



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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Every man and his cat can help

■ EDITOR'S NOTE

In this issue is a story on biosecurity education in schools which is just one example of many initiatives being developed across the nation.

There is also an item on the Institute's summer promotion which explains how everyone can help us do our job.

Although management and control of escaped pets and plants is just one part of biosecurity work it is an area where "every-man-and-his cat" are vital allies. As well there is an item on research into a possible biological ally in the control of wasps, which sheds some light on the challenges of researchers and the helpfulness of the public. There is also a story about the rewards of continuous vigilance of historic

infestation sites despite the amount of effort it often requires. This issue also celebrates some of the many successful plant and animal pest operations carried out recently.

Thank you all for your help this year.

Have an enjoyable Christmas and New Year.

CHRIS MACANN,
EDITOR

"Every-man-and-his cat are vital allies"



Pets not pests these holidays

■ FROM THE NZBI EXECUTIVE

The executive has prepared a summer communication programme to raise awareness among all New Zealanders about the Institute and the activities of our members.

As well it suggests ideas in which all kiwis can help make our job easier. It builds on the initial summer communication programme we embarked on last year which focussed on good stewardship of pets given as Christmas gifts, and on other summer themes like good gardening practices and the healthy use of waterways.

Thank you to those of you who contributed examples of pet and garden escapes from around the country.

Very best wishes to you and your families for Christmas and the new year, and thank you for your support throughout the year.

Nga mihi

REBECCA KEMP,
PRESIDENT



A very busy year in the North

■ NORTHLAND/AUCKLAND BRANCH REPORT
BY MARY STEWART

What a busy year, with many of our branch members being involved in the Queensland fruit fly response and many other projects in the Northland and Auckland regions. The Auckland Northland area has seen not only fruit fly in the headlines but also marine issues and the brown marmorated stink bug.

The Auckland Northland Branch held several meetings during the last year.

Our November meeting began with a trip to Marunui (near Mangawhai Heads) hosted by John and Kathy Hawley. Dave their pest control contractor also joined us. The Hawley's are one of eighteen shareholders who manage and privately own Marunui. The land (around 423 hectares) was originally bought by Teddy Goldsmith, an English ecologist, in 1987 who set-up the company with a constitution to manage the land. The land is on the southern slopes of the Brynderwyn Hills near Mangawhai and there is a DOC reserve that adjoins it. The whole property has a QEII covenant and in April 2013 14 kiwis were re-introduced to the area. In 2003 an ecological report was written by R Pierce entitled "Ecological Management and monitoring at Marunui Forest, Brynderwyn Hills". This resulted in a Management Plan and a Conservation Working Plan for pest control. There are regionally significant plants and fauna on the land including Hochstetter's frogs, tomtit, kakariki, and pippin. The forests are

There have been some chicks resulting, and one pair of kiwis has nested again.



Branch members at April meeting outside Cauldrey House, Wendelholm with Barry Green, Senior Park Ranger.

Northern podocarp-kauri-broadleaf forest with extensive areas of kanuka.

There has been strong support from the Mangawhai community for the kiwis. Initially some of the kiwis paired-up and built nests. In April-May 2014, 22 more adults were introduced to bring the total number of adult kiwis to 36. There have been some chicks resulting, and one pair of kiwis has nested again. As they like to roam, some of the males were monitored with transmitters. Ultimately the kiwis will spread and some have walked 5-6km and then returned to Marunui.

Kane and Sara from the Northland Regional Council gave a presentation on the Whangarei Heads Landcare Forum—an overarching group providing financial, administrative, monitoring and public advocacy support to a number of smaller Landcare Groups.

These groups are all helping to restore and enhance habitat for kiwi on over 6000ha of land on the Whangarei peninsula. The 'Backyard Kiwi Programme' promotes kiwi recovery on private land with assistance from NRC and now with the Kiwi Coast's support the programme extends

Education has centred on teaching school children about the impact of dogs on kiwi.

up to Tutukaka. Dogs have been a problem for the programme and so education has centred on teaching school children about the impact of dogs on kiwi. Children are now good advocates for ensuring that dogs are tied up.

We held a meeting in April at Wendeholm Regional Park. We thank Barry Green for taking us on a guided walk of the historic Cauldrey House and the Wenderholm peninsula. Barry was Senior Park Ranger for Auckland Council and has just retired after 40 years. He gave us a biosecurity and plant history of the Wenderholm Regional Park which is celebrating



fifty years as Auckland's oldest regional park this year. Mel Galbraith gave us a thought provoking talk "Time for a Biosecurity Journal for New Zealand". Watch this space.

Our AGM was hosted by Mel Galbraith at Unitec in July. We had talks from Glenn Aguilar from Unitec updating us on GIS technologies, Mark Mitchell from Auckland Council spoke about the Hunua pest control project and Mel took us on a field trip to Oakley Creek. Wendy Johns from Friends of Oakley Creek showed us the great restoration work the group has been doing along Oakley Creek for over ten years. Samantha Happy, Rowena Gilchrist and I brought along some sample plants of Chinese and Asiatic knotweed and we discussed the increasing threats of Chinese herbal medicinal species. Chinese knotweed has been found on Oakley Creek.

