



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

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You kiwis are the best in the world

■ EDITOR'S NOTE

It was great to see many of you in Dunedin at NETS2015.

This issue contains an overview of the conference with special attention to those members who received recognition for their services to biosecurity and to the Institute.

I noticed a few comments from those members who have been in the biosecurity sector for a significant number of years along the lines of "the more things change the more they stay the same". This is often most likely the case but the recurring themes of community collaboration and good liaison between scientists and practitioners also suggested ways of constantly improving and getting the job

done well together. This of course tied-in well with the theme "The Learning Never Stops" and long may it continue.

Also frequent were comments from senior members about the recognition New Zealand's

biosecurity system receives internationally. I experienced this first hand once when I went through a biosecurity checkpoint in Hawaii: "You kiwis are the best in world but we still have to ask you a few questions".

That's a great pat on the back for all involved in our sector.

CHRIS MACANN,
EDITOR

"You kiwis are the best in world but we still have to ask you a few questions"

Looking towards summer

■ FROM THE NZBI EXECUTIVE

NETS2015 well what a week that was, a great turn out and some great papers, gems and posters. The Exec would like to extend their thanks to everyone who presented and made NETS such a valuable training and networking. The field trips lived up to expectation and the Monarch Cruise was spectacular on a very clear and crisp Dunedin afternoon. Special thanks to the Conference Organising Committee, it's not an easy task to pull a NETS off successfully whilst working full time, the Exec would like to thank you for your time and efforts both prior to and during NETS.

It is with sadness that we have seen two of our very valuable Exec Members move on to other ventures in life, firstly I would like to acknowledge Lindsay Vaughan for his

representation on the Exec for a number of years and his dedicated work to driving the Institute forward, Jono Underwood has taken up Lindsay's role as branch rep and we are pleased to have him aboard.

Secondly and certainly not least, Randall Milne has stepped down from his role at treasurer to pursue other interests. Randall has been a fantastic team member in this role and we are going to sadly miss his outstanding efforts to keep our books and membership information in check. We wish Randall all the best in his personal endeavours.

Nga mihi

REBECCA KEMP,
PRESIDENT





Predator control work has led kereru to successfully fledge

A walk in the park

■ NORTHLAND/AUCKLAND BRANCH REPORT

Nick Ward reports on The Northland/Auckland branch meeting held earlier this year. The meeting was delayed by the Queensland Fruit Fly response which involved many of the branch's members. Among other things, the meeting was a walk in the park.

The meeting started with a guided walk around Wenderholm Regional Park and historic Cauldrey House led by Senior Park Ranger Barry Green. Barry has been a ranger for over 40 years and is soon to retire.

Wenderholm Regional Park is celebrating 50 years this year and is Auckland's oldest regional park. The park is a mix of historic plantings including coral trees, Moreton Bay figs, and cork oaks, mixed with regenerating native bush. There is ongoing work in the park by Auckland Council, volunteers and contractors to reduce weeds and pest animals. The predator control work has led kereru to successfully fledge. In 1985 North Island Robins were released in the park. The population grew but has now moved north out of the park. Barry also pointed out the Te Muri regional park, which has been recently purchased by Auckland Council.



The Branch under the branches of a cork oak in Wenderholm Regional Park.

The walk was followed by the branch meeting in which we welcomed several new members.

The meeting also discussed the perennial problem of trying to keep on top of membership when people change jobs or contact details.

Mel Galbraith presented a case to the meeting on the need for a specialist biosecurity journal and I updated the gathering on the ongoing Fruit Fly Response in Auckland.



Branch members with Barry Green on the veranda of Cauldrey House.



Safe control measures and strong animal ethics:

David Morgan wins Peter Nelson Award

Dr David Morgan from Landcare Research was awarded the Peter Nelson Memorial Award for his contribution to vertebrate pest management.

His colleagues penned this citation:

Dave joined the Forest Research Institute at Rangiora in 1975 to join a group tasked with researching the problems caused by mammalian pests and their solutions. Right from the start Dave focussed on improving the aerial control of possums, publishing a problem analysis in his 1982 paper that served as the research plan for the next 20 years, work that was pulled together and summarised in his PhD thesis in 2004.

Over the years, Dave's most important contributions to pest management have been in improving the cost-effectiveness and environmental safety of aerial 1080 operations for possum control and control tools in general. The research component of Dave's work was recognised as part of the team effort that won the Shorland Medal—an NZAS award. But Dave's scientific approach has always been conducted in close collaboration with end users to ensure there has been rapid adoption of many of the improvements Dave has made to pest management tools, especially aerial 1080 poisoning.

In the mid 70's, aerial operations for possum control averaged around 70% kill, and failures occurred frequently. Initially Dave's work focussed on the palatability and acceptance of baits. Working closely with pest managers in the Forest Service and Pest Boards, a series of field trials in various parts of NZ showed that regardless of the bait type used, good results could always be expected except in late summer when highly favoured foods such as fruits, seeds, and invertebrates were abundant.

He discovered that 30-40% of possums have an innate ability to detect and avoid 1080



Frank Visser, Dave Morgan and Alistair Fairweather

So the bait wasn't the problem and he turned his attention to the toxin spending many nights observing possums in the pens at Rangiora (there were no videos in those days!). Through that, he discovered that 30-40% of possums have an innate

ability to detect and avoid 1080. This led to the development of cinnamon, and other flavours, as masks for 1080, and cinnamon is still being used highly effectively 30 years later.

