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Protect Autumn 2012

Magazine of the New Zealand Biosecurity Institute Contents

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NZBI news

Editor's Note

recently attended the NZ Science Communicators Association (SCANZ) Conference at Te Papa. SCANZ is a worthy organisation focused on communicating good science and keeping it to the fore in education and public awareness.

A keynote session noted that keeping science in the public eye had not been a problem in Christchurch because of the great deal of public interest in earthquakes but in other fields science communication was often less keenly followed.

Good science and communicating it is fundamental to biosecurity, and managing the information when people aren't particularly interested can be a challenge. To this end TBfree NZ communications advisor Alan Dicks spoke of the importance of promoting real versus "flakey" science in the 1080 debate. He said it was essential to keep good reliable scientific information about 1080 in front of people, and that the key was to keep the message simple, to repeat it often and have it further repeated by respected authorities.

Please continue to send in your stories and advice to *Protect* so that all Institute members, whether researchers, policy makers or practitioners can share your wisdom and repeat key messages with authority.

> Best wishes Chris Macann Editor

News from the Executive

Kia ora and hello from the Executive.

Well, 2012 has begun with even further belttightening within our industry. Organisations such as MAF and DOC recently completed major restructures and with job cuts being felt throughout most of government, we are commonly being asked to deliver more with less. I believe that in true Kiwi spirit we must not let this current climate discourage us from striving to make the best of the situation and continue to find the most cost-effective means to protect NZ's unique environment. In these tough times, organisation's such as the NZBI that bring together central and local government to share knowledge and experience, become even more important.

Biosecurity Month

A reminder that Biosecurity Month is fast approaching, so I encourage you all to start collecting together all those great work-related stories so we can blitz the media with biosecurity press releases in July. Please contact our Website Manager, David Brittain or myself if you would like to promote Biosecurity Month as a banner link on your organisation's website or as an email banner for your own signature.

Archives project

On March 27 the NZBI Archival Group had a teleconference during which the NZBI Archives Policy was finalised and signed-off. We will post regular

updates on the project's progress in future issues of *Protect.*

Free memberships

The Top of the South branch recently sponsored some training for three promising students and in order to continue to encourage them to be active in biosecurity work the Executive agreed to sponsor them with one year NZBI memberships.

The Executive agreed that this is a great way to promote the NZBI, particularly to students, non-industry people and volunteers. Therefore, the Executive has decided that each branch will be invited to nominate two people (volunteers, students, non-industry) for one year free memberships. The NZBI will approve up to two free memberships per branch per year.

NETS2012

Over summer, the organising committee has been busy finalising sponsors, speakers and field trips for what is shaping up to be another dynamic and informative NETS experience. I look forward to seeing you all July 18 to 20 at Wairakei Resort Taupo.

> Pedro Jensen President pedro.jensen@boprc.govt.nz

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Central North Island

Much to discuss in the 'Naki'

he central branch had a fantastic time in the Taranaki region. We got to enjoy the 'naki' in all its glory with rain – lots of rain – and a wee bit of sunshine. We had a great time. We had the privilege of having our meeting at the Pukeiti Gardens where Gardens Manager Andrew Brooker showed us the vast diversity in the rhododendron genus. We also got to experience first hand the Pukeiti Garden Rainforest Zone, which lived up to it name.

There are currently many national and regional issues that members of the central branch are involved with. A number of these were presented and discussed at our meeting, including Weedbusters, MAF's plant and animal toolbox initiative, the National Pest Plant Accord, DOC's restructuring, NETS2012, weed surveillance, the National Weed Distribution Database, and biosecurity training. All are hot topics and of real interest to the Central North Island members.

On the second day of our meeting, the Taranaki Regional Council Animal Pest Manager, Steve Ellis, arranged for us to see Taranaki's Argentine ants programme, and to visit an estuary where we found some giant knotweed and also to visit an amazing on-farm biodiversity site where we heard about the animal pest and weed control programme happening there.

This meeting was well worthwhile and a great opportunity to catch up, learn about each other's region and chew the fat, so to speak. I see these meetings



Te Rewa Rewa Bridge Estuary visit. Photo: Carolyn Lewis

as extremely valuable, they are a time to peer review the way we all do things and get the opinions of knowledgeable people.