The Auckland Northland Branch are now well into the organising phase for hosting NETS 2015.

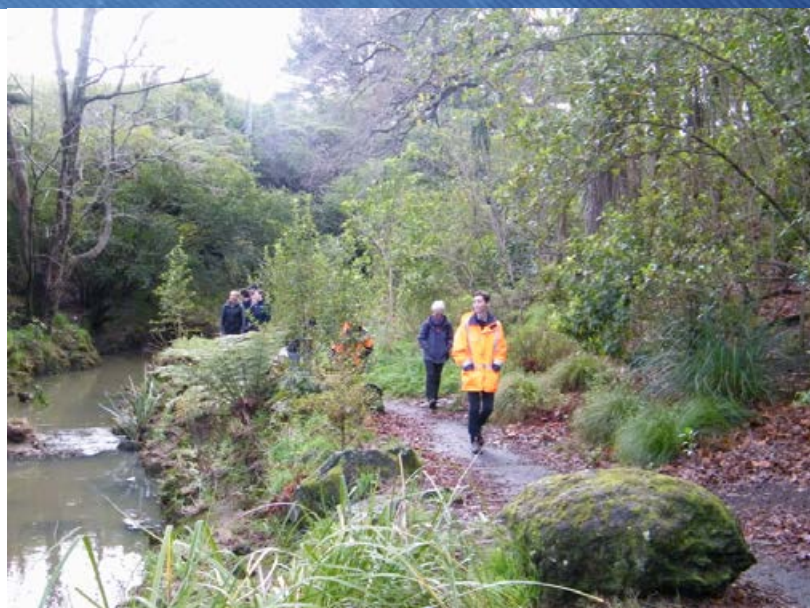
We welcome Diane Fraser from Unitec as Secretary. Nicholas Ward continues as Chairperson and I continue as Executive Representative.

A number of our branch members attended NETS 2015 in Dunedin along with four students who presented gems at the conference. NETs 2015 proved to be a great learning and networking event as usual. The Auckland Northland Branch are now well into the organising phase for hosting NETS 2015.

We all embraced Biosecurity Month 2015 with articles and education initiatives and the Biosecurity banner.

We discussed the increasing threats of Chinese herbal medicinal species.

We thank Robyn Kannemeyer for being our Secretary who has done a wonderful job organising meetings, trips and minutes. We have had some fantastic learning opportunities this year. We now



Branch members exploring Oakley Creek with Wendy Johns from Friends of Oakley Creek

How to stop pet and plant escapes this summer

A summer promotion from the New Zealand Biosecurity Institute

The people involved in keeping New Zealand free of plant and animal pests are asking Kiwis to help make their job easier over the summer, by taking good care of their pets as well as their gardens.

New Zealand Biosecurity Institute President, Rebecca Kemp has some simple messages for pet owners and gardeners this summer.

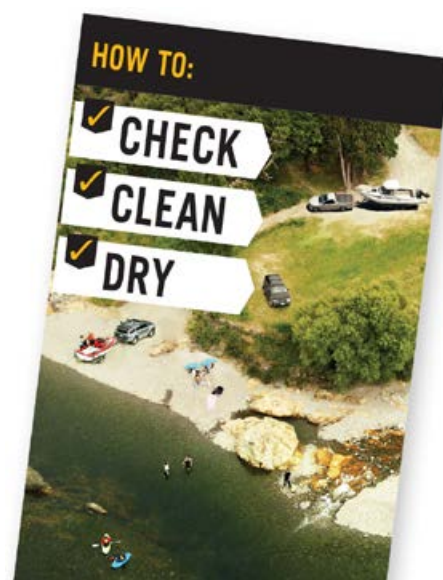
"We ask people to de-sex their pets, be conscious of where they are and do their best to prevent them from roaming."

"As well, we ask gardeners and pond and aquarium owners to either compost garden waste and aquarium contents or dispose of as green waste, and to take care that water and fish are not released into waterways."

Ms Kemp said every year Institute members spend hundreds of hours controlling or managing the risks to the environment, of the pet and gardening industry.

"This is part of wider biosecurity 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," she said.

Biosecurity Institute members will also be promoting the "Clean, Check, Dry" message amongst recreational users of all New Zealand's waterways, to stop the spread of all aquatic pests this summer.



Queensland Fruit fly eradicated from Auckland

The Ministry for Primary Industries announced in December that the Auckland fruit fly operation has been successful and the insect has been eradicated from New Zealand.

Director General Martyn Dunne said field staff cleared fruit fly traps in Grey Lynn for the final time on December 4th and found no signs of the Queensland fruit fly.

"We have not found any fruit flies in the affected area since March and enough time has passed to confidently say that New Zealand is again fruit fly-free.

"There are no longer any restrictions on the movement of fresh fruit and vegetables in Auckland.

Mr Dunne thanked the residents and businesses of the affected suburbs.

"You've borne the brunt of this situation with both the movement restrictions and regular insecticide baiting on fruiting plants in your gardens and we're extremely grateful for your support.

"This particular insect pest is a significant threat to our \$3.6 billion a year horticultural export industry and home gardens.

"This makes the eradication cost of \$13.6 million, as at the end of October, a very justifiable investment to make," Mr Dunne said.