Then the focus moved to the question—"Do all possums encounter the bait?"—a question that led to many years of assessing the effectiveness of current aerial sowing techniques. A major advance occurred in the late 80's and early 90s with the emergence of aerial guidance systems, notably GPS, and better designs of sowing buckets. Dave showed that, together, these greatly improved the likelihood that all possums would encounter bait, and led to a tenfold reduction in bait being distributed, saving an estimated \$11 million annually by 1995, and leading the way for further refinements more recently.

The quality and variety of baits used in both aerial and ground-based control is another important area where Dave's research has greatly improved the likelihood that, not only will all possums encounter bait, but the bait will still be palatable and carry a lethal dose. Improvements were made in the production of both carrot and pellet baits, continuing to the present with work on bait storage life and bait hardness, and new baits such as gels and pastes were developed. All this work was completed through

close collaboration with the bait manufacturers at Animal Control Products, Connovation, Pest Control Research, and Kiwicare.

By 2006, Dave and colleagues were confident enough that the collective improvements made by researchers and pest managers made the idea of local elimination of possums achievable, and a paper published in that year showed the substantial economic gains that could be made, especially if immigration from outlying areas could be slowed by control around the perimeter. However, two years of study at Lake McKerrow in Fiordland showed that preventing immigration after control is extremely difficult and that remains a major challenge.

Drawing his extensive knowledge together in a very practical way, Dave and IT colleagues recently constructed an internet based Vertebrate Pest Decision Support System. This uses scientific information to recommend the best options for controlling possums and other pests in relation to the local conditions and constraints that a user faces. It is particularly useful to pest managers who wish to provide objective justification for the design and cost of their pest management programmes.

He believes it is important that we should try to control pests as humanely as is practically possible

with aspirin as a true, cost-effective-alternative to 1080 that may be more publically acceptable. This work is continuing and it is hoped that new

Dave's research has greatly improved the likelihood that, not only will all possums encounter bait, but the bait will still be palatable and carry a lethal dose

products will emerge from it, helping pest managers to sustain pest control into the future in a publically acceptable manner.

It has always been important to Dave that, as an ecologist and naturalist at heart, the welfare of animals is taken into account, even if they are pests. This concern for animal welfare issues in pest management is partly the reason why he has served as Chair of the Animal Ethics Committee at Landcare Research and its forbears since 1988, on the National Animal Ethics Advisory Committee for 6 years, and as an MPI-accredited reviewer of animal ethics compliance. He believes it is important that we should try to control pests as humanely as is practically possible.

Dave's research findings have been published in over 100 scientific papers, and a similar number of contract reports to TBFNZ, DOC, and bait manufacturers in NZ and overseas. He is frequently consulted on pest control technology matters and has made numerous presentations over the years about his work to end-users, pest controllers and the public, as well as at scientific conferences.



Spotted anything unusual?

Early reporting of unusual insect pests or plant symptoms helps to protect the avocado industry.

Calls to MPI's pest and disease hotline 0800 80 99 66 are confidential and ensure industry pests are discovered early before they spread.



Commitment to working collaboratively:

Murray Dawson wins the Peter Ingram Memorial Award

Murray Dawson from Landcare Research was awarded the Peter Ingram Award for the work he's done to help those in the field improve their identification skills in the area of weeds, as well as providing the platforms for increased 'citizen science' around invasive plant species. Some of his colleagues made these comments in his nomination:

Murray has been a driver in developing the interactive plant keys – especially the Lucid weed key online which is a major tool now for 'weedos' in general, as well as those who deal with National Plant Pest Accord species in particular. Murray is currently working on the mobile app to go with this Lucid key which will up the standard even more. His work in the background of Nature Watch, his knowledge of botanical naming and similar which he is happy to help others with, his understanding of web based applications and his commitment to working collaboratively has been really valuable – I know he's become one of my 'go to' guys for Weedbusters stuff for me, and that's been so helpful. But he's also not well known or acknowledged by the biodiversity community for the work that he has done behind the scenes in all these areas of endeavor.

■ CAROLYN LEWIS, WEEDBUSTERS

I have deep admiration for Murray's diligent, quality work that he has carried out across a range of fields over his considerable working life. He richly deserves recognition for this, especially when one can see he did not necessarily get the breaks or support earlier in his career.

But his chromosome studies were fundamental to supporting modern, evolution-based plant taxonomy in New Zealand. He has had a crucial role in applying science in ways that are relevant to end users – interactive keys for important or difficult groups of organisms including pest plants, working with the large horticultural industry and its customers, and joining these interests up with citizen science. Again, although science ultimately demands and promises 'outcomes', it is only people like Murray who have that particular ethic to actually make it happen, but then unfortunately get little in the way of thanks for it!

■ COLIN MEURCK, LANDCARE RESEARCH



Murray Dawson and Trevor James

Murray and I have collaborated on several projects of many years. I am a co-author of many of his weed identification keys and we are currently working together on apps for smart phones and other devices. In development of these keys Murray also collaborated very closely with Sheldon Navie of University of Queensland. Sheldon and Murray shared lots of material both for Murray's keys and Sheldon's Australian keys.