Planning for NETS2012 in Taupo is coming along well so we hope to see you all there.

Darion Embling

Auckland/Northland Branch

ollowing a successful NETS2011, the Northern Branch of the NZBI has been taking a big breath. We shared our meeting before NETS2011 with the Auckland Region Pest Liaison Group which was a great networking opportunity particularly with many of the community and volunteer groups involved in biosecurity and biodiversity in Auckland. They contribute much to our environment here and deserve our encouragement.

In November we had our meeting at the DOC offices in Warkworth with talks from Diane Gleeson of EcoGene and Frank Visser of Key Industries.

Our next meeting is planned for March 28 at Landcare Research where we have three interesting talks planned in relation to connectivity mapping, the creation of synthetic odours and an Australian termite discovery within our region. This will be followed up with lunch, networking and a tour of some of the Landcare Research facilities.

Attendance has been up this year at our meetings and we have invited some of the students who are studying related topics within the campus to our upcoming meeting.

As with the rest of the country there have been significant changes in our industry over the past year and the restructure of many organisations involved with biosecurity and biodiversity is ongoing. While change is inevitable in the workplace and indeed life, we all hope that things settle back down in the near future so we can get on with the important tasks in front of us.

> David Moverley Northern Branch Chairman

Top of the South

Butterfly incursion update

he first New Zealand incursion of the great white cabbage butterfly (GWCB), *Pieris brassicae*, was in Nelson in May 2010. It is a close relation of the common white butterfly and is a significant pest to brassica plants. Unlike the common white butterfly, it tends to lay groups of eggs on individual plants, leading to early defoliation, and requiring the developing caterpillars to move to new food sources. A native of Europe and India, it is a strong flyer and was expected to spread quickly.

MAF implemented a surveillance and monitoring programme and a publicity campaign to encourage reporting of suspicious finds. Landowners with GWCB larvae were offered spraying. An analysis of response options based on cost-benefit analysis of the impact on production crops favoured an extension of the monitoring and local treatment option until December 2010. A review at this time indicated the population was small and the programme was extended to November 2011. A further review found a small increase in the number of infested properties, and a close down of the response and halt all operational activities was proposed.

DOC staff had concerns about the potential impact of GWCB on native brassicas, with a substantial number classified as being threatened or at risk. DOC staff contacted UK biologist Dr John Feltwell, the author of the only book on the GWCB, who was sufficiently interested to offer to travel to NZ and provide advice. DOC organised a Nelson workshop to consider options for control and eradication and invited MAF staff and local stakeholders.

As a result of the information presented, MAF staff agreed to extend monitoring and local treatment until the end of February and review treatment options. One of the key factors restricting its spread appears to be the the high level of parasitism by parasitoid wasps originally introduced to control the common white butterfly.

Herbicide registered

On September 5, 2011, the New Zealand Food Safety Authority granted a certificate of registration for Taskforce herbicide to its manufacturer Bill Dobbie of Vee Dri Industries, Australia. The entire registration process took five years and has cost more than





Great white cabbage butterfly caterpillar, above, and the common white butterfly caterpillar, left.

\$200,000. Taskforce is a selective herbicide for Chilean needle grass and nassella tussock and provides residual control of these invasive weeds for four to five years.

The registration process was funded by Biosecurity New Zealand, various regional and district councils and PGG Wrightson. Five field days were held across New Zealand in early November with Bill Dobbie, the manufacturer of Taskforce, to educate landowners, council staff and PGG Wrightson representatives about the safe and effective use of Taskforce Herbicide.

These field days were well attended by landowners and the product was released in each area at the field days. Taskforce can be purchased from PGG Wrightson stores across the country.

The Marlborough District Council recently made an application to the Environmental Protection Authority (EPA) to allow the aerial use of Taskforce, and to use it in vineyards and on the invasive weed kangaroo grass in New Zealand. Taskforce has been applied aerially in Australia for nearly 40 years with no reported adverse environmental effects. Submissions for this application closed on March 23.

