Summer – 2007
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Protect

New Zealand Biosecurity Institute

Our mission: "To preserve and protect New Zealand's natural resources from the adverse impacts of invasive pests."

GORSE ~~IS~~ WAS A PAIN IN THE ARSE.

A lot of testing has gone into **new and improved formulation** Tordon* Brushkiller XT – three years of it in fact. Why, you ask? Because, like you, we know how frustrating gorse can be to destroy. So for the sake of everyone's sanity, we wanted to perfect the toughest solution for eradicating brushweeds while improving your pastures and livestock capacity. And now that we know Tordon Brushkiller XT is the best, most robust formula to rid your farm of gorse and broom, we can proudly announce that brushweeds are no longer a pain in the arse – unless, of course, you sit on them.

For faster brownout of gorse and broom, get Tordon Brushkiller XT; proven to be tougher on gorse yet gentle on grass.

NOW TOUGHER ON GORSE, STILL GENTLE ON GRASS

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*Trademark of Dow AgroSciences. Tordon Brushkiller XT is registered pursuant to the ACVM Act 1997, No. P7545.

Protect

Summer 2007

Magazine of the New Zealand Biosecurity Institute

Contents

Editor's Note

"Rimarau" (500 in Maori), a few hours old, from Taranaki will be re-released back into the wild when it reaches its goal weight of approximately 1kg. Of the 162 kiwi chicks released into the wild last season, 116 were released by Kiwi Encounter.

Photo: Rainbow Springs, Kiwi Encounter

A Kiwi Christmas present! In October, the 500th kiwi chick was hatched at Rainbow Springs Kiwi Encounter and will be released back to its homeland, Taranaki. This is only one of the hundreds of important species that make up New Zealand, but it's a symbol of who we are and the determination we have to look after what's important.

To all of you involved out there, whether it's weeds, critters, bugs, doing the paper work, or out in the field and talking, talking, talking with people about issues and changing behaviour – the hard yards ARE worth it!

Thanks to everyone who has contributed articles to another year of *Protect*. A special thanks to layout sub-editor Col Pearson and proofreaders Lynley Hayes and Carolyn Lewis.

As well as our regular columns, articles in this issue include an RHD update from Canterbury, biosecurity concerns with biofuel species, a review of the Biosecurity Summit and the recent collaborative learning initiative in the Pacific.

Navigation should be easier in the electronic version of this issue by the use of links from the Contents Page and a return link at the bottom of each page. Just click on the story in the contents and you will go to the page. Email addresses are similarly linked.

Look forward to hearing about your news and views next year.

Have a great Christmas and New Year.

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New Zealand Biosecurity Institute

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News from the Executive

Kia ora and hello from the Executive!

Seasons greetings. Hopefully you'll be reading this issue of *Protect* with the festive season on your mind. Summer can be a mixed blessing for those who work outdoors. As the weather improves our workload seems to increase exponentially, with aquatic-pest awareness programmes and rampant weed growth among others. For those less tied to the seasonality of nature, hopefully you may be able to put your feet up a little over the next period.

Looking back over the year its encouraging to see our membership grow and to hear good reports of some excellent branch activities. I would like to encourage all members to seek out their chairpersons and lend a hand to organise "local" events that further the mission and aims of the Institute.

Exec meeting

The Exec met in Wellington on November 27 to have an in-depth discussion on a number of matters relating to how we go about our business. The major issue was whether or not the Institute should become GST registered. I presented a basic appraisal on our current situation that covered pros and cons financially and system oriented. It was agreed that a formal opinion be sought that would enable the Institute's special circumstances (a not-for-profit incorporated society with branches) and requirements around NETS be taken into consideration. We hope to have clarification on this matter to present at the AGM during NETS2008.

We also have drafted an amendment to our mission statement, clause three of our constitution, which we will circulate to branches for consideration prior to the AGM.

A scoping report by Mal Galbraith on the feasibility of producing a Journal of Biosecurity for New Zealand was discussed. The report looked at the number of recent articles that dealt with biosecurity issues and the spread across New Zealand/Australasian journals.

Another matter of importance was the NZBI website. As one of the more important avenues for information exchange, the Executive is looking at how the website can be modified/upgraded to better serve the membership and possibly as a tool to market ourselves to new members. If you have some constructive criticism of the current website and some ideas, big or small, about what you'd like to see functioning in cyberspace, then please contact Tim Senior, Environment Bay of Plenty, (Tim.Senior@envbop.govt.nz).

Finally, we threw some ideas around the "voice" of the NZBI. We are a group of about 500 people all passionately involved in protecting New Zealand from invasive organisms. The challenge we have is to articulate collective opinion to organisations, business, public and media. We agreed to discuss this matter further and look at the options open to us.

NETS2008

NETS2008 Biosecurity Connections – touch, pause, engage
Hamilton 23-25 July 2008

The next installment of NETS is taking shape. The committee is busy finalising keynote speakers, sponsors and field-trip options, so expect a call for papers shortly and watch this space.

