacing myriad rules with one single consistent standard across the regions that account for around 90% of marine pest movement in New Zealand.

Fan Worm on a vessel.

At the same time as these regional groups are collaborating, a national approach to marine biosecurity is also in development, led by Biosecurity New Zealand. John Sanson from Biosecurity New Zealand's Pest Management Group explains that the strategy will establish a shared vision for everyone involved in domestic marine biosecurity and outline the actions required to improve the marine biosecurity system. "The strategy will provide a guiding framework and roadmap for future collaboration and collective action".

And three key players - Auckland Council, Marlborough District Council and Northland Regional Council are partners in, and case study regions for, the Marine Biosecurity Toolbox which is an MBIE-funded 5-year collaborative research programme whose mission is the development of science-based tools and technologies that empower government, tangata whenua, industry and the public to effectively mitigate biosecurity risks.

So far the wins tend to be things you can't see. One of the worst pests, the Northern Pacific Seastar, is not established here. Mediterranean fanworm has not ballooned out of control in Tauranga or the Bay of Islands. It has been eradicated from Tutukaka, where it was first found in 2015. And a number of marine pest incursions have been stopped in their tracks. And, thanks in no small part to extensive engagement work by Auckland Council and others, boat owners are becoming more knowledgeable and willing to do their bit.

Auckland Council and Biosecurity New Zealand are also running a joint response to a Mediterranean fanworm incursion at Aotea Great Barrier Island. Their work programme focuses on checking for the presence of the fanworm, and removing any found.

Auckland Council's work has a pathway management approach and policy to support that. They have also been delivering a best practice work programme that combines engagement and behaviour change with other essential components including surveillance and monitoring, and research, development and innovation.

But like with Covid-19, it can be difficult to get widespread credit for the absence of something. Education and surveillance remains a high priority, as does building the body of science and knowledge that informs decision making and provides tools for those at the coalface to work with.

Greg said that marine pests will continue to feature so long as boats are moving. "We have had some surprises such as where someone has done some in-hull cleaning in part of the harbour and as a result part of the floor is covered in fanworm. But we have mopped them up with no ongoing ballooning of the population. We have kept it very suppressed. It has taken a lot of work but it shows what is possible with very rudimentary tools."

"We won't eradicate something like fanworm, but our efforts now might buy us 10 or 20 years to maintain the pressure for science to catch up. That gives us hope."

The archives

Jimmy Moffat Rabbit Destroyer

THE SOUTH CANTERBURY RABBIT FENCE.

[BY OUR AGRICULTURAL REPORTER.]

Weekly Press.

While going through Grays Hills [most certainly Grays Hills Station near Tekapo in the Mackenzie Country of South Canterbury] I met caretaker Moffatt with his pack of dogs. Jimmy is not a man tall of stature, but he is a genuine Highlander, and is most zealous in the cause of rabbit destruction. He has been in the district for the last twenty-five years; knows every hill and dale, nook and cranny. He is a man who literally lives in the open, and except on occasions when he retired to his hut amongst the mountains for a few hours sleep, or is actually driven to it by unusual stresses of weather…

He is one of those who believes he has a mission to perform on this earth, and that his is to rid his own particular line of country of rabbits. He has killed more rabbits than any other man along the line, and… keeps his section of the fence… in excellent order… directly a fresh rabbit scratching is seen along the fence line the hole is carefully filled up, and Moffat and his pack of dogs set off on a hunt till the unfortunate rabbit falls a victim to the capacious jaws of Jimmy's ravenous lurcher.

The Press
19 September 1890.

The tail

Possible pests perhaps plod pavement

A lurcher is a greyhound or similar breed crossed with a terrier. The intention is to encourage tenacity, intelligence, and scenting ability. Apparently they are calm and intelligent except around furry things.

New Zealand **Biosecurity** Institute

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