The programme began in February this year when a single Queensland fruit fly was caught in one of MPI's fruit fly surveillance traps. A small breeding population of the fruit flies was soon found, triggering the resulting programme of insecticide treatments, trapping and community education.

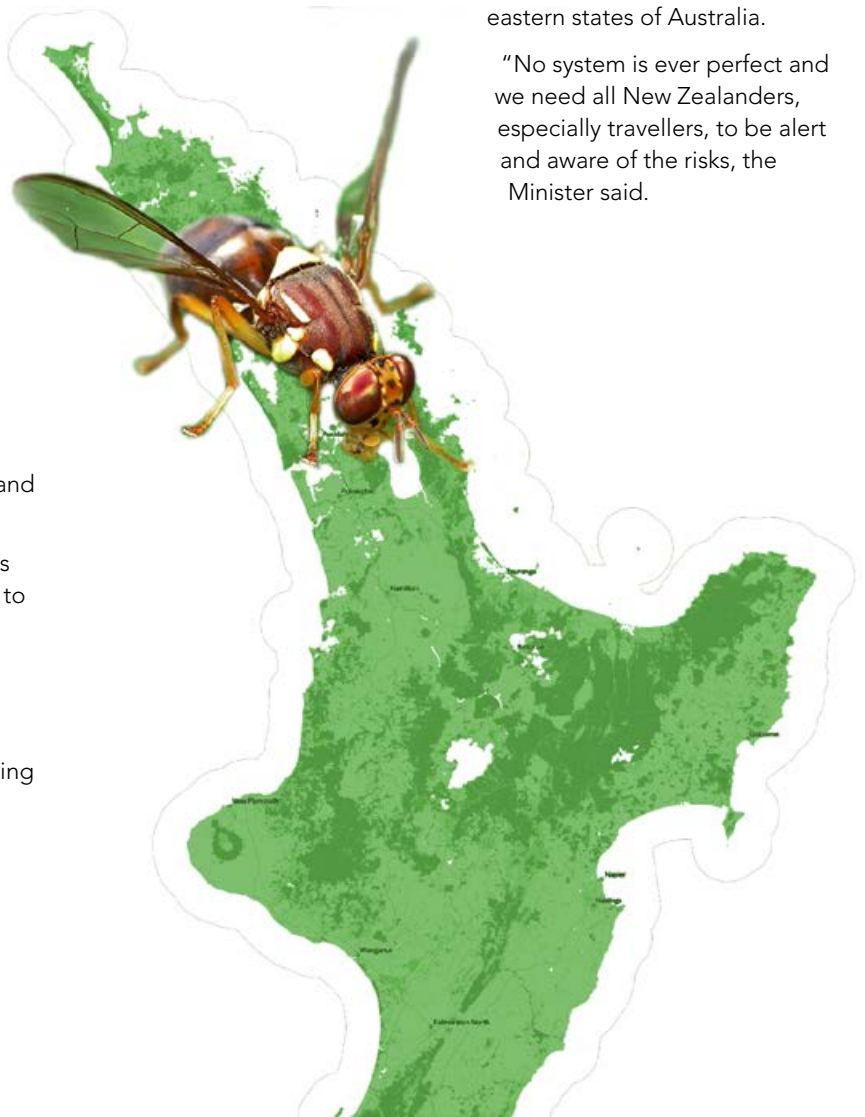
"This makes the eradication cost of \$13.6 million, as at the end of October, a very justifiable investment to make."

Martyn Dunne said eradicating the Queensland fruit fly has been a collaborative effort between MPI, horticulture industry partners Kiwifruit Vine Health, Pipfruit New Zealand and Horticulture New Zealand, AsureQuality (MPI's field operations provider), Auckland Council and the local community.

While the eradication programme is now over and New Zealand is officially fruit fly-free, MPI's routine checks for fruit flies will continue and the nationwide network of 7,600 fruit fly surveillance traps will remain in place.

Primary Industries Minister Nathan Guy said MPI will still be on high alert this summer for any further incursions, given the wide spread of the Queensland fruit fly throughout the eastern states of Australia.

"No system is ever perfect and we need all New Zealanders, especially travellers, to be alert and aware of the risks, the Minister said.



Otago consults on wilding pines

The Otago Regional Council in September began an informed debate with the Otago community in order to help it decide what level of involvement it should have with the control of wilding pines in the region.

ORC chairman Stephen Woodhead said the council was aware of the spread of wilding trees within the region over many years, and applauded the work of many community groups, such as the Wakatipu Wilding Conifer Control Group, in managing these trees.

He rejected assertions by Conservation Minister Maggie Barry at NETS2015 in Dunedin that ORC was “dragging the chain” on the problem.

Mr Woodhead said the release of a NZ Wilding Conifer Management Strategy, the launch of the National Policy Direction for Pest Management, and the forthcoming review of the Otago Regional Pest Plan, had all meant the timing was right for the council to consult the public.

The key consultation questions include whether the council should be involved in a regulatory role with wilding control, or contribute financially to this control, or a combination of both.

He said ORC is considering whether it will propose funding for community-based wilding control projects.

“We look forward to the Government providing funding in support of its own obligations to deal with legacy plants on Crown land, on the conservation estate, and on other Crown land.”