New members

Welcome to following who have become full members of the Institute this year:

Brendan Veale
Charles Eason
Heidy Kikillus
Martin Cleland
Lyn Davison
Louise Cook
Cas Vanderwoude
Joanna Meys
Andy Spence
Holly Cox
Mark Mitchell
Jonathan Sala
Pieter Borcherds
Glen Currall
Steve Leiataua
Matt Rose
Ian Surgenor
Regan Courtney
Aaron Treadaway
Clyton Moyo
Ben Paris
Susan Crawshay
Rajagopal Duddumpudi
Gail Shuttleworth
Scott Morrissey
Jessica Wallace
Sara Brill

In conclusion, I would like to pass on thanks to our wonderful editor, Kirsten Crawford. *Protect* does not create itself and without Kirsten's enthusiasm and energy at hunting out stories and hunting down people to tell them *Protect* wouldn't be what it is.

On behalf of the Exec we hope that you enjoy your summer and don't forget that whatever you're doing slip, slop, slap, then check, clean, dry.

Craig Davey
President
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News from the Branches

Central North Island Branch

Quite a large group from Taranaki, the Waikato and Bay of Plenty turned out for a fascinating return visit to Maungatautari.

Discussion during the meeting at Pukeatua school ranged over a variety of topics including: the draft EW RPMS, which is held up by appeal from a pig hunting club; NETS2008; a proposed biosecurity journal; the NZBI website; and insectivorous plants.

Paul Champion showed us some tiny *Utricularia sandersonii* (NPPA plant). This and another insectivorous plant, *Pinguicula grandiflora*, (first record for NZ) were found in Broken Hill DOC reserve at Tairua and presumably planted by a misguided enthusiast. Keep an eye on those wetlands and keep an eyeglass in your pocket!

Thanks to EW for providing a sumptuous lunch.

Then off to the mountain… One of the trustees gave us a fascinating and entertaining introduction to the project – a story of hard work, passion, perseverance and dedication from a huge number of people. The 42km predator fence around the entire mountain is now complete. There has been fantastic support from all neighbouring landowners and a huge fundraising effort and great collaboration between multiple agencies.

The project now also includes ponds and a special enclosure for two takahe. Several kaka were released but they immediately disappeared. Overall there has been a huge increase in birdlife.

The fence needs constant vigilance, with problems such as fallen trees in the middle of the night but it is alarmed for such eventualities. Pest monitoring continues. The project highlights how much we still do not know about predator behaviour and native species behaviour.

The trust has a big focus on education and science. A special classroom has been built for visiting school kids at Pukeatua school and a teacher is to be appointed to staff it.

A walk followed, through magnificent, little modified, hardwood/podocarp forest full of birdsong. We climbed an enormous tree top viewing tower provided by Waikato Lions groups. Great to see huge rata in prime condition and we watched a falcon terrorising a harrier hawk!

The only problem was the planting of Taiwan cherries at the entrance!

Tim Senior
Executive member, CNI Branch
Tim.Senior@envbop.govt.nz

Central North Island Branch members on the tree-tops viewing platform at Maungatautari.

The predator-exclusion fence at Maungatautari is now finished and there has been a huge increase in birdlife within the enclosure.

Maungatautari will be one of the field trips at NETS2008

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News from the Branches Continued

Just reward: Canterbury branch members mark the passing of another busy year.

Canterbury Branch

Canterbury put on another fine sunshiny day on Friday, November 9 for the end-of-year "Christmas-Education" do.

It was great to see a good number of members take time out from work to take part in the "educational" wine tour, especially at such a busy time of year. It was even better to see about five new faces come along to the event!

Before hitting the vineyards we caught up with Miles Giller from QEII trust on a piece of land near Waipara. Miles discussed a number of special plants in the area and also issues they were having with weedy species such as boxthorn (*Lycium ferocissimum)* and sycamore (*Acer pseudoplatanus)*.

After talking with Miles, the team ventured on the big bus to Mud House for a talk from wine merchant Jean-luc Dufour. Jean-luc has a strong interest in the "Greening Waipara" project and shared with us the beginnings of their native habitat planting near the main building and discussed their experimental use of native mat plants between rows for weed suppression and pollen sources for beneficial insects, and at the end of rows as indicators where traditionally roses have been used. Discussions with members covered insect, fungal and animal pest control including the Mudhouse's intention to investigate bringing falcons to the area to control pest birds.

After all this serious stuff standing out in the hot sun it was time to quench our thirsts, tasting a range of Mud House wines and then Waipara Springs wines, yum!

Waipara Springs kept our glasses full while hosting our meeting and talk from Keith Briden about his boneseed restoration project in the area of Whitewash Head, Taylors Mistake and Godley Head. A lively discussion was had regards the possibility of the Canterbury branch getting involved with this project.

All in all it was an enjoyable, tasty, refreshing afternoon topped off with great company a delicious meal at the Brew Moon.

Laurence Smith has offered to be our local secretary since the departure of Jenny Williams.

Gemma Bradfield
gemma.bradfield@ecan.govt.nz

The Mud House vineyard uses native plants as indicators of pests at the ends of each row of vines – traditionally a rose species would have fulfilled this role.

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NETS2008

Biosecurity connections: touch, pause, engage

The organising committee for NETS2008 is assembled and under way (and being lead astray), chaired by the mighty Paul Champion!