Lindsay Vaughan

Otago/Southland Branch

Using last year's Southland inter-agency RPMS field trip with DOC Southland, LINZ and Environment Southland, several large *Buddleia davidii* plants were found growing along a gravel road adjacent to Redcliff Stream. This was a major concern as it was the largest infestation of wild buddleia found in Southland. One or two trees have been found and controlled in several locations around Southland.

Environment Southland's Amy Lagerstedt and I surveyed the broom and gorse-choked banks of Redcliff Stream. We found several large trees and a significant number of juvenile and seedling plants. Our main concern was that the infestation could have spread to the Waiau River.

Locals spoken to also told about an infestation at a gravelpit at an area known as Duncraigen Farm, which we visited and found several large trees and many small plants. A helicopter survey in January of the Waiau River from Borland Bridge to Duncraigen Farm showed no plants on the river but we found several large plants in the scrub adjacent to the Redcliff Stream which we had missed. A helicopter was used to control the large plants while all plants along the Redcliff Stream and Duncraigen Farm quarry were dealt with from the ground. Next summer we will re-survey all areas and control where required.

Lynne Huggins



Canterbury Branch

he Canterbury Branch has been very quiet over the past few months but members have been keeping an eye on our planting project on the Port Hills.

Good progress on plantings

We finished our last planting day around Nicholson Park and Whitewash Head on the Port Hills last July and since then a couple of weeding days have been held. Unfortunately on-going earthquakes have meant we have not been able to get access to some areas for weeding and checking the plants. We have lost some sites and plants due to earthquakes but most areas have survived.

We lost some 200 plants in the February and June earthquakes but we have had excellent survival of 95% and very good growth rates from last winter's planting.

Many of the trees we planted two years ago are now over two metres high.

Hosting NETS2013 perhaps

right.

We have had our first meeting to discuss the options and possibility of hosting NETS2013 in Christchurch.

A committee of 12 representing MAF, DOC, Landcare Research, ECan, Christchurch City Council and industry organisations, has met and decided that at this time we think we can host NETS2013. We are currently looking at potential venues.

Because of on-going aftershocks we have been rather distracted away from NZBI branch business. We may get a chance to look at meeting together as a branch before this summer is over but the threat of aftershocks has most of us thinking of other things.

Hugh Gourlay

Lower North Island Branch

Hornwort – Lake Wairarapa

ollowing the formation of several committees to oversee the restoration of Lake Wairarapa, a project is currently under way to manage the aquatic weed hornwort (*Ceratophyllum demersum*). Hornwort has infested many of the streams, drains and wetlands of the lake for many years. Building on past trials and work recently undertaken by DOC at Boggy Pond (also at Lake Wairarapa), a pilot programme has begun to look at options for its long-term control. To date site mapping and inspections of the area, have commenced and monitoring requirements have been determined.

Manchurian wild rice

At present there is one known site of Manchurian wild rice (*Zizania latifolia*) in the Wellington region. The site in a wetland on the Kapiti Coast comprises many fragmented infestations spread over 7ha, making it very difficult to control. Management of the site is conducted by Greater Wellington with funding from the Environmental Protection Agency (EPA), which has prioritised this site to be eradicated.

Control is becoming increasingly difficult at the site, with natural recovery of vegetation and deeper water causing issues with control effectiveness. Due to a rise in the water table, some infestations are now permanently under water.

Infestations on dry land are being dug out to assess control. At this stage it appears that the plants may not have enough foliage to ensure full chemical uptake. Some sites will be physically dug out to test effectiveness against continued spraying. The nature of the site and the resilience of the plant may mean that the battle is far from over.

Biological control

Five releases of the tradescantia leaf beetle (*Neolema ogloblini*), and a release of the tradescantia stemboring beetle (*Lema basicostata*) have been made in



the Wellington region. Damage so far has been encouraging. Less than three months after their release the leaf beetles are already causing significant leaf damage causing windowing and notching. Monitoring of the sites to assess the long-term impact of the beetle on tradescantia is under way.