Mr Woodhead said the council was aware of growing community concern about wildings.

Reports have identified that more than 300,000 ha of Otago has some wilding infestation, with this figure likely to triple to 900,00ha in the next 20 years if nothing further is done.

Mr Woodhead said a co-ordinated regional and national management approach to the issue was needed while it was still possible to win the battle and contain the spread of wildings.

He rejected assertions by Conservation Minister Maggie Barry at NETS2015 in Dunedin that ORC was “dragging the chain” on the problem.

Reports have identified that more than 300,000 ha of Otago has some wilding infestation, with this figure likely to triple to 900,00ha in the next 20 years if nothing further is done.



A game changer for Wilding Pine Control

As a progressive environmental contractor who specialises in wilding tree control, Wayne Godfrey of Godfrey Pest Management Ltd, a Canterbury based contractor, has been using X –Tree Basal for two seasons across the South Island.

"Once we picked up on the X Tree product we were convinced" was the reply when asked about the product.

With 15yrs experience in wilding tree control, mostly in wilding conifer control, we knew the difficulties we were facing and the scale of the task ahead of us.

The product has increased our productivity some fourfold and the results are dramatic, meaning we can start to step ahead of wilding tree spread at some sites. X Tree has been a game-changer for us and our industry."

The product is very quick to apply and relatively simple to use. Given its premixed there is no infield measuring or mixing required. Mostly applied from knapsack operators apply a small quantity to the base of the stem around the entire

circumference approximately twice the height of the stem diameter. The X Tree quickly translocates through the tree and starts to do its magic. Wayne says "this is a whole lot easier than chainsaw operations, it's almost relaxing to apply and requires minimal PPE. Its particularly good in low to medium density sites and allows us to treat huge areas in a short space of time."

"We use the smaller 20L containers just because they transport easily and minimise our spill risk but often refill out of larger containers to minimise waste. Pouring into knapsacks is a very easy process, not a drop is wasted and as a conscientious contractor and registered chemical applicator we can easily meet our environmental and legislative requirements with X Tree."





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What a pest: a good start to teaching biosecurity in schools

A programme for Canterbury school students is looking to address a potential lack of knowledge about animal and plant pests.

A recent survey of Year 9 Auckland schoolchildren found that many of those surveyed considered zoo animals and illicit drugs like marijuana to be New Zealand's biggest biosecurity threats.

Canterbury Schoolchildren among others should now fare better because its students have been exposed to a teaching resource called "What a Pest".

The resource was created by Environment Canterbury in collaboration with the Department of Conservation. It is curriculum linked and aims to be easy for teachers to implement in their classrooms.

The Environment Canterbury Youth Engagement team supports the resource for teachers who choose to get involved.

One of the schools involved is St Andrews School in Timaru.

Karen Porritt, a Year 4 teacher at St Andrews School, said she was impressed by the amount of knowledge her children were able to gain from the programme supported by Environment Canterbury's Youth Engagement Advisor Debbie Eddington.

"The programme is designed for Year 8 children but it was adapted for my Year 4 class with ease by Debbie," Karen said.

Canterbury Schoolchildren among others should now fare better

They are still talking about what they did and learnt a term later.



Schoolchildren near Christchurch take a closer interest in the notorious legacy plant pest gorse

"The children enjoyed the range of activities, especially heading into the bush to search for signs of pests. They are still talking about what they did and learnt a term later.

"This is an invaluable programme as it is teaching the children who believe these pests are cute that they cause a lot of damage."

Graham Sullivan, Environment Canterbury's Biodiversity and Biosecurity Manager said biosecurity is fun to learn about. "The topic can fit into a range of curriculum areas. It gives our youth an opportunity to learn that their actions can make a difference to our environment and they can be involved in biosecurity and protecting their place and country every day.

Biosecurity is fun to learn about

"Simple actions such as pulling seeds out of your socks and removing dirt from your shoes before leaving a nature walkway can stop seeds and other organisms hitch-hiking a ride to a new environment - as does cleaning your gear after fishing or boating.

"If you're doing this you're playing your part, and we all need to contribute."

Balloon Vine: never underestimate the seedbank of an invasive plant

Mary Stewart from Auckland Council provides this insight into the value of repeated visits to historical invasion sites, no matter how much time it takes-up.



Samantha Happy and Rowena Gilchrist controlling balloon vines in July 2015

I have been inspecting the one “under surveillance” site in Auckland of balloon vine since I started with the Biosecurity team in 2008, only to find nothing each time. You do start to wonder if this is good use of time. Recently I was showing two staff this balloon vine site, the site of the one species in the Regional Pest Management Strategy that we may have managed to eradicate in the life of this Strategy. But I spoke too soon. Two small vines (without seeds thankfully) growing happily at the Mt Albert property. Never underestimate the seedbank of an invasive plant.

These plants would do very well in New Zealand if given the chance, destroying our biodiversity

I spoke to the occupant who was happy to let us look around the garden but closed the door again quickly (and bolted the chain just in case). He was totally unaware of how unusual this find in his garden was.

He was totally unaware of how unusual this find in his garden was.