The National Education and Training Seminar next year will be a chance to touch, pause and engage in biosecurity projects and issues.

Field trips will be out and about in the heart of the Waikato – a hub for biological restoration. Tentatively they include:

• Maungatautari Ecological Island, to experience the results of intense pest control behind a 42km predator-proof fence

• The urban environs of Hamilton looking at gully restoration and the constant challenges of determined gardeners

• Electric fishing on the mighty Waikato

• Restoration of Waikato wetlands and biosecurity of the Hamilton Zoo and its residents

• The ever-popular clay-bird shoot.

Call for papers

Please contact Carolyn Lewis with your abstract for a paper, poster or workshop ASAP. Email Carolyn on cl.sb@xtra.co.nz

Nominations now open for trophy

Nominations for the Peter Nelson Memorial trophy are now open and will close on June 30, 2008.

Nominations can be made by members only and may cover achievement in any field associated with vertebrate pest management such as research, training, product development, project management, industry representation, planning, specific operations or cumulative achievements over many years.

Nominees can include non-members (individuals or organisations).

Please send your nominations to the NZBI Secretary/Executive. The award will be presented at NETS2008."

Award for the Most Weed-wise Nursery in NZ

The Council of Australasian Weed Societies (CAWS) presents an annual award to recognise the most weed-wise plant nurseries in New Zealand and Australia.

The award, instituted in 1996, acknowledges nurseries which proactively educate the public about plants that pose environmental risks if they escape from gardens to threaten native plants, wildlife and environments.

Winners receive a certificate, and a trophy. All winners will be publicised through their local media.

Applications for the award must be with the Secretary of the NZ Plant Protection Society by April 30, 2008.

Full details of the award, and how to apply can be found on http://www.nzpps.org/forms/WeedWise.pdf

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Non-member Profile: Col Pearson

Role: Protect sub-editor
Email: col.pearson@caverock.net.nz

Former lives:

Have long had a rural focus since spending all my school holidays working on a high country station, which lead on to a stint as a blade shearer in the mid-1970s.

A job with what was then Lands and Survey (remember them?) in Arthur's Pass National Park in 1975 marked the start of a long period based in that part of the Southern Alps with time spent away doing other things.

Have worked in a variety of jobs ranging from logging truck weighbridge operator to wine waiter, from would-be possumer and skifield manager to MAF observer on tuna boats, before settling into business as a painting contractor which carried me through much of the 1980s and 90s.

Realising that my brain was in danger of atrophying, I went to University of Canterbury in 1987, and did a BA in geography and political science.

In 1997, I returned to Canterbury University and did a Diploma in Journalism and went to work for the *Christchurch Star* as a sub-editor, a job I left a year ago. I am now doing freelance editing, layout and design work as well as specialising in the production of clear maps and diagrams for publication.

My biosecurity involvement, such as it is…

My first involvement with "biosecurity" probably occurred pushing through gorse while mustering sheep in the 1970s, but the first "official" encounter took place using a motorised backpack sprayer on gorse and pulling out ragwort along rural roads running through scenic reserves on the West Coast while working as a reserves assistant for Lands and Survey in Hokitika in 1975.

This environmental awareness grew over the years due to national park work and associating with people working in the conservation field.

Besides weedspraying, editing *Protect* has been my only official biosecurity work. I was asked to take on the role of editor of *Protect* in 1998, but lacking close links with those in the biosecurity sector and in the Institute I didn't hear about stories and couldn't keep up with developments, and so handed the editorship over to Carolyn Lewis in 2004, remaining on to do lay-out and sub-editing of the magazine.

Not sub-editing* Protect*, but rather checking out the thistles beside the track en route to the Sign of the Packhorse hut, Lyttelton Harbour.

I enjoy my association with *Protect* and the Institute and finding out what is going on around the country in a field which in crucial to New Zealand's well-being.

Cheers,
Col Pearson

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Immunity to Rabbit Haemorrhagic Disease an issue for ongoing control

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Long-term population monitoring and serological testing shows a decrease in the effectiveness of Rabbit Haemorrhagic Disease (RHD) to control rabbits in some rabbit-prone areas in Canterbury. For RHD to continue to maintain a cap on rabbit populations the number of sero-positive or immune rabbits has to be reduced.

