



New Zealand
Biosecurity Institute

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Protect

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New Zealand
Biosecurity Institute

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

FROM THE EDITOR

Looking out from the bubble

As I sit looking out of my bubble, I can see rabbits running rampant.

A new strain of rabbit calicivirus virus has been released in my neighbourhood. I send intact dead rabbit samples to Landcare Research to help its research into the effect of the various rabbit calicivirus strains. I know that only the original strain seems to be taking the odd few out.

Right now a new virus that didn't have a name until a very short time ago, is working better on humans.

I hope life has been going well for you all during the Covid 19 response and that you are managing to get some work activities done as well as the many other duties some members will have been called on to help with. There will be lots of changes for all during and after we get this human virus under control.

About everything that could possibly be said has been said in these strange times about Covid 19. It's a biosecurity response of the most extreme nature. It shows how well **we can quickly direct resources and it shows what kiwis are prepared to do if the stakes are high** enough.

It highlights just how important science is as well as how important it is to get the advice of experts.

This is the way biosecurity decisions should always be made. Decisions on all matters biosecurity are made with varying degrees of speed and urgency. **Vital is early action, good intelligence and public understanding.**

Stay safe one-and-all.

CHRIS MACANN,
PROTECT MAGAZINE EDITOR



Our bubble. NZBI Life Member Lynley Hayes and Protect Editor Chris Macann with Poppy and Archie.

PRESIDENT'S MESSAGE

A very interesting time

Hello one and all in these very interesting times. Who knew what lay ahead for us as we began a new decade?

There were a few hints on the horizon that we needed to be wary at our border, but what has happened is not, I am sure what any of us expected.

Let me first thank all members who have contributed to fighting Covid 19, and continue to do so. I know many people have been asked to perform additional jobs in response to this threat the whole world faces.

Business as usual

We as a sector also have plenty to continue with in terms of all the other biosecurity matters we are faced with daily.

Although NETS2020 has been postponed for a year, please keep in mind the New Zealand Biosecurity Institute Legacy Awards usually presented at NETS and the NZBI Scholarship and Wendy Mead Development Award. The plan of the Executive Committee is that **it should be business as usual** regarding all other matters. This includes Biosecurity Week in the last week of July which normally coincides with NETS.



Alice McNatty
President

In the end it was a pretty easy choice to postpone NETS for a year. A few hours later the government announced the plan to go into lockdown within 48 hours. It would be nice to think conditions will be right for a conference at the end of July had we gone ahead, but certainty is important at the moment. **I am pleased the Executive set an example and chose to act swiftly.**

Stay Safe one-and-all.

Alice McNatty
PRESIDENT, NZ BIOSECURITY INSTITUTE



The Prized Plate: Let's keep the Legacy

The NZBI Executive committee is keen to recognise the importance of its heritage awards. An important part of the heritage awards is the shooting trophy, once competed for between animal pest destruction boards across the country.

Most recently the trophy has been competed for as part of the annual NETS conference but this has not been ideal because it generally conflicted with valuable field trips. As a result, the trophy was not competed for in 2018 or 2019.

Over the years the trophy was competed for as a postal shoot between the pest destruction boards where each branch held its own competition then submitted the results to the national body.

The Executive proposes that the Shooting Trophy goes back to the branches and is a postal shoot run through local shooting clubs. Categories could include the Best Branch and the Best Individual. The trophy would be presented at NETS.



Khan Adam with the shooting trophy which he successfully defended in 2017.

The Executive plans to send out an email survey to gauge members' views on the type of shooting competition it should be, and is keen to hear from members who remember the old days of the trophy. It also plans to investigate sponsorship from businesses involved in hunting.

Extraordinary times: Covid 19 the story so far ...

This story serves as the beginning of a record of extraordinary events as Covid 19 affects the NZBI.

On the morning of the March 23 the Executive had an extraordinary video meeting to discuss the future of NETS2020. It was an easy decision to make. NETS has now been postponed until 2021. The venue, theme, and field trips will be the same, in Christchurch from 28 – 30 July 2021.

Later that same day the government announced it was going into Level 4 lockdown within 48 hours. **"The decision removed early, any uncertainty for presenters, attendees, sponsors, and all involved with the conference,"** Institute president Alice McNatty said.

The Executive issued the announcement immediately to all members and later issued guidelines for branch chairpeople about the process of holding the annual general meeting and branch annual meetings.

These are essential activities which meet the legal requirements of the organisation.

The plan for this extraordinary year is that NZBI branches will hold their branch annual meetings prior to June 3rd. These meetings are likely to not be held face-to-face, but perhaps by video conference or email.

Alice reiterated it was important to sort the election of officers at branch level and nominate candidates for positions at national level, and accept financial reports.

The Executive has suggested that the current incumbents retain their roles on the branch and executive committees. However, this is at the discretion of each branch.

If multiple nominations for branch or national offices are received, an anonymous election should be held digitally.

The NZBI AGM will be held as scheduled on 29 July 2020.

The incumbent NZBI Executive committee will meet, via video conference, if necessary, after 29 July 2020 to process the results.