The buddleia leaf weevil (*Cleopus japonicus*) has been released at four sites in the Wellington region. Two of the sites in Upper Hutt failed for an unknown

Adult tradescantia leaf beetle on leaf.

reason. However, both releases in the Wairarapa are looking very promising with significant damage evident. The monitoring technique used involves taking photos of the infested bushes with a metre square quadrant in shot. The photo is then analysed using the Digital Sampling Method Software developed by Landcare Research to determine the extent of the damage. The two successful release sites are now at the stage where they can be harvested after just two seasons.

Sara Moylan & Ben Winder

Biosecurity personnel profile: Richard Bowman

Role: Biodiversity Manager Environment Southland

'm a jack of all trades," Richard Bowman says of his job as Environment Southland's Biosecurity Manager .

He said working for a small council had allowed him to do a bit of everything.

"It has involved trying to keep up with everything and hopefully get ahead of it.

"It also means there is never a dull moment. The job is interesting and challenging because of the variety."

Richard has been in his job since 1994. His original job title was Animal Pest Manager. It was then a new position established about four years after regional councils were formed. His primary function was to manage the old rabbit board function which actually involved dismantling it. When he started there were 35 staff involved in the section but within two years the number was reduced to about 12. Now Richard is responsible for eight people and his main concern is to see that the council's pest management work programmes are delivered and where possible, improved.

"I also get involved in a range of other activities including the management and maintenance of the council's pest policy through the review of the Regional Pest Management Strategy. So it's a policy as well as an operational role."

Richard is also a member of the national biosecurity managers group. He said his involvement had been very useful in terms of learning a lot about pest management and contributing through the group to biosecurity legislation and the future of pest management.

Richard started his working life as a geologist after earning a degree in geology at Otago University in 1975. He then worked with mining companies for many years and travelled extensively, working in the fields of coal, iron ore and gold exploration in New Zealand, Australia and South Africa.

He returned to New Zealand in 1993 to study for an MBA and when completed began looking for another area of work.

"Working for a regional council appealed to me particularly because of the environmental management aspect. I was always interested in the landscape



Richard Bowman: Working for a small council has allowed him to do a bit of everything.

and natural history. That and being born and bred in Invercargill and through growing up in Southland enjoying the outdoors, especially trout fishing, hunting and tramping.

"I could see there was a lot to be done in the new job because of the importance of pest management to biodiversity and farming.

Richard has a strong interest in research and development regarding pest management.

"Working smarter and being proactive is the key. Across the whole pest management spectrum there are enormous problems to face with often very limited resources," he said.

Richard's advice to newcomers to biosecurity:

- Look at the big picture
- Take a long-term view
- Don't get buried in a specialist area
- Be prepared to take on new challenges
- Take a keen interest in research and development.

MAF

Border management set for revamp

ew Zealand's three border agencies are stepping up work to make trade and travel more efficient through better co-ordination of border services. Primary Industries Minister David Carter, Customs Minister Maurice Williamson and Immigration Minister

Nathan Guy announced in mid-February the Future Directions for the Border Sector work programme which will look at how the three agencies can operate together more effectively.

"A wide range of collaborative work is already under way across the three agencies," Mr Carter said. "This new programme will build on the progress made in improving trade and travel services, while keeping a firm focus on border security."

"It is about taking a fresh look at the functions of each agency and how co-ordination of the overall border management system can be improved.

"Protecting the integrity of New Zealand's biosecurity system is a top priority. With \$80 billion of exports and imports and 10

million travellers across our border each year, this must not be compromised."

The ministers said travel and trade patterns were changing rapidly as New Zealand interacts with more international partners, tourism was increasing and pressure was building for more streamlined travel.

"This work programme will build on a number of joint initiatives already overseen by the Border Sector Governance Group to improve information sharing and the targeting of risk at the border," Mr Williamson said.

"

'An example is the Joint Border Management System (JBMS), a new information system developed by Customs and MAF, which is leading to reduced duplication and fragmentation of border services and lower costs for industry and government.'

> Maurice Williamson Customs Minister

"An example is the Joint Border Management System (JBMS), a new information system developed by Customs and MAF, which is leading to reduced duplication and fragmentation of border services and lower costs for industry and government."

The ministers said the work was consistent with the government's goal of delivering better public services.