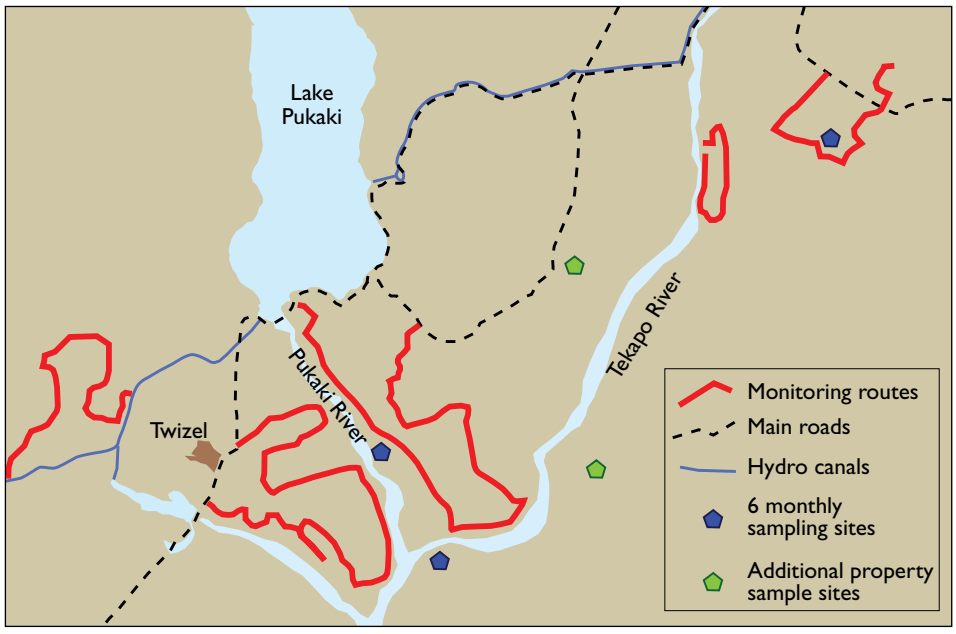
Since the initial outbreak of RHD, the disease caused by Rabbit Calicivirus (RCV), in September 1997, Environment Canterbury's (ECan) Biosecurity Section has continued to regularly monitor both rabbit population trends, through selected night-count transects and immunity levels to RHD through rabbit blood sampling at several sites.

The most intensively monitored sites are within the Mackenzie Basin due to the historic rabbit problem and also because this is the largest area of extremely prone and highly rabbit-prone soils within the Canterbury region. The Waiau River in the Amuri pest district is also monitored on a frequent basis.

A total of 128.7km of night-count transects covering part of eight high-country runs are monitored every four months. The monitoring routes are marked in red on map below.

Rabbits collected for antibody testing, including an albino and a black rabbit, 2006. Photo: ECan

In conjunction with the transect monitoring, approximately every six months a night shot sample of 30-35 rabbits is collected from each of the sites marked on the map with blue circles. The green markers indicate location of recent additional property sample sites.



Mackenzie Basin RHD night-count transects and rabbit sample points.

Blood samples are taken as each rabbit is shot and both rabbit and sample are numbered. Every rabbit is autopsied and data is collected on body weights, fat index, breeding status, litter sizes and the population age structure is determined from the dry eye lens weight.

Blood samples are spun by centrifuge and the frozen sera sent to Wallaceville National

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Immunity to RHD an issue for ongoing control Continued

Rabbit proof fence prior to RHD arrival, Mackenzie Basin. Photo: ECan

Research Laboratory for testing. The laboratory test for RHD antibodies is the internationally recognised competition ELISA test.

Summary of results

For the majority the of Canterbury region's low and negligible rabbit-prone classified land, RHD continues to suppress rabbit levels to the stage where landowners rarely carry out any control other than on a recreational basis.

However, on the moderate, high and extreme classifications there are areas where the virus is having a reduced impact and generally landowners have been slow to take the initiative to use conventional control methods, instead believing RHD will have more of an impact next time around. This is changing as some properties are facing huge costs for aerial poison campaigns which can range from $50 to $60 per hectare, and neighbouring properties fear spreading infestations.

Rabbit numbers are increasing in the Mackenzie Basin and have shown a regular increase over the last five years. Although the average is not up to the 1996 pre-RHD rabbit levels, some individual properties have rabbit numbers higher now than they were as long ago as 1991.

One property this season had a spotlight count of 95 rabbits over one kilometre.

The percentage of rabbits testing sero-positive is also increasing noticeably since 2003. In the Mackenzie Basin, the average level of immunity at August 2007 was 50% of the population.

This of course indicates that still half of the population is susceptible to the virus. However, reductions of this nature seem very uncommon. Night-count transects would indicate an average epidemic reduction of about 22% ± 12%.

Disease epidemics do not seem to sweep through a large area as in the past and some pockets seem unaffected as though there is some barrier to disease transmission.

On a district level, RHD epidemics combined with natural predation and some landowner control keeps the rabbits from their exponential rate of increase which did occur prior to the release of RHD.

The Waiau River site has just over half of the population immune (53%) and very high numbers of rabbits (72 per kilometre in Nov 2007). A primary poison operation is required there.

There is no doubt that there has been a decrease in the effectiveness of RHD's ability to control rabbits in some of the rabbit-prone areas. The patchiness of

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Immunity to RHD an issue for ongoing control Continued

this decreased effect is consistent with some areas of Australia and other rabbit-prone areas of New Zealand.

For RHD to continue to maintain a cap on rabbit populations the number of sero-positive or immune rabbits has to be reduced. This will only be achieved through conventional baiting and poisoning while maintaining high operational technical standards to delay poison intervals. Continued serological testing is required throughout the region.