Alice reminded one-and-all that **applications and nominations for Awards should proceed as usual.**

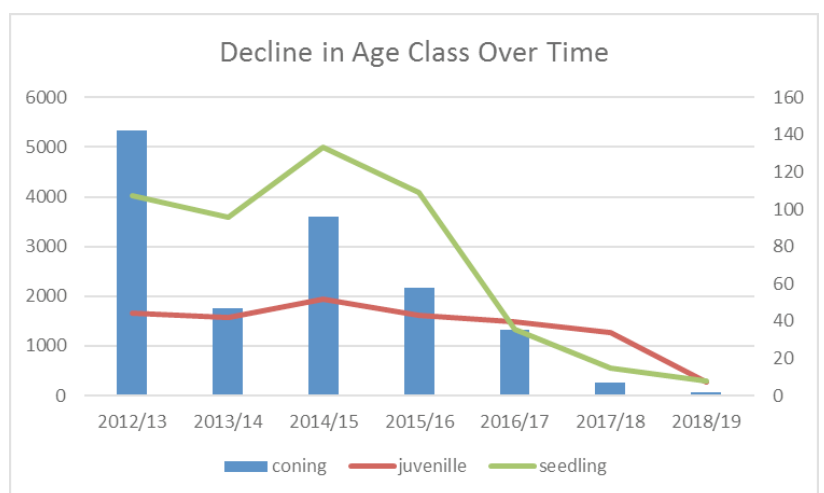
Wilding Conifer Control: The importance of measuring and counting

BY MALINDA MATTHEWSON, BIOSECURITY OFFICER, HORIZONS
REGIONAL COUNCIL

The first of three snapshot articles from Horizons Regional Council biosecurity staff highlighting their work on three different land types against three target weed species.

Killing pest plants, it's what we all aim to do and do well but **how do we measure how effective we are** at reducing the overall infestation?

One way to show our effectiveness is to count and measure the plants we kill. Not the most exciting part of the job but the data we collect can be a powerful demonstration of how successful or otherwise we are. An example of this is the measuring and counting of wildings Horizons controls at Ohinewairua Station, a large high country station on the Taihape-Napier road.



Graph 1 Ohinewairua Station Wilding Conifer Control:
Decline in tree age classes over time.



Figure 1 The next generation of wildings about to be wiped out. Returning to control seedlings around a dead adult tree, more trees controlled but smaller trees. (M. Matthewson)

We have been counting and measuring here for six years and have seen tree numbers, adult trees and tree size reduce dramatically. Tree numbers controlled peaked at over 7000 trees in the 2014-15 season (Graph 1) to just over 500 in the 2018-19 season. Adult trees reduced from 154 to 2 in the 2018-19 season (Figure 1) and size of individual trees reduced which meant less effort and chemical was needed to control the trees found.

Measuring and counting means we know our infestations well, shows how effective our control operations are and assists in planning future control.

So counting and measuring may seem onerous and a waste of time but it is valuable when the question is asked... is this investment in control effective and are we making a difference?



Darwin's Barberry: Burn baby burn

By JACK KEAST, BIOSECURITY OFFICER, HORIZONS REGIONAL COUNCIL

The second of three snapshot articles from Horizons Regional Council biosecurity staff highlighting their work on three different land types against three target weed species.

Darwin's Barberry is a Progressive Containment plant in the Horizons region. There is a 73 hectare site in the Tararua where there was a large amount of Darwin's growing under regenerating Manuka canopy. The Darwin's was preventing bush seedling recruitment and also spreading into pasture. The site is close to the Waewaepa bush reserve, an important and vulnerable large bush block.

Control at the site had been sporadic in the past. Aerial control over solid Manuka (before the honey rush) had only killed the manuka canopy, allowing the Darwin's to receive more light and grow even bigger. Ground control with knapsacks or gun and hose was not feasible due to the terrain and density of the Darwin's. Traditional methods were not solving the problem, and we were fighting a losing battle. **In a partnership with the farming land owner we decided to part-fund pasture development of the hillside.** This required a gang of scrub-cutters to completely fell the block, and then set fire to burn the slash which would kill the plants and root systems. Returning the area into pasture would allow for much easier control in the future, and more stock pressure would minimise seedling recruitment.

We cut the site into three blocks, and we cut each block in successive years in autumn. We used helicopter and napalm to burn the cut and dried scrub in the next summer season. Currently we have all three blocks cut, but only one block burnt as fire restrictions prevented us from burning last summer.



Spreading napalm. (J.Keast)

The cut and burnt section has re-established into pasture very well.

There is a small amount of seedling growth on a steep bank away from stock grazing, this has been sprayed with a knapsack. Other than that, there has been no Darwin's regeneration, so it is looking very positive that we will get good long-term control in the area.



Goodbye barberry. (J.Keast)



Original infestation, 73ha of mixed scrub and Darwin's. (J.Keast)



Scrub cutters part way through the hillside (J. Keast)

Alligator weed: Getting down and dirty

By DAVE ALKER, BIOSECURITY OFFICER, HORIZONS REGIONAL COUNCIL

The third of three snapshot articles from Horizons Regional Council biosecurity staff highlighting their work on three different land types against three target weed species.