Here at AgResearch, we believe that plant identification using apps on smart devices are likely to be the main source of information for farmers, growers and the general public and we need to be prepared for that event.

We have already been approached by some of our stakeholders enquiring about capability in this area. For these and for AgResearch's own pest and weed information project we have been in discussion with Murray about improved identification apps. We believe there is a real and on-going need for capability in this area and that Murray is well equipped to fulfil this.

Murray's talents are also well respected elsewhere and the authors of the very popular book 'An Illustrated Guide to Common Weeds of New Zealand' (published by the New Zealand Plant Protection Society) have approached him to be a full co-author for the upcoming 4th (revised) edition.

■ TREVOR JAMES, AgRESEARCH

A couple of great Kauri trees that have fallen and are now lying quietly in the forest:

Ray Weaver and Peter Nelson

The Institute paid tribute to member Ray Weaver who passed away on the 3rd of July this year. Frank Visser from Key Industries presented this tribute to Ray and also acknowledged Peter Nelson.

Ray was a NZBI member and active conservationist and who has contributed much to our industry over the past 50 or more years. In 2007 Ray carved and built the handsome Peter Nelson Memorial Trophy, which is awarded to an individual or organisation annually at our Conference for achievement in Vertebrate Pest Management.

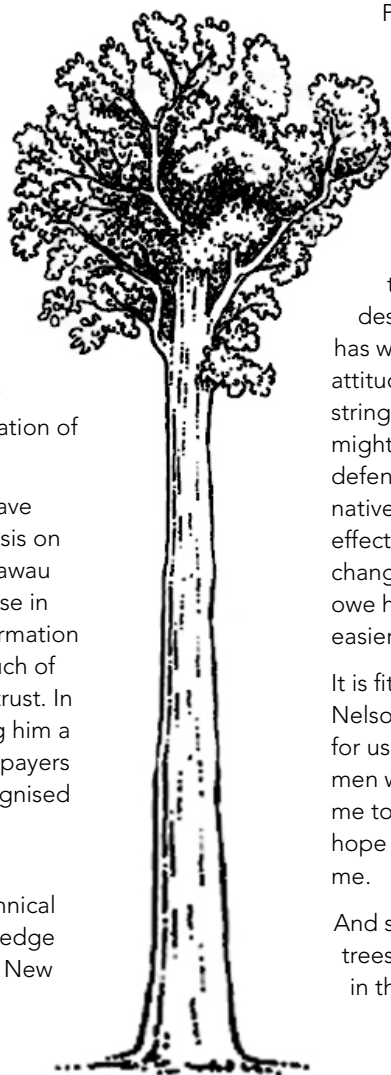
Back in April 1955, after widespread speculation as to what was killing the pohutukawa trees in Bostaquet Bay on Kawau, Ray took photographs of the dead trees and sent them to Mr Basil King, Commissioner of Crown Lands in Auckland stating "I have determined beyond doubt that the trees were killed by opossums on the island, not disease." That was a significant year because it was also the year that I was born, just to emphasize how long Ray Weaver was actively involved in saving our native species through eradication of unwanted pests.

As a result of his work there are many people who have been spurred on to gain an understanding of the basis on which native plants can be re-established both on Kawau Island and in NZ generally, with a consequent increase in the number of native wildlife. His work led to the formation of the Pohutukawa Trust through which Ray gave much of his time and finances in work and promotion of the trust. In 2003 his efforts were recognised by islanders making him a life member of the Kawau Island Residents and Ratepayers Association and the Pohutukawa Trust was also recognised in 2003 by the Ministry for the Environment with the presentation of "The Green Ribbon Award".

We owe so much to Ray Weaver for the years of technical work he did in pest eradication which gave us knowledge on how to tackle the massive task of conservation in New Zealand.



Ray Weaver, right with Diederik Meenken, the first recipient of the Peter Nelson Trophy in 2007



People like Ray Weaver have set a foundation of technical knowledge upon which subsequent years of work have built layer upon layer of smarter and better pest management solutions and will continue to do in the future.

Not only do we owe Ray much for his technical knowledge but we could also describe him as a constant dripping tap that has worn politicians down to help change their attitudes to conservation and open up purse strings as well. Sometimes a better metaphor might have been an angry Doberman pinscher defending his beloved Kawau Island and NZ's native species heritage. Let's not forget the effect of his consistent and persistent voice on changing public opinion to Conservation. We owe him much as it makes our job so much easier to day.

It is fitting to remember both Ray and Peter Nelson who have left such an important legacy for us to follow on in. When we remember great men who achieved so much it always inspires me to want to leave a legacy like they have. I hope that challenges you as much as it does me.

And so we remember a couple of great kauri trees that have fallen and are now lying quietly in the forest.



Goodbye and thanks: Rob McCaw retires

Rob McCaw received a special contribution award from the Institute at NETS2015 in acknowledgement of his retirement and gratitude for his contribution to the Institute through his branch activities. Canterbury colleagues farewelled Rob formally at an earlier Branch function in April.

Rob only took the job with the North Canterbury Nassella Tussock Board because it came with a house. That was quite a few years ago - sometime in the 1970's. The rent was around \$4 a week and the salary about \$300 a fortnight.