Mackenzie Basin Monitor

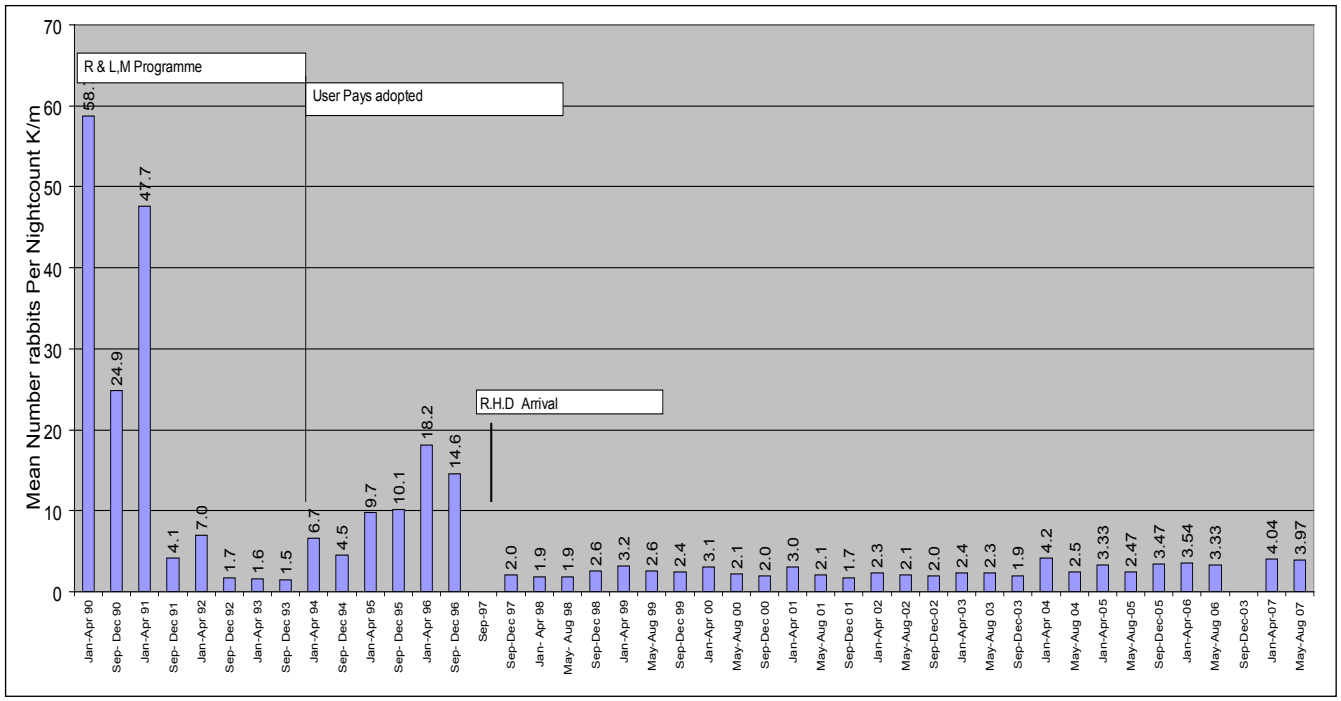

Figure 1: Mackenzie Basin RHD monitor routes: Average number of rabbits per kilometre (128.8k/m).

Figure 1

In Figure 1 (above) the variations in the rabbits-per-spotlight kilometre over the first four years show the effect of major 1080 carrot aerial control operations during the Rabbit and Land Management Programme and the associated decline in rabbit numbers. The R & L M Programme was a transition from the highly subsidsied control regime of the past to the user-pays model.

In 1994 farmers voted in the "user-pays" system whereby they were responsible for initiation, co-ordination and funding of rabbit control on their own land. Rabbit numbers again started to increase as opportunities were missed and corners cut.

With the arrival of RHD in September 1997, rabbit numbers crashed – the average reduction on these properties 83% ± 7% (95% confidence interval) – and numbers have remained consistently lower for the past nine breeding seasons. Disease epidemics occur two or three times throughout the year but the major RHD epidemics occur through the basin post breeding around March and April slowing the rate of increase.

Figure 2

Figure 2 (see over) represents information collected from the serological surveys. The bars (with 95% confidence limits) represent the percentage of sero-positive blood samples from collection sites within the Mackenzie as a district sample (n=100 to 130).

There can be wide variation in the percentage of rabbits that test sero-positive; this can be due to a number of factors. Depending on the timing of a naturally occurring epidemic compared to sample collection timing. If a sample is collected immediately after a naturally occurring epidemic, many rabbits that are susceptible succumb leaving a high percentage

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Immunity to RHD an issue for ongoing control Continued