The garden had remnants of a bygone era and a keen gardener had once lived here. This gardener had probably been the one who had planted the balloon

vine for the fragrant white flowers to grow over a metal garden arbour (the arbour had gone now too). Anyway we enjoyed the garden while looking for seedlings, by looking at some more unusual plants that had survived the new ownership, such as a pawpaw and a cherimoya. A few moth plant vines had crept in, which we couldn't help pulling those out, unfortunately knowing there would be more next year. Never underestimate the seedbank of an invasive plant.

So what is the issue with *Cardiospermum grandiflorum* and *C. halicacabum*? They are widely distributed around the world now and are invasive in many countries including

Australia, Africa, America, several Pacific Islands and Hawaii. They are vigorous long-lived perennial climber-vines that can grow densely, smothering up to 10 metre tall trees. They build a thick curtain of vegetation that contributes to canopy collapse. In countries like Africa they impede wildlife travelling through areas. They particularly like wetland and riparian habitats and will grow very quickly. These plants would do very well in New Zealand if given the chance, destroying our biodiversity. Perhaps a good use of time on those site checks after all.



Noogoora bur: new tactics to beat maize pest

In August the Bay of Plenty Regional Council announced that a Te Puke maize paddock infested with the pest plant Noogoora bur, is showing signs of recovery after trialling of a new spray, feed and crop rotation regime, developed by the Council.

The Regional Council was notified about Noogoora bur in 2006. Since then, biosecurity staff have been working with the owner to find a way of containing and eradicating the invasive weed, while keeping the 100 hectares of affected land in productive use.

Bay of Plenty Regional Council Biosecurity Officer Andrew Blayney said that Noogoora bur is hard to spray without damaging valuable crops because it can grow when the maize canopy is too high to spray over.

"It also takes a long time to eradicate because the seeds can stay dormant in soil for many years," he said.

"Noogoora bur originates from the Americas. It probably came to New Zealand in contaminated seed supplies. The seeds are easily spread by unclean farm machinery or stock movement," Andrew said.

In the past, maize was grown on the affected property and harvested well after Noogoora bur seeds had germinated, grown and set seed amongst the maize. That meant the risk of weed seeds being spread at harvest time was high.

Bay of Plenty Regional Council pooled funding with Waikato Regional Council and the Foundation for Arable Research and commissioned AgResearch to explore how Noogoora bur responded to different herbicides. They also explored what effect ploughing and silage storage had on seed viability and germination.

it's early days yet but initial results are extremely promising.

Armed with new research, and an understanding of the landowner needs, Regional Council staff developed the new solution that's been trialled at the property since 2014.

The new regime involves using a combination of pre and post emergent sprays that the research found to be effective for Noogoora bur. Fertilizer is still applied but it's no

longer cut in to the crop, so the pre-emergent barrier stays intact.

Instead of growing grain maize, the owner now sows a short rotation of maize for silage that can be cropped before Noogoora bur sets seed. That's followed by grass, which allows for easier Noogoora bur control later in the season, if it's needed.

Mr Blayney said it's early days yet but initial results are extremely promising.

"I'm confident that no Noogoora bur plants are reaching maturity and adding to the seed bank on the property. In past years, our contractors have had thousands of Noogoora bur plants to spray or pull. Last year our monitoring found just 12 plants and they would have all been

destroyed at harvest time, before setting seed," he said.

Andrew reiterated the importance of biosecurity at the farm gate.

Last year our monitoring found just 12 plants and they would have all been destroyed at harvest time, before setting seed.

Noogoora bur is hard to spray without damaging valuable crops.



Hunua pest programme complete

Auckland Council's 1080 programme in the Hunua Ranges area reached an important milestone in September with parkland reopening after the final bait application.

Hunua Ranges, Waharau and Whakatiwai regional parks reopened with rangers travelling around the 17,000-plus hectares of parkland removing closed signs, unlocking gates and reconnecting campground water supplies.

Tracks in the neighboring Department of Conservation reserves, Vinings and Mangatawhiri, have also reopened.

Auckland Council Biodiversity Manager and operational lead Rachel Kelleher said signs will remain in place until early 2016 to remind people that 1080 has been used in the area.

"This caution period is one of the operational requirements of using a toxin like 1080 and is a good reminder to visitors that they may encounter bait that hasn't yet broken down or pest animal carcasses.

"Treating a 21,000 hectare area that includes a water catchment, is popular for public access and includes private land requires many months of careful planning," said Rachel.

"After each block was treated with toxic bait an extensive track clearance programme was carried out. This required dozens of staff walking the 186km of tracks multiple times and carefully moving baits or carcasses.

"Initial independent monitoring results from block one of the operational area, which was monitored with 40 trap lines, only returned two trapped possums over what is the equivalent of 1000 trap nights," Rachel said.

Monitoring of both pests and native species will continue.

Auckland Councillor Bill Cashmore described the Hunua Ranges as Auckland's southern lungs.

"To visit the ranges and hear kokako sing, accompanied by tui and bellbirds, is truly wondrous but, until now, has been rare.

"We look forward to hearing an abundance of birdsong once again, and soon," he said.

"To visit the ranges and hear kokako sing, accompanied by tui and bellbirds, is truly wondrous"

Summertime care over kauri dieback

As the weather warms up and people become more active outdoors, trampers and others visiting bush areas are again being urged to take particular care to help prevent the spread of the disease kauri dieback.