Rob finished his career in biosecurity with ECan at the end of April, after working with a succession of predecessor agencies involved in plant pest management and later the wider biosecurity sector.

Rob began in Cheviot as a tussock grubber. He discovered he quite liked the pest plant work and from grubbing tussock he later moved to Waimate as a noxious plants officer.

Upon a major rearrangement of the pest management structure at Environment Canterbury Rob moved to Christchurch as a team leader.

Colleagues and team members thanked him for his support and for helping them to grow in their jobs. "He gave his team members room to move and encouraged them to do things outside their comfort zones," they said.

Canterbury branch members commended Rob for his support of Institute activities over their years and for his time as branch treasurer.

Lyndey Hayes thanked him for his support of Landcare's biocontrol research and the weed biocontrol group. "He was an early champion of weed biocontrol and was always helpful and supportive," she said.

Ian Hankin from DOC thanked Rob for the creative ways in which he managed to work with the Department on control programmes, and his cooperative and pragmatic approach to managing budgets.

Rob said he has attended some great conferences while in the job, and it was through his work that he met partner Helen.



Rob and Partner Helen cut the "farewell-and-thanks "cake

"He gave his team members room to move and encouraged them to do things outside their comfort zones"

"One of the things I'll have to manage now is not having a group like you around me," he said.

He recalled, when he first started, that the issues were the same then as now.

"We're still talking about the same things. The more things change the more they stay the same," he said.

The learning never stopped

■ A BRIEF OVERVIEW OF NETS2015 BY CHRIS MACANN

More than 200 members experienced Dunedin's warm embrace at NETS2015. The cosy spirit within more than made up for the cooler temperature outside.

President Rebecca Kemp welcomed delegates saying that this year's conference theme 'The Learning Never Stops' was poignant for such a nationally and internationally successful learning institution.

Steve Ellis, chair of National Pest Control Agencies echoed this in his welcome. "Technology transfer and best practice hold more relevance than ever. Getting it right first time is critical," he said.

Guest Speaker, Conservation Minister Maggie Barry chose the conference to launch her "War on Weeds" programme.

She made no apology for the military language.

"We're focusing efforts on what we are calling the Dirty Dozen, 12 weeds which are causing particular problems in different parts of the country. They are weeds which everyone will be able to identify and help to remove with minimal equipment."



Conservation Minister Maggie Barry



Bill Lee



Richard Bowman and Lindsay Vaughan



Adriana Najar-Rodriguez and Cecilia Falla



Jeff Donaldson, Carolyn Lewis and Lynley Hayes

She said research by the Royal Society suggests they cost the agricultural sector more than \$1.2 billion a year in lost productivity and control costs.

"I want our War on Weeds campaign to focus people's attention on the problems these weedy ecoinvaders cause.

"It's an opportunity to get some exercise pulling out weeds in the great outdoors, in the cause of helping the environment."

She said \$1.2 million Community Conservation Partnerships Funding will go towards weed eradication this year.

"The scale of the challenge is daunting, but I have confidence that together we can make a difference for our natural heritage." She said.

Richard Blakely, deputy vice chancellor at Otago University explained in his welcome, the workings of the University's Annual Statistics and Transparency Report with an emphasis on environmental outcomes.

Otago Regional Council chair Stephen Woodhead and chief executive Peter Bodeker invited all to enjoy the Otago region. In separate addresses they gave overviews of

the region and its community, legislative, and biosecurity challenges including rabbits, wilding pines and lagarosiphon among many.

Bill Lee from Landcare Research spoke of lessons from past invasions. He said the argument internationally for accepting novel ecosystems with species from many countries is misguided



in the New Zealand context however we do need to review some of our approaches to pest control to provide enduring cost-effective biodiversity benefits.

Philip Hulme from Lincoln University spoke on the gap between the knowledge generated by scientists and the uptake by practitioners. Bridging this gap requires reciprocal flows of information from both scientists and practitioners he said. In addressing the gap Philip said the dialogue must be respectful and that objective evidence is essential.

Heinrick Moller from the University of Otago introduced the NZ Sustainability Dashboard - a tool for benchmarking farm performance. He said designing the framework highlighted two main lessons. Firstly, all the 'layers and players' have valuable knowledge and linked roles to play for enhanced biosecurity; secondly, managing biosecurity as a singular threat rather than part of a whole social and economic governance systems approach will undermine our best efforts for mitigating and counteracting the effects of invasive species.

Judith Curran, Executive Producer at Natural History New Zealand unit used some of her favourite clips to show how the "Our Big Blue Backyard" television series produced by the Unit reminded Kiwis of their connection with the marine environment, and of how fascinating the lives of some of the most charismatic as well as some of the most mundane sea creatures really are.

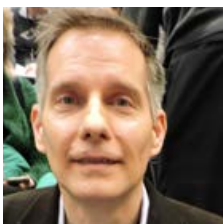
Island biosecurity, wasp and plant biological control, Chilean needle grass, beech forest pests, brown marmorated stink bugs and Queensland fruit flies were but a few of the pests covered in sessions on managing data, policy development, invasion pathways, and community, which peppered the conference.