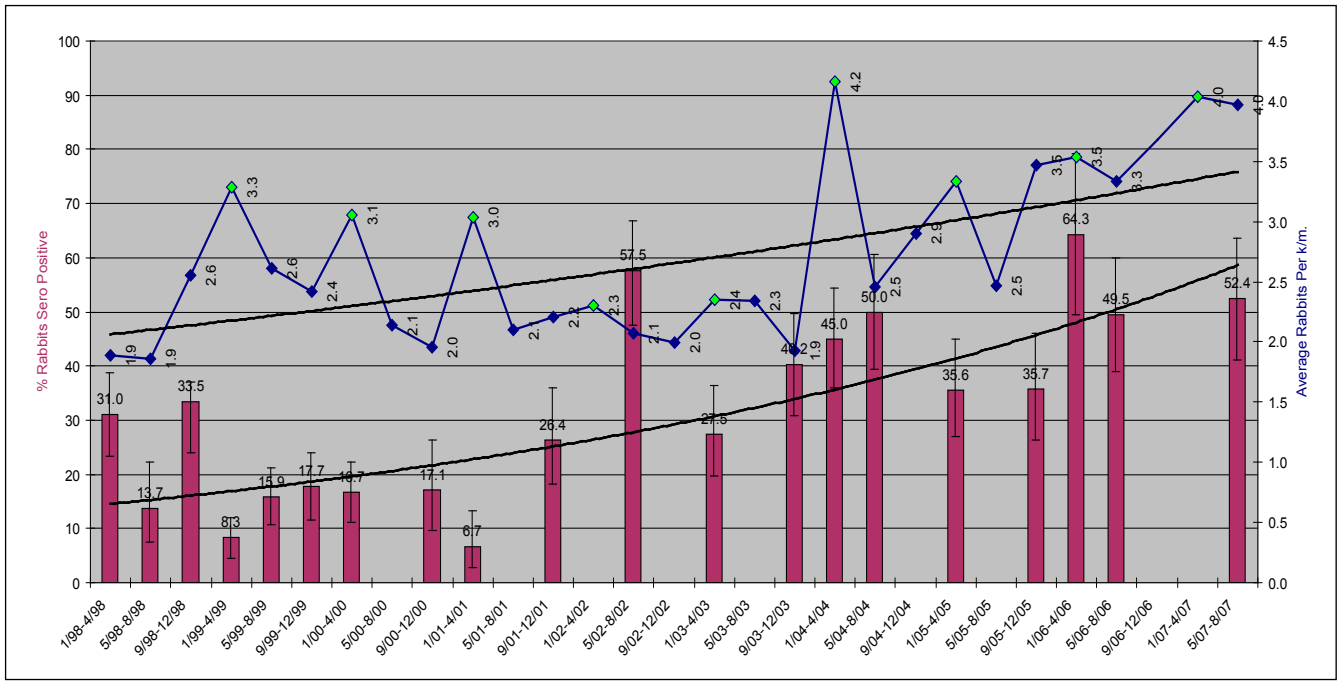

Figure 2: Mackenzie RHD Monitor, Percentage of rabbits Sero Positive (95% CI) & Average number rabbits per km (over 128km).

of sero-positive rabbits as a result. Conversely if the population is tested post breeding the concentration of immune rabbits is reduced due to the diluting effect of a large increase of sero-negative rabbits recruited.

With the fitted logarithmic trend line it is obvious that there is an increasing trend in the percentage of rabbits that test sero-positive, or immune to RHD, in the Mackenzie samples. To put this in context the last four periods of sampling between September 2005 and May 2007 have an average level of immunity of 50%, while average rabbits per kilometre over that period range from 3.3 to 4.0. This indicates that RHD is still effectively curbing the pre-1997 rate of increase of the rabbit population, helped by secondary control and natural predation. However rabbit numbers are slowly increasing over these sites as indicated by the top trend line.

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Fuelling future problems? Call for care with the introduction of biofuel species

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The promotion and use of non-native species with invasion potential as biofuel crops could seriously damage what's left of New Zealand's very special biodiversity.

Cultivation of high-yielding crops for biofuel production is being promoted by many countries as an alternative to the use of fossil fuels in trying to reduce the impacts of climate change. Some of the crops being promoted, such as Johnson grass (*Sorghum halapense*) and reed canary grass (*Phalaris arundinacea*), are already highly invasive either overseas or in New Zealand. Johnson grass, present in a few places in this country, is being eradicated by Biosecurity New Zealand and regional councils around the country because of its threat to the environment and its toxicity to livestock. Reed canary grass already seriously threatens plant and animal biodiversity in New Zealand's scarce wetlands.

Overseas, large swathes of natural areas are being cleared for monoculture of biofuel crops such as sugar cane and oil palm. There is a danger that these are being introduced without proper assessment of the ecological risks they pose. Conservationists warn that this could result in an increase in the two major causes of the reduction of biodiversity – habitat loss and biological invasions (Raghu et al. 2006; GISP, 2007).

Micanthus x gigantus ***is a perennial grass that has a life span of 20 years and can grow to 3m in height. It is cold tolerant but not particularly frost tolerant. Individual plants increase size through rhizome production. It has just been approved by ERMA to bring into NZ.***
Photo: Pat Schitz and Steve Long, University of Illinois.

Many biofuel species have a high invasion potential, so it is critical for long-term sustainable growth and poverty reduction that the benefits of biofuel species can be maximised and adverse effects minimised through well-informed decision-making and management. Management of the natural environment is as important to our lifestyles as future production of alternative fuels.

The Invasive Species Council Australia in its recently published report (Low & Booth 2007) summarise the weed risks of 18 crop species being promoted as potential biofuel crops in Australia and elsewhere. The authors conclude that a majority of the crop species assessed pose a weed risk, and recommend that many of the species should not be cultivated in Australia because of their weed risk. Among them are reed canary grass (mentioned above); spartina (*Spartina* spp.), already being eradicated from several estuaries around New

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Fuelling future problems? Continued

Zealand because of its effects on bird life; and giant reed (*Arundo donax*), currently listed in a number of Regional Pest Management Strategies. Other species in its list already occur in New Zealand and some are being actively promoted as potential biofuel crops. All of those in the list are invasive somewhere and, with continued climate warming, could one day pose a threat to New Zealand's wild places.