Alligator weed at the Taumarunui oxidation ponds is a long standing contained infestation. Arriving in the late 1990s from contaminated plant material for the oxidation ponds the infestation has been in constant management. In an early attempt to clean the ponds of alligator weed plants were removed by digger and deep buried on adjacent pasture land. Since then the population within the pond flared up occasionally from what must have been missed root fragments and subsequent control has kept a fairly good lid on it with only the occasional spike in population given the difficulty of surveillance within the ponds. Or so we thought.

The adjacent paddock had been leased to maize growers for a number of years and it was in a very wet spring in 2016 when an astute biosecurity officer had a walk through the later sown maize crop. **The wet weather combined with late weed control had created a perfect opportunity to search for alligator weed.** It turns out **the deep buried plants were not deep enough** and had reached the surface and then been cultivated through about five hectares of crop.

Some plants were more than a season old but many had cut root sections obviously cut by discs or rotovators. Given the late discovery Horizons delimited the infestation and then worked with the owner and maize harvester to ensure no plants or roots could spread from the site. This was achieved by high set header harvesting for stalk retention and a thorough clean down of any machinery.

In 2017 the area was fenced and removed from any cropping until we could reduce the infestation.

With sustained control and spraying, cultivating, and digging we will hopefully get the weed to a manageable level and land handed back to productive uses.

The area has had three boom sprays to maintain the area free of vegetation which could hide the alligator weed and a couple of knock downs post-harvest.

The first spray used Apache at approximately 50 grams per 100 litres at 200 litres per ha. Results were acceptable though there was regrowth. In tandem to this application we had spot sprayed with Tordon XT with good results, so for the second treatment we used 2 litres per ha with the same water rate with good results but still patches showing up, and these seemed like heavy concentrations of the weed roots with little vegetation.



Alligator weed front and centre, Taumarunui oxidation pond flareup (D. Alker)



December 2016 discovery (D. Alker)



Harvest height required above live plants material (D. Alker).

continued



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It was decided to deep cultivate to break up the strong root mass, let it grow until there was more vegetation above the ground than root mass under thereby getting enough chemical into it to kill it completely. I think from observations so far this is working.

Post cultivation and spraying we targeted what was left behind with a team of diggers.

Approximately 10 rubbish bags later we had finished the area and were happy this had reduced the root mass and since then only the odd plants are showing up in these areas; compared with maybe a bread bag full which has been dug up since, so a good option in isolated infestations.

This season we have done a spray with glyphosate to get rid of the grass and other weeds so we can hopefully find what alligator weed comes up easier and dig up these areas. The only issue we see from digging is some of the plants roots were down a metre, so it was very hard to get every fragment. Chasing down a fragile root was time consuming and we adopted a method of leaving the hole open and treating the broken root with herbicide.

As at November 2019 no alligator weed has been found in the 5 ha area. 2 ha has been returned to the farmer and has now been planted with maize. This area will be closely monitored. We have no illusions that some alligator weed will

Typical root and shoots in April (D.Alker).

return but with the knowledge we have gained to treat it according to its root system we feel confident the population is diminishing.

"Horizons staff have been helped in deciding how to manage this infestation with advice from Paul Champion, NIWA, and the excellent staff at Waikato Regional Council particularly Darion Embling and Pest Plant Contractors Ben and Chris from CG Hale Ltd"



Bagging the roots.



Clean down post-harvest (D.Alker)



Dave Alker filling a bag with roots. (D.Alker)



Alligator weed post-harvest, spring flush. (D.Alker)

Guitar Plant, among many other names: *Lomatia fraseri* in the Wellington Region

BY MARK McALPINE, SENIOR BIOSECURITY OFFICER - PEST PLANTS, GREATER WELLINGTON REGIONAL COUNCIL

Lomatia fraseri is known as tree lomatia, forest lomatia, silky lomatia and my personal favourite, guitar plant. It was reported to Greater Wellington Regional Council (GWRC) this year [2019] as being naturalised between Wainuiomata and Lower Hutt by a Wellington Botanical Society member. This was a new infestation to us - we had previously controlled a few plants in a reserve in Kelson (Lower Hutt) but not in this area. We have undertaken some research and are now also aware of it growing and seeding in Tawa (Wellington) where it was planted in Charles Duncan Reserve, an old homestead.

More about this plant

Guitar plant is in a genus of 12 species belonging to the Proteaceae family. It is native to eastern Australia and southern South America (source: Wikipedia). Guitar plant grows into a tall shrub or small tree up to 11 m in height, however it can be much smaller in exposed places and may not exceed 50 cm. It has lanceolate to elliptic leaves which range from entire to deeply lobed. The leaf margins are generally toothed and the leaves on the plants can be highly variable. Leaves normally measure 6.5-15 cm long and 1-1.5 cm wide.