Kauri are naturally found in the North Island to about 38 degrees south—roughly a line from Kawhia to Tauranga.

Earlier this year sick-looking kauri tree on private land at Pirongia in Waikato was cleared of having kauri dieback disease.

The owner of the land where the tree stands had become concerned that the kauri was affected by the pathogen that causes kauri dieback.

"It's great news we've been able to rule kauri dieback out in this case but also excellent that the landowner contacted us for advice," said the Waikato regional Council's kauri dieback project manager Kim Parker.

For more information on the disease visit www.kauridieback.co.nz

"It's great news we've been able to rule kauri dieback out in this case"



Hunting out shady characters: woolly nightshade

A three-strong team of specialist abseilers was used by Waikato Regional Council in late winter to support landowners to clear around 100 woolly nightshade plants from a riverside area in Hamilton city.

The work, involving abseiling down steep banks, was done over one day in the suburb of Hillcrest.

Dealing to the plants involved cutting them down with a saw and painting the stumps with herbicide.

The work, aimed at helping restore native habitat by keeping on top of imported pest plants, was part of a winter pest plant control programme in Hamilton City to clear gullies and riverside areas.

"One of our aims is to support the efforts of private landowners by carrying out control in difficult to access sites and other selected spots," said pest plants biosecurity officer Hamish Hodgson.



Bird nests not so tasty

An excuse for importing birds' nests didn't fly with MPI.

The Ministry for Primary Industries applauded in early December the \$10,000 fine handed out in the Manukau District Court to a woman who had admitted possessing and selling illegally imported edible bird nests.

They can carry a number of significant avian diseases not found in New Zealand.

MPI seized 500 grams of raw swiftlet bird nests (nearly 50 nests) after raiding an Auckland property in June 2014.

Thought to provide health benefits to those who eat them, raw bird nests are made from the saliva of a

species of swiftlet bird. However, they can carry a number of significant avian diseases not found in New Zealand.

"The offenders defence that she was naive about New Zealand biosecurity rules did not wash with the judge because MPI countered by pointing out she had worked for an airline until very recently and her main business involved importing and selling cosmetics and commercially processed bird nests, which can be legally imported.

"In these roles she would have experienced New Zealand's biosecurity processes." the Ministry said.

Biosecurity Briefs

Czech your diaries: 7th International Weed Science Congress

The 7th International Weed Science Congress will be held in Prague, Czech Republic in June 2016. Details are on the congress website at: www.iwsc2016.org. If you would like further information on the congress please contact Trevor James trevor.james@agresearch.co.nz.

Biocontainment laboratory building begins

Construction work on a new National Biocontainment Laboratory at Wallaceville in Upper Hutt began in October. The laboratory is expected to be in full operation in 2019. Primary Industries Minister Nathan Guy said the \$87 million investment will provide diagnostic support for animal pest and disease investigations as well as scientifically credible information confirming New Zealand's freedom from diseases. "It will have better capacity to deal with a large-scale emergency," he said. The new laboratory on the site of two demolished former research buildings continues more than 100 years of veterinary diagnostics at Wallaceville.

Waitakere weeds offensive: A community takes action

Waitakere Ranges Local Board of Auckland Council launched in September offensives to protect the Waitakere Ranges rain forest and coastal areas from damaging weeds. According to the Board the Waitakere Ranges contain 40 per cent of all native vegetation in the Auckland region. Among the many weed management initiatives included are six permanent weed bins in strategic locations and funding a 'buffer' weed management programme with landowners of properties next to the Waitakere Ranges Regional Park.

Forestry joins biosecurity agreement

In November the New Zealand Forest Owners Association became the sixth industry group to join the Government Industry Agreement biosecurity partnership. MPI reports that forestry is New Zealand's third largest export earner behind dairy and meat, earning around \$4.6 billion in exports. The Forestry Owners Association joins Kiwifruit Vine Health, Pipfruit New Zealand, New Zealand Pork, New Zealand Equine Health Association and Onions New Zealand under GIA.



Spotting Chilean needle grass

Environment Canterbury has urged all Cantabrians in rural areas to be on the lookout for Chilean needle grass this spring and summer. The Council said November and December is the best time to spot the pest because it will be left ungrazed by stock and its purple seed heads will be standing out among other pasture.



Wasp control: Mite there be a natural helper?

Ronny Groenteman from Landcare Research provides this update on the early stages of research which could provide a valuable biological ally in the control of wasps. Along the way she explains in simple terms some of the challenges with the fieldwork and research that Landcare Research colleague Bob Brown is carrying out.

The main issue we had to grapple with was that in the original application we said that mastering or failing to mass rear the mite in captivity will be a make-or-break point for the project, and so far we have not mastered this mass rearing aspect.

Why did we put this limitation in the first place, and how did we get around this problem?

Looking back to the time we applied for funding for this piece of research, we knew almost nothing about the mite and the study we proposed was high-risk. We only had records of the mite from the Canterbury region, and

we believed that in order to be able to conduct any studies on mite life cycle, the effect it may have on wasps, and aspects of safety to non-target organisms – we would require high numbers of mites, and to achieve those, we needed to learn how to generate such numbers ourselves.