"New technologies are giving us access to information faster and we should be using this to improve our effectiveness at the border," Mr Guy said.

"We must ensure that e future. An efficient border

our border is fit for the future. An efficient border management system is critical to New Zealand's economic growth and prosperity."

The work programme will provide recommendations to the Government by mid-year.

Invasive species spotted on sale

Kahili ginger, a plant unwanted in New Zealand, was spotted for sale at an airport souvenir shop in Hawaii, shown at right, by an eagle-eyed institute member.

There are two varieties of ornamental ginger that have gone wild in New Zealand: kahili ginger (*Hedychium gardnerianum*) and yellow ginger (*H. flavescens*). Another invasive, white ginger (*H. coronarium*) that plagues Hawaii has not yet been found wild here.

Wild ginger is a frightening example of when good plants go bad. If unchecked, whole forests may be put at risk through the loss of native understorey that would normally replace ageing canopy trees over time.



Biodiversity

Plant collection register launched

w Zealand has inadequate records of what plants are actually in this country, where they are growing or what they are called. This is about to change with a new project, the New Zealand Plant Collection Register, that has recently been awarded three-year funding through the Terrestrial and Freshwater Biodiversity Information System (TFBIS). Murray Dawson (Landcare Research, Lincoln) is leading the project which is a collaboration with the Royal New Zealand Institute of Horticulture (RNZIH).

The register will document both native and exotic cultivated plants in living collections, and will be freely available online for use by botanic gardens, arboreta, garden groups, plant societies and holders of private collections. The total range of plants in cultivation is much wider than that currently sold by commercial plant nurseries. Hence the register will facilitate conservation of rare plants and heritage cultivars, plant exchange, sourcing germplasm for plant breeding, managing potential weed escapees, and better importation and biosecurity decisions.

The project builds on a pioneering register developed by the RNZIH from the late 1980s to the early 1990s. This first register was compiled by Dr Keith Hammett and others, but its scope was limited as it listed collections at the genus-level only and is now out of date. Many private collection records (often just as spreadsheets) are on personal computers without server or network backup so records are vulnerable and cannot be shared. Fortunately internet technologies and online databases have come of age and provide the best means of delivering, managing and sharing this resource.

One of Murray's first tasks is to define the functionality of the register – spreadsheet import/export, database

fields and entry forms, integrated mapping, image handling, robust names module and message board requirements. The document will be circulated for user feedback to ensure that the new information management platform will meet everyone's needs.

In addition to the living collection information,

The register will document both native and exotic cultivated plants in living collections, and will be freely available online for use by botanic gardens, arboreta, garden groups, plant societies and holders of private collections. the register will build an extensive bibliographic list of cultivated plant names, past and present, which will be derived from the New Zealand horticultural literature: plant books. cultivar registers, journal and magazine articles and nursery catalogues. This will provide a "pick-list" within the system for those entering their collection records.

"For the first time, we will be able to freely access

an accurate record of New Zealand's cultivated plant stock, determine how common or rare a plant is in cultivation, where it is growing, and who the custodians are," Murray said.

The TFBIS is funded by the government to help achieve the goals of the New Zealand Biodiversity Strategy, and is administered by the Department of Conservation.

The TFBIS is also funding a redevelopment of the New Zealand Biodiversity Recording Network (NZBRN) platform, to record natural history observations that include plant, animal and insect sightings. The RNZIH is working with the NZBRN and their new website and database developers to see if groups can share the same platform to meet their respective needs.

Robots patrol laboratory

f one happens to be snooping around the Western Australia Department of Agriculture's Food Grain Insect Resistance and Insect Reference Laboratories in the dark of night be prepared to suddenly come face to face with two additions to the cleaning crew which might be compatriots of R2D2.

The pair of automatic robots are not there to terrorise the rest of the cleaners, but are being trialled to roam throughout the lab to continually scan and collect latent infestations of insects that could become active after dark and damage valuable reference specimens. Both 'bots' have a powerful vacuum and fine filter to trap dust and particles from the air while capturing larger debris in an on-board bin, says senior entomologist Rob Emery, instigator of the experiment.