Keeping it under control

We inspected the new site in Wainuiomata and discovered that the infestation is on a fire break on private property adjoining council land. There are approximately 10,000 plants covering 2.4 km of fire break. About 860m of track is heavily infested with at least 10 plants per linear meter. We suspect it was introduced via machinery clearing the fire break. The oldest plant sampled was between 14-17 years so the species has had time to spread. It does not seem to have spread into the regenerating native forest (mainly Manuka), largely dispersing along the fire break.

Our recent awareness of the spread of guitar plant locally has created a healthy discussion around the policy and protocols we should follow when a newly recorded naturalised plant is found in our region. As it is not currently listed in the National Pest Plant Accord (NPPA) we are considering applying to have *Lomatia fraseri* included. We have also notified the Ministry for Primary Industries (MPI) of the infestation.



Example of guitar plant growing along the edge of the fire break with open seed capsules.



Example of a heavily infested area of the fire break with Manuka behind.

GWRC is currently notifying and working with the private landowners in the area. Wellington Botanical Society has expressed an interest in helping to control the infestation. Please keep an eye out for this species in your region and if you would like more information regarding *Lomatia fraseri* control over the near future please contact us.



A new phone app for measuring weed cover:

The Grassland Cover Estimator

AgResearch has released a phone app for measuring the cover of weeds in pastures. The app called Grassland Cover Estimator will be of interest to anyone who needs to measure weeds at scales from experimental plots up to whole paddocks, farms and natural landscapes.

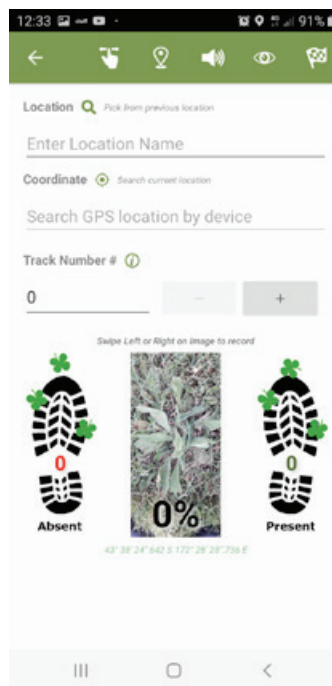
It is the result of AgResearch's Giant Buttercup Sustainable Farming Fund project, but can be used for any weed.

The app is designed to measure the ground cover of a weed or other components of a plant community. It enables the user to set up 'Projects', 'Locations' within a Project, and 'Tracks' within Locations.

A Project may, for example, be defined as a weed species (the default Project in the app is 'Giant Buttercup'). A Location could be a paddock, a plot within an experiment or other land area. Tracks are the lines walked along which observations are made. The data (presence/absence observations, longitude/latitude of each observation, time of observation, observer's name, Project name, Location name, Track number) are automatically saved to the phone as they are entered and can be exported to an email address for later analysis. The estimated percentage ground cover is displayed by the app and automatically saved to the device's memory.

The app is available from the Apple App Store and the Google Play Store.

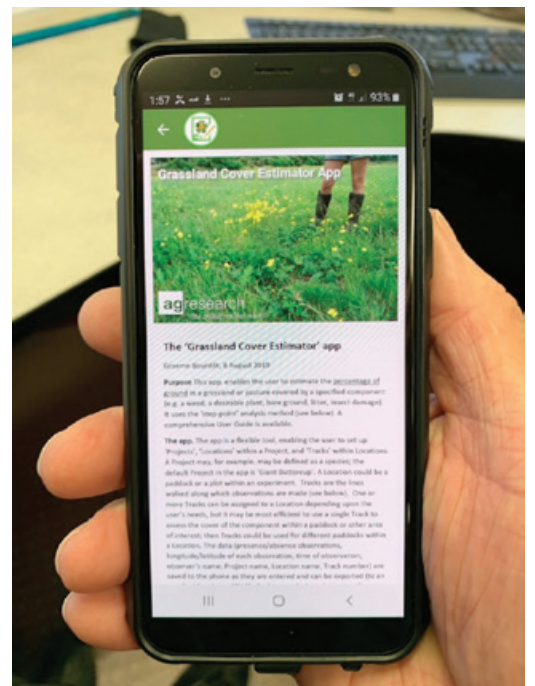
CONTRIBUTED BY GRAEME BOURDÔT, WITH ALASDAIR NOBLE, SHONA LAMOUREAUX AND HARRY YOSWARA, ALL FROM AgRESEARCH, LINCOLN.



The groundcover app recording screen.



Out standing in his field. Graeme Bourdôt using the groundcover estimator.



The groundcover estimator app.

Funding future for long-life lures

Long-life lures for rodents, possums and mustelids developed by Dr Helen Blackie from Consultancy firm Boffa Miskell are among the predator control tools selected for funding by Predator Free 2050.

A \$3.5 million boost from the Provincial Growth Fund will go towards making New Zealand predator free by 2050. The extra funding will back five new tools designed to eliminate predators and help reduce repeated use of 1080.

The long-life lures aim to provide a cost-effective alternative to food-based attractants that deteriorate quickly in the field.