In addition, we envisaged that surveys of wasp nests in the wild will be conducted such that nests will be dug up, frozen, and examined for mite presence once dead.

Fast forward a year and a bit, we now know that the mite is present at any region that has been examined and that we can bring live wasp nests to the rearing facility and extract live mites in good numbers directly from these nests. The advantages are that examination of mite presence in nests is much faster than it would have been for dead nests under microscope, and we get high numbers of live mites quickly.



Bob inspecting a wasp nest inside the mite extraction mechanism.

A wasp nest is inserted into the funnel and a light/heat source at the top drives the mites down to the bottom, where they fall into a collecting tube.

A normal day in the office: a delivery of wasps sent to Bob by members of the public

Earlier this year our project went through a Stop/Go assessment, and I am pleased to report that the ministry for Primary industries has approved the research project.



Consequently, while we have thus far failed to mass rear the mite, we were able to demonstrate that mass rearing was a means to an end and not an end in its own right: We thought we would need to mass rear in order to get the numbers, but we are able to get the numbers in other ways we could not have predicted at the outset. The rearing failure should not affect our ability to deliver on the original main goals of the project. That's science for you!

Mite prevalence

A huge thank you to all who sent wasp queens throughout winter. Bob has by now received around 400 queens from 14 regions from as far north as Northland (5 wasps, 1 had mites) to as far south as Southland (10 wasps, 7 had mites). Both wasp species were represented in the samples and from the material examined to date every region represented in the samples had mites. As far as the split between species: roughly 50% of German and about 30% of common wasp queens hosted at least one mite.

When it comes to checking live nests, it gets tricky: we now know that nests with mites are smaller than nests without mites. The differences are even more magnificent than what we reported previously. This size difference and reduced wasp aggressiveness associated with mite infestation reveals a sting in the tail: small, less aggressive nests are less likely to be detected, and could therefore be under-represented in the sample. So the effect may be still greater than what we are able to detect.

How can we overcome this sampling bias?

One obvious way would be to randomly 'draw' areas to survey, and sample each such region at a pre-determined grid. A cold fact is that we do not have the resources to perform such a survey. Another way would require public assistance once more: this time of year, as queens start new nests, it would be good to start locating such new nests and mark their location with a clear physical marker.

Later, in autumn when Bob Brown conducts the live nest digging survey, it would be extremely useful for him to come back to such locations and discover whether the nest survived and grew, or whether it has collapsed, and if mites are associated. Collapsed nests marked from earlier in the season would not likely be detected otherwise. This year we are particularly

interested in surveying nests around Wellington, Canterbury and Otago. If you can assist by finding and physically marking early nests in these regions, please let us know. Make sure these nests are nowhere near dwellings though.

Mite gut content analysis

We have collected some circumstantial evidence to suggest the relationship between the mite and wasps is damaging to wasps, but we have not yet been able to hit the nail on the head and demonstrate beyond doubt that this is indeed the case. One new trick we are trying is the use of molecular tools to look for wasp DNA inside the guts of mites. DNA material from mite samples has now been extracted, and we are waiting for the molecular scientists to tell us what they are finding.



What's new in biocontrol?

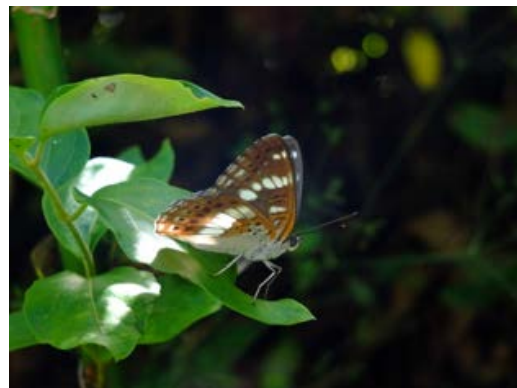
A ROUND UP OF SELECTED WEED BIOCONTROL PROJECTS AT LANDCARE RESEARCH

CONTRIBUTED BY HUGH GOURLAY

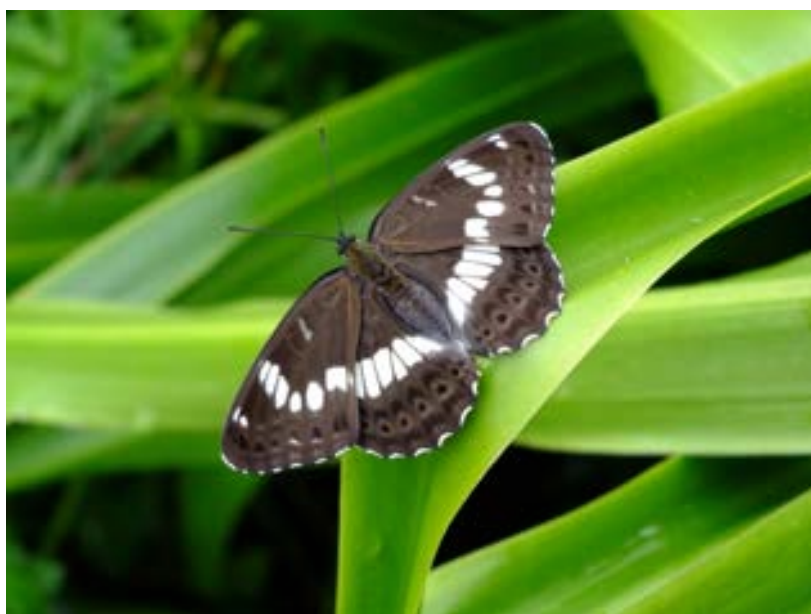
Japanese honeysuckle (*Lonicera japonica*):