On completion of their scheduled rounds, the two mechanical sweepers return to a docking station to recharge. Or is it just in time for their break?

From the Western Australia Department of Agriculture. More information: Rob.Emery@agric.wa.gov.au.

Good human hygiene the best weapon against kauri dieback

Amanda Peart (Auckland Council) & the Kauri Dieback Engagement Team

ur treasured taonga is under threat from kauri dieback disease. It has already killed thousands of kauri trees and will spread further unless all forest users take action.

New Zealanders see kauri as playing a huge part in who we are. Its taonga status derives from its mythical origins and present-day importance to our biodiversity, eco-tourism economics and our innate sense of what New Zealand is all about. Kauri contributes to our national identity, spiritual wellbeing, economic prosperity from tourism and our overall biodiversity and interconnected forest ecosystems.

Potentially catastrophic

Kauri dieback disease has emerged as a major threat, some would say potentially one of the most catastrophic biosecurity threats of recent times to kauri forests.

Kauri dieback is a fungus-like disease specific to New Zealand Kauri staghead. kauri and can kill trees of all ages. Microscopic spores in the soil

infect kauri roots and damage the tissues that carry nutrients within the tree. Infected trees show a range of symptoms including yellowing of foliage, loss of leaves, canopy thinning, dead branches and lesions that bleed resin at the base of the trunk. It is believed to have been introduced from overseas and work by Landcare Research into the origins of the pathogen is under way.

The disease produces both a soil-borne "oospore", and water-borne, motile "zoospore", both of which can infect kauri roots.

One of the few positive aspects is that the disease only affects kauri. Other native woody plants and trees such as pohutukawa and manuka have been tested, with none falling prey to the pathogen.

Spores of kauri dieback were first discovered along with sick kauri on Great Barrier Island in the 1970s. Identification methods at the time led to these samples



being misclassified. Kauri dieback was formally identified in April 2008 as Phytophthora taxon Agathis (or PTA).

Phytophthoras are commonly known as "water moulds" and comprise some of the most destructive plant diseases known to man.

Horticulturalists and gardeners have long known about the perils of Phytophthora diseases, with the Greek word literally meaning "plant destrover". The diseases' impact on crops and nurseries has been widespread and devastating at times, for instance when Phytophthora infestans wrecked havoc on European potato crops in the 1800s.

Unwitting introduction

Unfortunately these destructive Phytophthora diseases have also been unwittingly introduced to many native forests throughout the world where they are not only killing millions of canopy trees but also whole ecosystems that rely on the trees.

Regrettably kauri has joined

this list and kauri dieback disease has killed trees in the Waitakere Ranges, on private land throughout the Auckland region, in the forest plantations of Omahuta, Glenbervie and Russell in Northland, Department of Conservation reserves at Okura, Albany, Pakiri, Great Barrier Island, Trounson Kauri Park and the Waipoua Forest in Northland, home of our most iconic kauri, Tane Mahuta.

There are pockets of health and resilience too, however.

At this stage, the disease has not been detected in many areas of Northland forest, the Hunua Ranges, Hauraki Gulf Islands (excluding Great Barrier) and bush on the Coromandel Peninsula. It's imperative that we protect these unaffected areas.

Since 2009, MAF, the Department of Conservation, Auckland Council, Northland Regional Council, Waikato Regional Council and the Bay of Plenty Regional Council

Threat to kauri

have joined forces to cover research into the detection and spread of kauri dieback, methods to control it and public awareness campaigns to help stop its spread.

Tāngata whenua involvement

The other programme partner is the Tāngata Whenua Roopū (TWR). Since first learning of kauri dieback, tāngata whenua throughout the kauri catchment were keen to be Kauri leaves yellowing up as Kauri involved in an issue critical to the dieback takes hold. health and wellbeing of their taonga, the mighty kauri. One of the ways this has happened is through the establishment of a Tāngata Whenua Roopū where interested marae, hapū, iwi and Māori-owned land blocks can nominate a representative to sit on the TWR.