"The lure is created using a robust solid-state, block which goes through a treatment process to make it highly attractive and long-lasting," said Helen. "Different treatments will be developed and tested to create a lure that's as attractive as fresh bait and which will last for months at a time, vastly reducing labour costs associated with replenishing baits."

Biosecurity was established as one of our Boffa Miskell's core disciplines in 2017. Helen has a background in the development of innovative technologies and tools for wildlife management and biosecurity.

"We're proud of her accomplishments, and we look forward to partnering with Predator Free 2050 to continue development of this product, and in seeking further creative solutions in sustainable and effective predator control."

The \$3.5m has been set aside out of a total \$19.5m investment from the Provincial Growth Fund. Other projects receiving funding in this round include a number of self-resetting traps targeting rats, possums and stoats. Like the long-life lures, these traps aim to reduce the time and labour needed to maintain equipment in remote areas.

The new tools will be used in large predator control projects funded by Predator Free 2050 Limited, expand the range of options available for conservation managers and community groups around the country, and have the potential to reach global markets.

Conservation Minister Eugenie Sage said the tools were part of a wider shift from "suppressing predators to eradicating them."

"I look forward to seeing the impact these new products have on enabling native wildlife to flourish."



The future doesn't look bright for these possums.



Dr Helen Blackie with Conservation minister Eugene Sage and some sample lures.



Lure testing in progress.



Ferret lures.



Stoat lures.

FROM AN ARTICLE PREPARED BY BOFFA MISKELL, NOVEMBER 2019





Black fronted tern

Endangered terns winning fight against predators

Native black-fronted terns have been handed a big advantage when it comes to the ongoing battle against braided river predators on the Clarence River | Waiau Toa.

Aerial weed control was planned to take place in April after aerial surveys of nesting islands in February indicated weeds were growing back. This reduced the viability of nesting sites monitored as part of a partnership project between us and the Department of Conservation focused on the black-fronted tern restoration.

In an effort to curb the predator population, traps will also be laid every 100m or so along the banks of the river. The aim is to increase the nesting success of the terns.

The riverbed has been degraded throughout its catchment by mammalian predators and weeds which threaten the braided river habitat. In the breeding season, terns pick braided river islands free of woody vegetation to nest, which the likes of broom and gorse can rapidly colonise.

This reduces available nesting habitats and forces terns into less desirable locations where they are more vulnerable to predators and flooding.

What predators are the terns up against?

Hedgehogs, stoats, weasels, cats, rats, mice, possums and the Southern Black-backed Gull | Karoro have all been targeted with the trapping strategy due to their hunger for eggs, chicks and occasionally adult birds.

Karoro are significant predators of birds that depend on braided rivers for breeding grounds and food, such as the black-fronted tern. The terns are endemic to New Zealand and currently have the 'threatened – nationally endangered' conservation status.

Environment Canterbury's Kaikōura land management and biodiversity officer, Heath Melville, said it is important to be giving the native terns a hand up.

"We've seen huge benefits to trapping and habitat enhancement over the course of the study," he said.

"Above average river flows in October created many natural islands and cleared vegetation to the benefit of the birds. But unfortunately, high flows followed, leading to islands being flooded and only 14 chicks fledging this season compared to 142 chicks the season before," Heath said.

A long project, but a successful one

Work over the five-year programme so far has included helicopter control of broom, gorse and hawthorn; control of broom on private and conservation land; ground-based weed control; and the five-year predator control programme.

The Clarence/Waiau Toa is Canterbury's longest river, running for 209km through its large, rugged catchment. Management is shared between us and Marlborough District Council.

Improving the Clarence/Waiau-toa River ecosystem by controlling weeds is a major focus of the programme.



Aerial View of the Clarence Riverbed

Positive results to date

The average number of chicks per nest on both managed and unmanaged black-fronted tern colonies has increased since the project began.

In the 2015/16 breeding season, only one chick in 10 nests monitored survived to fledgling stage on the managed colonies. In 2017/18, that number had risen to almost six chicks per 10 nests monitored.

In the unmanaged colonies, the average number of chicks per nest has increased from less than one chick per 10 nests in 2015/16 to about 2 chicks per 10 nests this season.

FROM A NEWS ITEM PREPARED BY ENVIRONMENT CANTERBURY,
MARCH 19, 2020

Ambitious possum control for Banks Peninsula

Pest Free Banks Peninsula plans to ramp up efforts to protect native wildlife and vegetation by eradicating possums and other pest animals.

Pest Free Banks Peninsula spokesperson, David Miller, said the control planned programme is part of a 30-year initiative; to protect biodiversity across the 115,000-hectare peninsula, and support sustainable agriculture and tourism. It replaces the previous possum control programme run by the group.

"We're looking to start a new programme with the aim of eradicating possums from south-eastern Banks Peninsula over the next five years. From there **we will progressively work outwards across the peninsula.**"

Mr Miller said the project needs the support and involvement of landowners and residents to achieve its long-term vision.