Short 'gem' sessions from students from Auckland University of Technology among others covered topics including risk pathways, biodiversity advocacy and new systems for animal pest management.

Early risers visited the Orokonui Bird Sanctuary for breakfast and birdsong. The sanctuary is home to kaka, takahe, tui, bellbirds and kiwi, among many as well as the Otago skink, jewelled gecko and the tuatara.

Fieldtrips covered the varying terrestrial and marine biosecurity challenges of the area around Dunedin.

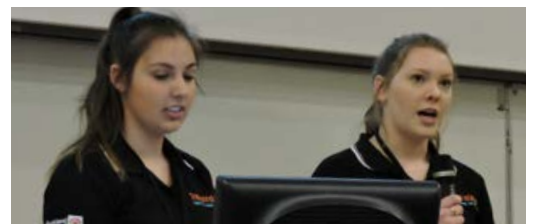
Some visited the privately owned 315ha Sinclair wetlands, part of a larger 2000ha wetland that is home to more than 60 bird species.



Philip Hulme



Richard Calvert and Lindsay Vaughan



Rachel Gibbons and Hannah Dabb



Richard Lord, on the organising committee, kept things flowing smoothly



Allan Cowley, Ray Wilman and Grant Lusi



Ray Wilman

Others learnt about the marine and terrestrial restoration of Huiawa Peninsula at the mouth of the Wakouaiti River.

A Goldfields tour incorporated a visit to New Zealand's largest goldmine. Along the way participants learned about spartina control, wilding pines, rabbit and possum control, an area free of gorse and broom, nodding thistle and biological control. As well, the group visited DOC's predator-free skink reserve.

Two trips visited the Otago Peninsula – one by land and one by sea.

Those that joined the Peninsula cruise were rewarded with memorable views of wildlife including seals and albatross. By land, others met the people improving habitats and protecting wildlife, among them the Otago Peninsula Biodiversity Group and the Yellow Eyed Penguin Trust.

The conference dinner was launched in spirited and unique "southern tradition" by the addressing of the haggis.

David Morgan from Landcare Research was awarded the Peter Nelson Memorial Trophy for his contribution to vertebrate pest management.

The Peter Nelson Memorial Trophy is awarded annually to individuals or organisations, for achievement in Vertebrate Pest Management within New Zealand. The trophy is a carved kokako standing on a limb above the skulls of small predatory mammals - a rat, a possum and a stoat.

Special tribute was paid to Ray Weaver who passed away in July this year. It was Ray who designed and built the handsome trophy.

Murray Dawson from Landcare Research was this year's winner of the Peter Ingram Memorial



David Brittain and Ronny Groenteman



Dave Morgan



Bob Brown



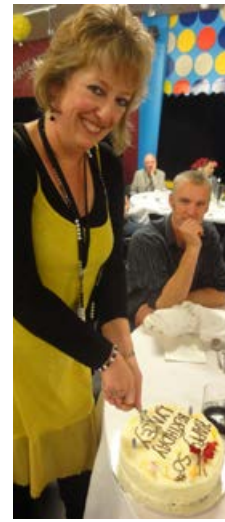
Randall Milne and Rebecca Kemp



Hannah Dabb and Molly Wilson



Eyes front - all eyes on the albatross colony



Lynley Hayes celebrated her 50th birthday on the night



Award for the work he's done to help those in the field improve their identification skills in the area of weeds.

The Peter Ingram Award is given to a member who has successfully undertaken or enabled others to achieve, relevant to pest plant education, control or management.

Peter Ingram was the pest plant coordinator at Environment Bay of Plenty when he died in August, 2001,

Lindsay Vaughan was given a special award for his services to the executive. Colleague Ken Wright acknowledged Lindsay's upcoming retirement and praised his efforts in biosecurity in the top of the south island as well as his contribution nationally.

Outgoing treasurer Randal Milne received a special commendation for his commitment to the Institute, and the office of treasurer and membership officer.

Rob McCaw who retired earlier this year was awarded a special commendation for his contribution to the Institute.



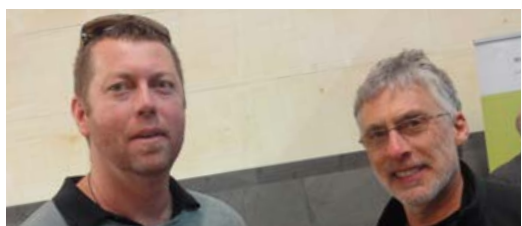
David Teulon and Mark McNeil



Glen Falconer and Ken Wright



Matt Hickson and Ivana Giacon



Lance Smith and Graeme Bourdot



Lindsay Vaughan and Rebecca Kemp



Paul Smale



Hanna Eastgate, Sarah Hemmingsen and Gemma Livingstone

A recipe for creating an ideal habitat won Ilona Keenan from Wellington Regional Council the Stook Award for best presentation. The stook is a cross between the story and a book. She conveyed a new idea known as veteranising in an entertaining and funky manner. Veteranising involves creating habitats from killed pest trees. Instead of being removed they are managed in

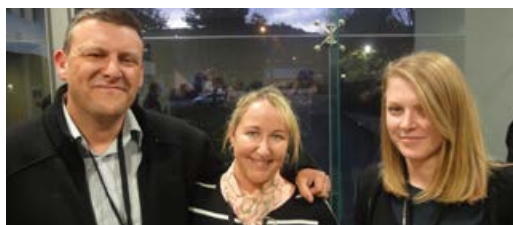
a way which creates opportunities for animals to live, mimicking the natural processes of an ecosystem where dead trees still have their uses.