TWR provides advice from a tāngata whenua perspective into all aspects of the long-term management programme and nominates tangata whenua representatives to all lead and workstream groups. TWR also worked with the partnership in the commissioning of a cultural effects assessment, development of a framework to consider cultural health indicators for kauri and kauri forests as well as selecting sites for surveillance.

Surveillance

The surveillance programme is helping to assess and monitor locations of kauri dieback disease. Research is under way to improve detection methods, increase our knowledge of how the disease spreads and develop effective control methods. Trials involving the use of phosphite to treat the disease have shown promising lab results and field tests have begun.

Work is also going into improving track construction, drainage and other man-made influences that will help reduce the spread of the disease.

There have also been trial closures of tracks in some parks, or re-routing tracks away from kauri.

Getting out key messages

The programme has focused on limiting the spread of the disease and protecting uninfected locations. Information is being shared with landowners, visitors,





Kauri bleeding lesion.



Kauri bleeding lesion close-up.

community groups, journalists. clubs and event managers to help build awareness, understanding and action around kauri dieback.

The key message being driven home is to stop the spread of the disease:

Make sure shoes, tyres and equipment are cleaned to remove all visible soil and plant material - before AND after visiting kauri forest

Stay on the track and off kauri roots

These messages have come from the understanding that spores of kauri dieback are found in the soil around affected kauri. Any movement of infected soil can spread the disease. Human activity involving soil movement (on footwear, machinery or equipment) is thought to be the greatest cause of spread.

The soil-borne spores are also very hardy and can live for at least three years in the soil, which emphasises how important it is to clean footwear and equipment.

"The key to cleaning is to scrub shoes free of all soil," says Dr Nick Waipara, Auckland Council Biosecurity.

"You can do this at a cleaning station if there is one on a park or reserve, or at home by simply scrubbing your gear clean of soil.

"Like the Check Clean Dry message for didymo and freshwater pests, good hygiene is the most important weapon against kauri dieback right now while we research treatment options.

"It is also the only way we will keep disease out of areas that are currently healthy and protect these for future generations.

"We all can help – tourists, hunters, trappers, trampers, runners, bikers, walkers. We all need to make it happen, rather than hope 'someone else' will do it."

So, to spread the word rather than the disease you can access more information at the programme's

website - www.kauridieback.co.nz. If you think your trees have symptoms of kauri dieback call 0800 NZ KAURI (69 52874).

Work on tutsan progresses

Dave Alker Environmental Management Officer Horizons Regional Council

ver the last couple of years Horizons Regional Council has been asking members through *Protect*, and pretty much whenever the NZBI has got together, about the distribution and weediness of tutsan in New Zealand. This was part of the supporting information to the Tutsan Action Groups (TAG) Sustainable Farming Fund (SFF) application to co-fund a full investigation into the biological control of tutsan.

This is a brief outline of progress so far on the North Island survey for pathogens and insects damaging tutsan plants. It's also a chance to pass on a big thanks to those who have spent time with Lizzie Rendell, a visiting intern with Landcare, in your respective areas showing her your tutsan infestations, it has all been a great help. I'm sure she has enjoyed the great scenery as well as your hospitality!

Genetic work

Tutsan

DNA analysis has been carried out on 16 leaf samples from different locations in the North Island.

We have had the sequencing results back for 13 of these samples. Five of the samples (from greater Wellington and southern Hawke's Bay) are genetically identical to some tutsan plants we have analysed from the UK. The other eight (including plants from the sites in Taumarunui we sampled with the help of TAG members) are very similar to the UK samples, but not identical. From the analysis conducted so far from the North Island, there does not appear to be much genetic variation between them, suggesting plants from different sites around North Island originated from similar locations.

Invertebrates

No significant herbivorous invertebrates have been identified from the samples collected from the North Island. Bronze beetle has been found present at most sites sampled, however being a generalist feeder, it is not eligible for use as an agent to target tutsan.

Other beetles have been identified down to family level at this stage (hopefully will be sorted into genera at a later stage) but there appears to be no potential agents among them, most being generalist feeders.

Rust fungi

Analysis of the rust fungi samples collected from plants has not been carried out at this stage. It is hoped that they will be able to undergo analysis within the next few months.