"We understand some landowners would like to see possums controlled over the entire peninsula. It is, however, widely accepted that the previous possum programme was no longer achieving its desired impact. **We need to look at new ways of doing things.**

"Over the next six months we will trial new methods of controlling possums to see if we can provide effective and affordable suppression beyond the eradication area to keep possum numbers down," Mr Miller said.

FROM AN ARTICLE PREPARED BY
ENVIRONMENT CANTERBURY, JAN 15,
2020



Looking for a solution in South America:

Randall Milne's mission in Chile

Recently, when travel was still an acceptable activity, Environment Southland biosecurity team leader Randall Milne had a South American adventure, all in the name of biosecurity.

Randall's research and collecting journey to Chile in November and December 2019 was helped by a New Zealand Biosecurity Institute travel grant.

Randall had two missions.

One, to collect a supply of a potential biocontrol agent for Darwin's barberry and sample populations of pampas grass.

The other, a new project, to carry-out a preliminary survey of possible biocontrol agents for the invasive climbing biodiversity pest Chilean flame creeper, a concern in Southland among other places.

Randall was accompanied by Landcare Research plant pathologist Chantal Probst and local Chilean entomologist and frequent Landcare Research collaborator Hernán Norambuena.

"Between Hernán and Chantal there was no problem with the language," said Randall.

"The key was working with Hernan—a local, and his colleague, making travel around the countryside easier as well as talking with a number of landowners."

The locations of a rust fungus for Darwin's barberry and sites with pampas grass and Chilean flame creeper were known from previous surveys by Hernán.



Randall Milne with Darwin's barberry.

continued



Features

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"We found a good site of pampas. The potential biocontrol agent is a smut fungus and it looks good for reducing the level of seeding in pampas. Hopefully, it will be an option for pampas in NZ," he said.

"The Darwin's barberry fruit we collected needed to be infected with rust so it could be used as an inoculum for host testing in containment to ensure NZ natives or other beneficial plants are not susceptible."

On return to New Zealand the collections of both these agents were taken to the containment facility at Landcare Research to start the host testing process.

The survey for possible biocontrol agents for Chilean flame creeper found a promising contender from the Chrysomelid family of beetles.

"This potential biocontrol agent still needs to be formally identified, which we're hoping Hernán can arrange through his contacts in Chile.

"Eventually the results will be presented to the NZ National Biocontrol Collective to seek further support for the next stages of progressing biocontrol for Chilean flame creeper in NZ.

"If this or other suitable biocontrol agents are found, and are approved for release in NZ, an ongoing, sustainable control option for a weed that has currently proven impossible to control could be a possibility.

"We struck two weeks of perfect weather for the field-work. The temperature was in the mid-twenties, making it very comfortable to work in. Some of the landscapes were similar to parts of New Zealand. The volcanoes were quite stunning, and forests of monkey puzzle trees in the national parks were very impressive.

We were based in the south of Chile around the cities of Temuco and Valdivia.

"Many of the weed issues were similar to New Zealand. It's a very long and skinny country and we only saw a small part of it. It's a lot more diverse than NZ. Farming practices are different. There's an interesting mix of undeveloped areas and modern practices in others.

"I was there during quite a period of civil unrest. It was on the news every day, mostly in the larger cities with universities. We didn't come across any troubles but we were very aware of it.

"The project also gave me a chance to increase my knowledge and understanding on the methodologies and challenges for surveying, collecting and identification of biocontrol agents in a weeds' home range.

Randall's collection of Darwin's barberry and pampas grass agents was a continuation of existing projects funded by The National Biocontrol Collective, which is comprised of Councils and the Department of Conservation, and funded by Landcare Research.



Chantal Probst and Chilean collaborator Hernán Norambuena.



Exciting find. A possible biological control agent for Chilean flame creeper.



Rust is good. Darwin's barberry infected with rust.

The Chilean flame creeper research was helped by the NZBI Travel grant and Environment Southland.

"The projects are good examples of working in partnership with others to find solutions for pest problems." Randall said.

Royal Rescue on Raoul Island among other places

In mid-April the Department of Conservation reported that visitors, trampers, hunters, and staff who were stranded in remote New Zealand backcountry and offshore islands were now spending COVID-19 alert level 4 at home with their families, after combined efforts from DOC and the Defence Force.

"The New Zealand Defence Force and Department of Conservation (DOC) Operations Managers pulled out all the stops to get everyone home for COVID-19 Alert Level 4." Minister of Conservation, Eugenie Sage said.

The Royal New Zealand Navy ship HMNZS Canterbury and crew collected six DOC rangers from Raoul Island, where they had been carrying-out important pest control and maintenance work on the remote Kermadec Islands for the past 12 months.

DOC workers were in good spirits after their quick journey home, returning to Auckland's Devonport Naval Base on April 12 after COVID-19 Alert level 4.

The crew of HMNZS Canterbury were not permitted to leave the ship in Auckland due to the risk of contracting COVID-19.

"It was very rewarding to be able to assist our colleagues in the Department of Conservation, NZ Met Service and GNS. To be able to help our colleagues get back to their families in these uncertain times was particularly important to me and my Ship's Company, and to be able to put our training to use in a real-life situation was fantastic" reported Commanding Officer of HMNZS Canterbury, Commander Martin Walker, RNZN.