Not for the first time South Canterbury pest control contractor Khan Adam won the clay bird shooting trophy for his expertise at busting clays.

President Rebecca Kemp farewelled delegates saying we shouldn't be divided by local regional or national boundaries, and in that spirit invited all to another round of learning and sharing at NETS2016 in central Auckland 27-29 July next year.



Darion Embling and conference organiser Carolyn Lewis



Dave Hodges, Heidi Pene and Frances McKinnon



Ilona Keenan, Darion Embling and Rebecca Kemp



Murray Dawson and David Brittain



Craig Davey and Hugh Gourlay



Nick Ward and Mary Stewart



Robbie Sicely and Tony Dixon



It's in the family: three generations of pest controllers - and mum too

At NETS2015 were Kevin and Karl Battersby, third generation pest managers. Father and grandfather Les, who passed away recently, was the subject of an oral history, along with his wife Zoe, carried-out by the Institute in 2013. At NET2014 in Taranaki some of Les' recorded thoughts on his career were shared.



Kevin and Karl Battersby



Zoe and Les Battersby in 2013

Mosquito zapper

Loyal conference sponsor Key Industries had a number of new products to display, among them a device that uses sound waves to kill the larvae and pupa of mosquitoes.

As Peter Visser explained, the gadget kills mosquito larvae by rupturing their internal air bladders with acoustic energy. All mosquito larvae have internal air bladders that help them breathe and move up and down in the water where they feed and grow. The air bladders are resonant therefore susceptible to acoustic energy in the 18 to 30 kilohertz octave. Peter said the product, recent on the world market, evolved out of a school science fair project by a student in the United States.



Peter Visser demonstrates the mosquito zapper

Good stewardship, customary knowledge and science can benefit the local community:

A fieldtrip to the Huriawa Peninsula at Karitāne

Derek Richards, Senior Environmental Advisor from Te Rūnanga o Ngāi Tahu contributed this report on an instructive afternoon outing.

Karitāne is located 40 km north of Dunedin and is home to the East Otago Taiāpure (Customary Fishing Area). A local Tangata Tiaki (guardian) Brendan Flack introduced the concept of Kaitiakitanga (stewardship) within Taiāpure and how mātauranga māori (customary knowledge) and science can benefit the local community using the East Otago Taiāpure as an example.

The philosophy of “Ki Uta Ki Tai” (from the mountains to the sea) and “Utu” (reciprocity) was discussed, using examples of the native plant restoration on Huriawa, and the riparian planting along the banks of the Waikouaiti River. Hopefully these initiatives will lead to improved water quality (e.g. less sediment) for



Fieldtrippers overlook the North end of the East Otago Taiāpure.

pāua and other marine or estuarine organisms that inhabit the area around Huriawa. Rāhui (temporary closures) as a management tool for pāua was also explained and discussed.

The East Otago Taiāpure was applied for in March 1992 because members of the local Rūnanga were concerned about depleting pāua stocks. They also wanted the ability to reassert their chieftainship for their present and future generations, and to ensure the maintenance of health and well-being

of the community. It wasn't until 1999 that the Government gazetted the Taiāpure, and it took another two years for the management committee (made up from iwi and commercial fishing interests as well as the local community) to be formally established. Since that time, two series of regulations have been

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passed by the East Otago Taiāpure Management Committee (EOTMC). The first for a ban on set netting on 1 October 2007, and the second for a temporary pāua closure on the Huriawa Peninsula and a reduction in bag limits for finfish and shellfish on 1 October 2010. Since its inception the EOTMC has worked closely with the University of Otago and Te Te Rūnanga o Ngāi Tahu to obtain the best scientific information to support these management decisions with over ten postgraduate projects conducted with the Taiāpure. As such this local fishery area is likely to be one of the most well studied and managed fisheries in New Zealand.



Tangata Tiaki, Brendan Flack explains the management goals of the East Otago Taiāpure.



What does it all mean? The effectiveness of biosecurity advertising

■ BY RAJESH RAM, UNIVERSITY OF AUCKLAND'S FACULTY OF EDUCATION

New Zealand is a trading nation and the livelihood of its people is highly dependent on the products that are grown, processed and exported.

Consequently New Zealand's trade with other countries has been increasing. Ministry of Primary Industry (MPI) records show imports of a variety of goods including the import of 600, 000 containers and passage of 4.5 million passengers, this continually exposes New Zealand to biosecurity risks. Growing international trade makes New Zealand's borders vulnerable to exotic pests and diseases, many of which could potentially destroy our economy and biodiversity.

Currently one such risk causing widespread concern for the horticultural industry in New Zealand is the Queensland fruit fly (*Bactrocera tryoni*). The discovery of a single male Queensland fruit fly and subsequent capture of additional adult fruit flies, one pupa and 39 larvae in the hip suburb of Grey Lynn, Auckland is cause for serious concern for the authorities. It was only in 2012 that newspapers were buzzing with news of a Queensland fruit fly caught down Great North road as the crow flies west, from Ponsonby in the racing suburb of Avondale.