Further surveys

Surveys of Tutsan around the South Island took place in February 2012. The data collected from these surveys is due to be analysed this month.

It seems likely that further field surveys of tutsan will be carried out in the UK by the end of 2012, enabling further DNA comparisons to be made and to look for any potential agents such as invertebrates or rust fungi, should the New Zealand tutsan be found to be of UK origin.



Tutsan survey under way.

Animal pest research

Role of predators in rabbit control

Grant Norbury, with Andrea Byrom, Bruce Wartburton, Wendy Ruscoe and Roger Pech Landcare Research

A common refrain from farmers is that "predator control results in more bl**dy rabbits". That belief is often used as an argument against the control of ferrets to prevent the spread of TB and the control of cats and mustelids to protect native fauna. Such assertions need to be examined in the light of

relevant ecological principles and evidence to find out whether they are soundly based, and if so under what conditions.

Whether or not predators can help to control rabbit populations depends on the favourability of the habitat for rabbits and on causes of mortality other than predation. In moist, lowland areas, predators do appear to play a role in suppressing rabbit numbers. In trials in the Wairarapa and in North Canterbury, predator numbers were reduced and the subsequent change in rabbit numbers recorded.

In North Canterbury, rabbit numbers declined during an outbreak of rabbit haemorrhagic disease (RHD), but declined least where predators were controlled. In the Wairarapa, rabbit numbers increased when predators were removed, although this study was confined to a single 8ha enclosure.

In both trials, predators helped to suppress rabbit populations that already had been reduced by diseases such as RHD and coccidiosis or by adverse weather conditions (young rabbits often drowned in their nests). In both areas, rabbits breed almost year-round, and the continuous supply of baby rabbits helps sustain predators year-round.

As neither study was replicated, the results must be interpreted cautiously. Nevertheless these studies show that in some circumstances predators and disease can provide substantially better control of rabbits than disease alone.

The situation is very different in drylands, as they provide ideal conditions for rabbits; namely, a dry climate and relatively lower incidence of diseases. Here, experiments have shown that predator control has little, if any impact on rabbit abundance because in most years rabbits out-breed any off-take by predators. The number of rabbits determines the abundance of predators in this environment, rather than the other way around.

Predator-prey theory

Predator-prey theory can help in understanding these differences. When the recruitment rate equals the kill rate, rabbit numbers are generally stable. Where recruitment exceeds predation, rabbits increase and where predation exceeds recruitment, rabbits decrease. In drylands, recruitment of rabbits is normally high and naturally declines with increasing population density as competition for food and shelter increases. Predation rates tend to decrease at low densities because some rabbits always avoid predators, and at high densities because predators can eat only so many rabbits in

It's really only at the environmental extremes where the response of rabbits to predator control becomes clear. a day. Importantly, in drylands, recruitment almost always exceeds predation, so populations increase until recruitment is balanced eventually by predation. Where predator numbers are controlled, rabbit densities increase only marginally i.e. there is no outbreak of rabbit numbers.

The situation is very different in moist environments. There, the recruitment rate is generally lower

than the predation rate because of other mortality factors, and populations tend to stabilise at lower densities. But when predators are controlled in this environment, rabbit populations can increase markedly. Of course, the relationship applies only during the rabbit breeding season.

During the non-breeding season, the size of the rabbit population is determined solely by survival rates. Data collected in all areas of New Zealand show that all mortality factors combined cause a density-dependent decline in rabbits over winter: high density populations at the start of winter decline rapidly, and low density populations decline slowly. The result is that rabbit populations start the breeding season in each area at roughly the same density each year. In ecological terms, this tends to stabilise rabbit populations ensuring their persistence in the long term.

Is the myth busted?

These relationships help explain what is observed when predators are controlled in rabbit-occupied lands, but the question landholders will ask is "in which of these two environments does my property fall?". It won't always be one or the other, because there is a land gradient of favourability for rabbits. It's really only at the environmental extremes where the response of rabbits to predator control becomes clear.

So, is the myth busted? "Almost always yes" for drylands, and "usually no" for habitats that are less favourable for rabbits. This work was funded by the Ministry of Science and Innovation (Programmes

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