DOC evacuated around 90 hunters, trampers and other backcountry users from Rakiura/Stewart Island via helicopter, planes and boats.

Twelve trampers and a hut warden were also helicoptered to the end of the Heaphy Track. They were assisted by local transport and accommodation providers to either find a place to stay, or to get to where they would stay for the lockdown.

"Local transport operators played a crucial role in getting everyone home - their support was outstanding" said Aaron Fleming, DOC Director Operations, Southern South Island.

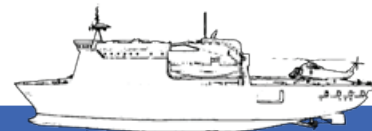
The majority of DOC facilities across New Zealand are not bookable, but DOC staff endeavoured to contact any last people on tracks that may be unaware of the COVID-19 Alert level 4 so they could get home.

"A systematic approach checking backcountry huts, hunting block booking applications and liaising with local transport operators ensured we got good coverage and made sure everyone was home safely" Aaron Fleming said.

Minister Sage offered her thanks too. "NZ Defence Forces provide invaluable support for the Department of Conservation's work in remote and difficult to access places; especially remote offshore islands. The speedy evacuation of DOC staff and volunteers from Rangitaahua / Raoul Island is another example of that.

"The swift manoeuvres of the HMNZS Canterbury are very much appreciated - their efforts and actions have enabled DOC staff and volunteers and others to be home with their families during the lockdown.

"NZDF's continued logistical support for DOC's operations make a major contribution to conservation, whether it is on remote offshore islands or mainland operations."



Usually at this time of year, the Defence Force would be carrying out a resupply and maintenance mission in support of DOC, MetService and GNS on Rangitaahua/ Raoul Island.

HMNZS Canterbury had a tight turnaround to travel from the Sub-Antarctic Campbell and Auckland islands on March 20, where they were supporting DOC's conservation and pest management work and MetService's maintenance of weather stations on the islands. To collect DOC staff from Raoul Island, they needed to travel north towards Tonga to get them home.

DOC staff will continue their work once they are able to return.

All DOC tracks, huts and facilities were closed under COVID-19 alert level 4.



The Vulgar Wasp: The Story of a Ruthless Invader and Ingenious Predator by Phil Lester

An unscientific review by Chris Macann of a seriously entertaining science book.

I thought there was no good reason for the existence of wasps. To the best of my knowledge there was absolutely no benefit from this vulgar creature in all its forms and its close cousins. After reading this book I think it still to be true but at several points I might almost have found some respect for it other than keeping a safe distance.

It turns out wasps are a delicacy in Japan where they have been eaten for centuries – the larvae that is. And there has been a fairly decent export industry of wasp larvae from this country.

Professor of Ecology and Entomology at Victoria University, Phil Lester has written a story about the wasp. It's a bit of a thriller and a mystery story. If they made a movie of the book it would be a horror story that I wouldn't want to see. I wouldn't be at all surprised if the term zombie arose from the lifestyle of the wasp.

Wasps are intelligent creatures. Some even get their energy from their own solar panels, and just like humans they don't like their sleep being interrupted - they sleep at night like the rest of us.

Where is the most painful spot to get stung? At three stings per body part when replicated twice someone has done the test on themselves. The answer to the question and the fate of the researcher lies within the pages. I wouldn't want to destroy any suspense. It's not where you would think, and yes it was tested "down there" too.

The book is worth a read just to hear of the experiences of the people involved in experimenting on these creatures, or who have had the misfortune to be on the sharp end of their displeasure. Some are entertaining but many encounters are quite tragic and not at all a laughing matter.

Phil covers all his points clearly and in simple language drawing on the research of many

from New Zealand and the world. He also has many relevant digressions about other clever insects. I particularly like the way he puts human attributes on the insect behaviour, an approach known as anthropomorphising (and there's not too many words bigger than that in the text either).

"She was rather like a CEO entering the room full of her subordinates. She was without fear. She had a strong sense of her authority and the knowledge that this was her dominion. Her presence, suit and colouration immediately commanded respect. She didn't perceive a threat or feel the need to use her considerable weaponry."

It's a thoroughly decent lock-up or any-other-time read. Phil shows a science book can be very interesting and entertaining as well. Almost laugh-out-loud. How about this one? Here he is on ant control v wasp control:

"Why waste our time and money on managing some Aussie ant when we have bigger problems? If we looked really hard we could probably find some ecologically harmful effects that these exotic ants have. **They probably speak in an Australian accent that is painful to the ears of other ants.** But such effects pale into insignificance against a million hectares of the highest known densities of wasps in the world."

I found myself having to slow-down a bit on the sections on genetics in particular gene drives and gene silencing. Slow-down that is, but not lose interest. It was an important and relevant section explaining the often-irreversible consequences once certain tracks are taken.

Phil covers the good the bad and definitely the ugly of this wasp. It's a great read for non-entomologists and contains plenty of interesting facts to throw into conversations and impress.