Endemic to eastern Queensland and north eastern New South Wales Australia, the female fruit fly is known to lays its eggs on immature fruit just beneath the skin. The eggs hatch in the maturing fruit and the larvae begin to tunnel and feed within the fruit. The tunnelling and feeding cause localised rot eventually causing the fruit to drop. Mature larvae tunnel out of the rotting fruit and enter the soil. In favourable

warm weather, they pupate and emerge out as mature flies, according to The New South Wales, Department of Primary Industries.

What has got New Zealand horticultural industry experts concerned is that the Queensland fruit fly is known to infect more than a 100 species of fruits including export varieties of New Zealand pip and stone fruit. There is alarm that potential overseas trading partners may use the infestation as a trade barrier.

The Ministry for Primary Industries (MPI) is working overtime to contain the outbreak of the fruit fly in Grey Lynn with a number of measures including setting exclusion zones, bait setting and localised spraying. The MPI has also made itself visible on the radio, various websites and in the newspapers by putting out full page advertisements asking the community to cooperate with measures set to control the spread of the pest. This sort of visibility by the MPI can be likened to their presence at the international airports where people entering New Zealand not only make contact with MPI staff, but are exposed to a plethora of biosecurity related information which are displayed on posters and amnesty bins. Because the area within the airport is a customs controlled zone, people are required by law to follow instructions including instructions on biosecurity posters. People who choose to comply with New Zealand's biosecurity regulations know that failure can lead to instant fines, imprisonment or deportation.

Compulsion and goodwill at play

There appears to be some similarities between the scenario that is unfolding in the suburb of Grey Lynn and the customs controlled areas in the airport. Both places operate by policing the movement of material in designated areas. However, at the airports people are obliged by law to follow instructions, but people are under no such obligation in Grey Lynn. It can be said that in Grey Lynn, the MPI are relying on people's goodwill to follow instructions.

Although the eradication of the fruit fly from the horticultural industry and MPI's points of view are paramount, people in Grey Lynn have been asking questions. News on television has shown members of the public asking questions such as "why leafy and root vegetables are allowed to be taken out of the controlled area but not whole fresh fruit and vegetables?"

Perhaps the leaflet provided by the MPI to inform people living in the controlled zones A and B about the fruit fly has failed to provide such information.

New Zealand's \$5 billion horticultural industry is at stake, so it is very important that people get all the relevant information regarding the fruit fly to insure they can make biosecurity-responsible decisions. People need to be provided with correct up-to-date biosecurity information so

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they can form positive attitudes towards biosecurity in New Zealand. Positive attitudes towards biosecurity in New Zealand matters because it will reveal whether biosecurity compliance can be expected of individuals when scenarios like the one unfolding in Grey Lynn occur.

Clear Intentions

The MPI have mobilised their staff and contractors to the affected site in Grey Lynn. We know this because the MPI has put out big and bold signage in the affected area and the MPI has made its intentions clear by putting out full page advertisements in the newspapers. However, are people willing to follow biosecurity regulations? And are people getting the right message from biosecurity related advertisement?

In 2014 as part of the Master's Degree programme, Year 9 New Zealand secondary school students were asked a series of questions related to biosecurity. Included in the questionnaire was a poster (a young girl covered with rock snot) used by the MPI to spread the message about the fresh water pest didymo (*Didymosphenia geminata*). The poster also included instructions on what to do to stop the spread of didymo. The questionnaire was administered to 171 students of which 89 were males and 82 females, a further nine students were interviewed. The poster was used to gauge students' attitudes towards biosecurity related educational material. Firstly students were asked to explain any feelings generated as a result of studying the poster, next they were asked whether they would follow instructions on the poster and finally the nine students that were interviewed were asked to identify the organism on the poster.

Are people willing to follow biosecurity regulations? And are people getting the right message from biosecurity related advertisement?

What the students thought

Images on posters are not only supposed to speak to you but make one think of the wider implications. But in this instance it appears that image on the biosecurity poster not only failed to give away the name of the unwanted organism

but also failed to engage nearly half of the students, as 43.3% of the students' responses were placed in the 'no response' category.

The image on the poster is of a young girl who looks rather distressed at the sight of green blobs caught in her clothing and skin. Hence it wasn't surprising that 24% of the students responded by saying that upon studying the poster, they became worried for the child. It seems that students received a distressing message from the poster as this concern for the child was also recorded in the face to face interviews. For example, interviewee 2 appeared empathetic towards the image on the poster with this response, "The girl she's covered in dirty seaweed I felt sorry for her". Interviewee 4 appeared protective of the child in the poster by stating, "I see a little child who wants to like go for a swim but there's like all these plants and everything, there's like dirty stuff on her... it looks harmful to her"

With 14% of students, there was a strong awakening of emotional feelings for the environment when they saw the poster. This could be seen as encouraging as the poster is supposed to conjure such feelings and prompt individuals to act in a biosecurity responsible manner. There was a cohort of students (9.4%) that said they felt anger against others when they saw the

scenario depicted on the poster. Although feelings of anger show students emotional connection to the environment and responsibility towards its well-being, anger can also suggest a lack of understanding of the issue.