The first biocontrol agent for Japanese honeysuckle the Honshu white admiral butterfly *Limenitis glorifica* was released at two sites; during the last field season. The first field release took place on 28 October 2014 at a locality in the Waikato region and releases continued until early December. In all, 238 butterflies were liberated at two localities: 178 at a site in the Waikato and 56 butterflies at a site on Waiheke Island. Site details have not been publicised yet as the small numbers released were considered to be at risk from butterfly collectors. Eggs were found at the Waikato site in December 2014 and these developed into adults that began emerging in January 2015. A further generation of butterflies began emerging in mid-March. Eggs and larvae have been found around 600 m away from the release site indicating that butterflies are beginning to disperse. Both sites will be assessed next spring to check for establishment, and to determine when harvesting and distribution to other areas can begin and the best method for doing this. It is not possible to mass-rear this butterfly as it will not breed in confinement, hence the need to establish field sites where they can breed naturally. New butterflies and eggs have been found this spring, November 2015, at the Waikato site so establishment is looking likely.

Last winter I travelled to Japan to collect the second agent for Japanese honeysuckle: the stem-boring beetle, *Oberea shirahatai*, which has been



approved for release by the Environmental Protection Authority (EPA). We are aiming to make field releases of larvae this coming summer provided we can demonstrate that the culture is free from disease or parasites. This is another insect which is difficult to rear inside our containment facility. The larvae live for two years before emerging as new adults, and keeping whole plants alive indoors for this amount of time has proven to be quite difficult. We are working on developing a method for rearing the larvae on artificial diet in the hope we may be able to develop a mass-rearing technique that produces new adults after only one year instead of two.



Limenitis glorifica



Oberea shirahatai

Chinese Privet (*Ligustrum sinense*):

Permission to release the first agent for Chinese privet, a lace bug (*Leptoypha hospita*) was granted by the EPA in May this year. Mass-rearing is going well and releases began this spring. The adults and nymphs pierce and suck the sap from the privet leaves damaging the leaf tips, leading to defoliation and reducing the vigour of the plant. Chinese privet is the main target and it is not known to what extent tree privet (*L. lucidum*), and other privet species will be attacked. We expect at least two generations of lace bugs to be produced each year.



Privet lace bug *Leptoypha hospita*

Tutsan (*Hypericum androsaemum*):

Host testing has been completed on the two foliage-feeding insects (*Chrysolina abchasica* and *Lathronympha strigana*) which appear to have potential for tutsan control. Work is on pathogens of tutsan has confirmed that plant pathogens don't offer much potential for improving biocontrol of tutsan. Rearing of the two insects continues in containment at Lincoln and an EPA application for permission to release them has been lodged recently.



Chrysolina abchasica



Lathronympha strigana



Lantana (*Lantana camara*):

Lantana rusts (*Puccinia lantanae* and *Prospodium tuberculatum*): Releases of the lantana blister rust (*Puccinia lantanae*) and the lantana leaf rust (*Prospodium tuberculatum*) commenced last autumn in Northland and the Bay of Plenty, and we will be hoping for signs of establishment soon. The climatic requirements of the two rusts differ slightly. The lantana leaf rust is subtropical whereas the lantana blister rust is tropical. Consequently, we expect the leaf rust to be active across a wider area in NZ, including the more southern parts of lantana's range, while the lantana blister rust may be limited to the warmer and wetter areas of the Far North. The leaf rust is well established in Australia, but NZ is the first country to release the blister rust.



Puccinia lantanae



Prospodium tuberculatum

Obituary: John Sawyer

Enthusiasm, energy and motivational leadership

Institute members were saddened to hear of the untimely death of John Sawyer, who died of a heart attack on Friday 6th November. He passed away at his "spiritual" home, the Isle of Mull in the Inner Hebrides of Scotland. This tribute is compiled from comments by his colleagues in New Zealand and the UK.

Many Institute members will either have worked with John or know of the work that he did in New Zealand.

John was born in Yorkshire and studied environmental sciences at the University of Southampton in the early 1990s. Since then he has worked in terrestrial biodiversity conservation around the world including the highlands of Guatemala, the Juan Fernandez Islands off the coast of Chile, and the Chatham Islands.

He worked as a technical advisor, team leader and manager at the Department of Conservation, and most recently was environmental strategy and policy advisor for Auckland until moving to the UK.

He worked for charitable NGOs including a time as President of the NZ Ecological Society and was co-founder of both the NZ Plant Conservation Network and Nature Space (a national partnership to support the work of those involved in ecological restoration).

He published a hiking cookbook in 2007 entitled 'Gourmet Tramping in New Zealand'.

John moved back to UK in 2014 to be chief executive of Britain's National Biosecurity Network.

In that short time his NBN colleagues report that he had a huge impact on the organisation, with his vision, his enthusiasm and energy as well as his hugely motivational leadership.



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