New Zealand's Environmental Risk Authority recently allowed the importation of *Miscanthus x giganteus*, a huge grass which is a sterile hybrid with large rhizomes. They did this after a "rapid risk assessment", which needs no public consultation. Low and Booth, in their report, pointed out that some grasses seem to be able to spread well in spite of their apparent infertility, and quote giant reed (*Arundo donax*), already a weed in some areas of New Zealand, as an example.

By all means, let us find alternative fuels to oil-based ones. But, please, let us be very careful about importing or propagating plants that might cause more damage to our precious environment than the good they do for the mitigation of climate change.

To quote IUCN (2000) "The intentional introduction of an alien species should only be permitted if the positive effects on the environment outweigh the actual and potential adverse effects."

Fuelling future problems? Giant reed (*Arundo donax*) is listed on RPMSs of a number of regional councils.
Photo: Steven Perkins @ USDA-NRCS PLANTS Database

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See ERMA organism and application documents for Miscanthus x giganteus at www.erma.govt.nz/search/registers.html?id=21787

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Grappling with different priorities – Biosecurity Summit talks trade

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The Biosecurity Summit brought together presenters from across the cargo supply chain spectrum including; MAF Biosecurity New Zealand, New Zealand Customs Service, freight forwarding companies and representatives from exporting/importing industries.

Some key issues and perspectives that were raised are summarised below.

Biosecurity crucial to NZ trade

New Zealand is more reliant on primary production and exporting than any other developed country, with about 35% of our GDP environmentally based. For example, New Zealand produces only 6% of the world's milk, but we have 60% of the world's export market. Biosecurity gives us low disease incidence in livestock, meaning better productivity and a reduced cost as vaccines and the like are not required to the extent of other trading nations.

The role that biosecurity plays in safeguarding our economy is acknowledged by the government with $845 million budgeted over the next five years. However one wonders if this amount is going to be sufficient if recent trends continue and a predicted 30% increase in trade volume over the next few years eventuates.

In the last 10 years, passenger numbers have increased by 1.9 million to 4.7 million people a year arriving in New Zealand. In the same period sea container arrivals have increased from 250,000 to 575,000 units a year. As well as this increasing volume of product there are challenges with the changing pathways that the product has travelled. The increase of product arriving from Asian markets is associated with an increased risk of incursions from that pathway.

Biosecurity Act-WTO tension

Challenges arise before trade even enters our border, noted Douglas Birnie, Director, Policy and Risk, MAFBNZ. Policy has a huge part to play in strengthening or compromising our biosecurity.

Trade involves a tension between The Biosecurity Act and the World Trade Organisation Sanitary and Phytosanitary Measures (WTO SPS), where one says "Prove it's safe before you let it in" while the other says "Let it in unless you prove it's unsafe".

Supply chain efficiency is crucial for New Zealand, especially in the "just-in-time" ordering environment.

The key principles that need to be adhered to in assessing trading decisions are:

1) risk management, which requires proof,
2) size of the risk, which equates to the size of the measure,
3) transparency, that our decision-making is accountable, and
4) reciprocity, as we expect other countries to behave as we do.

The point was made that things should be as simple as treating others as we want to be treated and Douglas then posed the ultimate question, "Isn't it a case of us all not exporting pests?"

Freight volumes/biosecurity impacts

Another of the key challenges facing agencies and freight companies is the ability to manage freight

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Biosecurity Summit talks trade Continued

volumes and biosecurity risk. This is no small task in the "just-in-time" ordering environment with 12-24 hour releases an industry requirement. When we look at the freight industry on a global scale there are 30 million packages a day being carted by 220,000 vehicles, 1800 aircraft and 2000 commercial flights. This industry generates $220 billion per year and employs 1.25 million people. If consignments are delayed unnecessarily that is a direct cost to the supply chain. If freight is moved without clearance then that is a potential biosecurity cost.

Geoff Vazey (consultant, Ports of Auckland) outlined New Zealand's absolute dependence on cross-border supply chain and that biosecurity requirements need to work alongside logistic capability as 10-50% of every product's cost is supply-chain cost. His point that products do not compete, supply chains do, and supply-chain effectiveness actually determines market share, highlights the importance of MAFBNZ working collaboratively with industry and other government agencies – a point also highlighted by Murray Sherwin, Director-General, MAF.

Clive Gower-Collins (Manager, Import Standards Group, MAFBNZ) and Charles Hatcher (Assistant Director, Cargo Directorate, MAFBNZ) outlined MAFBNZ's role in the cargo supply chain. MAFBNZ's intention is that business sees MAFBNZ as part of their supply chain, and they see themselves as a part of New Zealand's biosecurity system. Internally, MAFBNZ is adopting a structure that puts staff in roles to act as supply-chain managers giving responsibility and complete line knowledge as well as simplifying the contact flow for external communication. They are starting the process of using mobile data capture with PDAs and paperless releases, rather than reliance on the "fax bank" – purported to be the largest collection of faxes in one place in New Zealand. MAFBNZ is extending its collaborative effort of pre-border container cleaning with four shipping companies from the existing operation in PNG to American Samoa, Western Samoa, and Tonga.