There were a number of students (4.1%) who became concerned for their own well-being when they saw the poster. Worrying about a situation usually prompts individuals to take action, so in this instance it can be seen as beneficial. However students appeared to be only worried, no indication of any forthcoming action was given.

Sense of powerlessness

Fatalistic views are said to be pervasive as is a sense of powerlessness people feel in regards to implementing meaningful change. Moreover, 2.9% of student's views were put into the fatalistic category because they responded with statements like "I don't care" and "I can't do anything about it." A possible explanation for these views could be that these students did not understand the concept of biosecurity or the issue highlighted in the poster was too big for them to be concerned.





There was a genuine concern amongst 2.3% of students for keeping New Zealand's environment safe for future generations. This idea was also evident in data from face-to-face interviews. For example interviewee 6 stated, "...It will be a much nicer place for our next generation like we can sustain our environment longer."

Students' attitudes towards following biosecurity instructions relating to the advertisement were gauged by asking them to indicate whether they would follow instructions stated on the bottom of the poster which said, "Check, Clean and Dry Gear Between Waterways". To respond to the question students were required to choose one from the following terms; Always, Sometimes, Maybe and Never to indicate their objective. The strong feelings students reported as a result of studying the poster would indicate that students had engaged with poster and found the message on the poster. However this did not eventuate because only 22.8% of the students indicated that they would "Always" follow instructions on the poster, 17% provided "No Response", 24% indicated that they would "Sometimes" follow instructions, 32.2% indicated "Maybe", to following instructions and 4.1% of students signalled that they would "Never" follow instructions on the poster. It can be said that the majority of the students were undecided in their judgement when it came to following instructions on the biosecurity poster or perhaps were unable to find any message on the poster as the message is in fine print.

A range of emotions

The poster of the young girl covered in didymo engaged Year 9 students because just over half (56%) of students reported a range of different feelings as a result of studying the poster. The poster had an effect on students' emotions

because both the interview and questionnaire data support the claim that the majority of students became protective of the child in the poster.

The findings from this study show that although the biosecurity poster engaged the students emotionally, it failed to convey the biosecurity message. First the message of "Check, Clean, Dry gear between waterways" was not realised because just under quarter (22.8%) of the

students indicated that they would "Always" follow instructions on the poster. Secondly, the poster failed to give away the name didymo as the unwanted organism as none of the nine interviewees could identify the organism didymo by name. It can be said that rather than showing concern for the damage that didymo could potentially inflict on New Zealand's economy and biodiversity, students' main concern was for the well-being of the girl in the poster.

They want to be part of the solution to the problem, but their lack of biosecurity knowledge has resulted in students being unable to understand the issue

The responses given by these students suggest that they want to be part of the solution to the problem, but their lack of biosecurity knowledge has resulted in students being unable to understand the issue. Research has shown that knowledge of an issue is needed to generate positive attitudes. The low level of biosecurity knowledge among this cohort of students' has not only affected their ability to form strong attitudes towards biosecurity, but also affected their ability to interpret biosecurity information from the poster. Similar results were reported in an Australian study where junior high and early secondary school students were unable to generate positive attitudes towards biosecurity because of a lack of biosecurity knowledge in 2011.

The MPI together with other agencies that are involved in the eradication of the fruit fly in the Grey Lynn area are working hard to get rid of this localised outbreak. However, we live in a pluralistic society. This means that there are some among us that do not care about biosecurity or are willing to change their actions because of scientific authority. Hence, to break through this aspect of human nature, biosecurity messages should be aimed to a specific medium or audience, using carefully researched illustrations, prompts and examples that stimulate a new way of thinking about the personal relevance of biosecurity. The school curriculum presents an avenue through which the personal relevance of biosecurity can be introduced to the next generation.

Ben Minehan: Marlborough based weed control specialist

Ben established his own company, Weed Solutions Ltd, in May of this year. He has been secretary of the Top of the South Branch for the last 7 years. Here he talks about his career and gives some advice to biosecurity newcomers.

I worked in the Biosecurity Section of the Marlborough District Council for 15 years running the weeds team. I have had an interest in plants and weed control from when I was at school.

An opportunity arose for me to be mentored part-time to be a Growsafe Trainer for the last three years.

Hungry for more knowledge about weed control and the use of agrichemicals, I left the Council and worked for Marlborough Helicopters as a loader/driver. Establishing my own company, I am now a distributor for Taskforce Herbicide.

While with the Council, I led the project for six years to have the product registered in New Zealand. I carry out inspection and control work for the Marlborough District Council and carry out weed control for local landowners. I also carry out herbicide trial work for various clients and help out at Marlborough Helicopters when they need me to fill in.

My future plans include developing an effective boom spray and re-pasture system to convert bad infestations of nassella tussock and Chilean needle grass into high quality pasture.

I love working in the outdoors and interacting with the farming community across New Zealand. I get to work all over Marlborough and with my recent work, I have travelled to North Canterbury and Hawkes Bay.

Advice for biosecurity newcomers

Make every effort to spend time in the field with the older staff working in biosecurity. They have a lot of knowledge that needs to be passed on. We don't need to make the same mistakes twice.

Treat those in the farming community with respect at all times and they will learn to respect you.



Ben Minehan in action



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