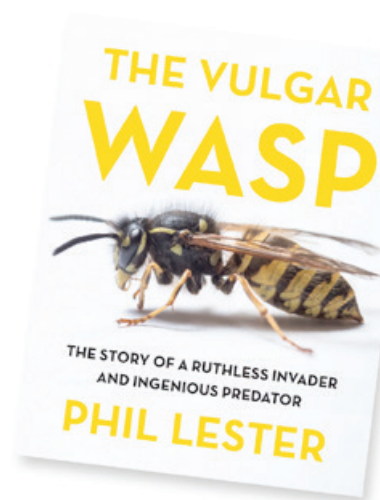
It contains a few big words and some smaller ones that I heard for the first time like exudate which is a substance secreted by plants or insects. In this case it's the sweet dew on a beech tree.

There's plenty of revolting and graphic as well as just plain interesting photos to accompany the story. There's even quotes from Aristotle and Exodus. After all they've been writing or hieroglyphing about wasps for more than 4,500 years.

Phil said it was a fun book to write...
"much more enjoyable and free than the scientific papers that I normally produce."

I'm glad to hear it. It was more fun to read than many scientific papers too.

THE VULGAR WASP IS PUBLISHED BY
VICTORIA UNIVERSITY PRESS (2018)



Phil Lester

Jemma Hippolite

Biosecurity Officer with Environment Canterbury in South Canterbury

How long have you been in your job?

I spent around six months at the Bay of Plenty Regional Council as a Summer Student and am coming up to two years with Environment Canterbury as a Biosecurity Officer.

What motivates you to be involved in biosecurity?

A lot of my life revolves around ki uta ki tai (from the mountains to the sea). Born and raised between Nelson and French Pass/Rangitoto Ki Te Tonga (Durville Island), it was the history and being in those environments, experiencing all the interactions and functions taking place, exploring, and living off them, that continually motivated me to protect them. **I hope to always protect them so that they can thrive, as close to their natural states as possible.**

What has been your career path to your current position?

I studied Biology at the University of Canterbury. It took me a long time, and time working on a farm, then a kiwifruit lab, before I understood more about some of the different roles I could potentially work towards. After accepting the role of an Aquatic Advocate Summer Student at the Bay of Plenty Regional Council, **I realised that Biosecurity was the official word for what my passion is**, thanks to both the role and team there at the time. Following my role in the North Island, I made the move back to the south where I've since been working with some of Canterbury's nasty aquatics, among other things.

What makes up a normal day for you?

A lot of my current role sees me undertaking compliance inspections. One day, I might be on my motorbike completing a Gorse and Broom inspection, but the next I might be walking through a creek or native bush, mapping or controlling pest plants and animals. Spending a week working in the Chatham islands was an absolute highlight of mine.



Jemma Hippolite with Ice (left) and Jet

I continue to put a lot of effort into our aquatic pest issues when and where I can. I think pathway management and communication/advocacy are two of the most important components to an officer's role, so my team and I work hard to ensure that we achieve these as often as possible.

What do you enjoy most about your job?

The challenges and the successes. You're probably not doing it right if you're not repeatedly facing challenges, and when the environment succeeds, that to me, is success.



From the archives

Zero keeps getting smaller

Over the past 40 years scientists have developed the ability to detect smaller and smaller amounts of any substance in our food and water.

In the 1950s, trace elements of both man-made and natural chemicals could be detected at one part per million. Any level below that was considered zero.

By 1965, one part per billion was detectable. Zero had become smaller. Today, one part per billion has become a reality – and one part per quadrillion isn't far away. All the while ZERO keeps getting smaller. These scientific achievements, while commendable, fuel consumer fears of pesticide residues. Just because something can be detected at a smaller level, doesn't necessarily mean that the risk level has changed.

The ability to detect residues at lower concentrations translates into the ability to research risks and benefits at lower concentrations. Industry is committed to using new technology to continuously update risk analyses.

With this commitment, safe, recommended usage levels can continue to be developed through extensive testing.

The following comparisons put detectable numbers in better perspective.

Think of one part per million as:

- 1 inch in 16 miles.
- 1cent in \$10,000
- 1 minute in 2 years
- 1 postage stamp on the surface of a baseball diamond or 1 inch in 16 miles.

Think of one part per billion as:

- 1 inch in 16,000 miles
- 1 cent in \$10 million
- 1 second in 32 years.

Think of one part per trillion as:

- 1 inch in 16 million miles (more than 600 times around the Earth)
- 1 second in 320 centuries
- 1 flea on 360 million elephants.



FROM A BORROWED ARTICLE
REPRINTED IN PROTECT MAGAZINE SPRING 1992



The tail

This time the tale really does have a sting in it

More recently our common vulgar wasps have also been shown to be able to recognize human faces. The study suggested that these insects can learn 'very complex but completely novel patterns like face images without any biological relevance'. Armed now with this new revelation, next week I'll start training wasps to recognize and sting my more irritating colleagues...

- Phil Lester

The Vulgar Wasp - the Story of a Ruthless Invader and Ingenious Predator, Victoria University Press (2018)



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