BMAC view of container pathway

The Biosecurity Ministerial Advisory Committee (BMAC) is an independent observer of the biosecurity system, and charged with undertaking a performance review of the Biosecurity Strategy and our biosecurity systems. BMAC has been looking at the sea-container pathway since 2006.

The overall impression as presented by Stewart Milne, Executive Director, Board of Airline Representatives of New Zealand, member BMAC, was of MAF's impressive dedication to task while being definitely capable of improvements by moving to electronic messaging

'The Bugman's' take on biosecurity, life and all that…

Keynote speaker and entertainer "The Bugman" Rudd Kleinpaste told us that its not governments, love or money that makes the world go round; its bugs.

Traditionally biosecurity has focused on bugs that affect production, health, and our ability to export.

Rudd hoped that sooner rather than later, we would start to recognise the importance of our bugs to the economy and our biodiversity. Our weta are native seed dispersers, fantails rely on insects to survive and the kiwis diet is 95% bugs.

Rudd Kleinpaste

A 2006 estimate of the "bug bill" to the USA reached $57 billion. This annual contribution to the economy is directly from bugs' involvement in pollination, food for wildlife, dung removal, and food.

Also a lot of the latest technology is "bugology", with the insect world mined for its innovations. Rudd talked of spiderweb cotton bulletproof vests a fraction of the weight of traditional vests, and cockroach-inspired Mars surface vehicles.

Maybe biodiversity is our greatest untapped capital?

Biosecurity helps stop the dilution of our living library, and Rudd's closing remark was aimed at all of us: "What are you going to do about it?"

Te Kaha, a resident adult female at Kiwi Encounter Rotorua for more than 25 years. A kiwi's diet is 95% bugs. Lose the bugs and we lose the kiwi – unless they are specially fed like those in captivity.

Photo: Kiwi Encounter, Rotorua

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Biosecurity Summit talks trade Continued

– getting rid of the fax bank – and adopting a single-window approach.

BMAC commented that MAF needed to realise that the supply chain was a key stakeholder. BMAC also felt that to have better biosecurity controls the number of approved transitional facilities needed to decrease from the approximately 4000 we have presently.

Biosecurity Science Strategy

The strategy is a tool for the whole of the industry. It has a 25-year vision: Biosecurity science is effectively contributing to keeping New Zealanders, the plants and animals we value and our unique natural environment, safe and secure from damaging pests.

There are three key goals:

1) Science direction – to clearly identify needs, now and into the future
2) Science delivery – to build and maintain capability, and
3) Science uptake – to ensure that the uptake is effective, and that the science improves policy and management to obtain the desired outcomes.

To aid in these outcomes the strategy introduces a science system which involves establishing management and sectoral advisory groups focused on animals, aquatic environment and plants. These groups will review and prioritise biosecurity needs and issues requiring research. The sectoral groups will feed information to a high level cross-sectoral science advisory group that will in turn signal agreed research priorities to science funders and providers. Check out the Strategy at www.biosecurity.govt.nz/science-strategy

MAF has the last word…

In conclusion, MAFBNZ is monitoring pathways for volume, effectiveness and change, and feeding this information back into planning, regulations and operations helps to make the biosecurity system more responsive, adaptive and effective. The key challenges and opportunities for MAFBNZ are managing risks while maximising economic, social, cultural, health and environmental opportunities. To do this it needs to work collaboratively with other agencies that have a shared interest in biosecurity issues.

Murray Sherwin closed the summit and reinforced MAF's responsibility to work with all stakeholders and that good biosecurity helps rather than hindering trade. Murray acknowledged that biosecurity was bigger than one agency and that "everyone needs to take responsibility for biosecurity risks and interests".

MAF Biosecurity New Zealand Awards recipients announced

The inaugural recipients of this award are:

John Helstrom: One of the pioneers of biosecurity in New Zealand, and helped introduce the term "biosecurity" into legislation for the first time anywhere in the world.

John started in biosecurity as a field vet in the Far North in the 60s at a time when "biosecurity" didn't even exist as a concept for what was then the Department of Agriculture.

When he left MAF in 1991, his notable achievements included setting up the National Agricultural Security Service – an organisation that enjoyed an unfortunate acronym before "National" was added to its title.

He presided over the wide expansion of incursion-response plans and introduced science-based risk assessment. And in 1997 he was appointed Chair of the Biosecurity Council.

He is still closely involved in helping to develop a process for managing biosecurity risks for MAF Biosecurity New Zealand, and for the control of possums, particularly.

And

Stewart Milne, a former Secretary of Transport. More recently he has been Executive Director of New Zealand's Board of Airline Representatives. He is a member of the Biosecurity Advisory Committee (BMAC).

Stewart has worked with the various border agencies on biosecurity, championing quarantine and biosecurity in various important forums while representing the international airlines flying into New Zealand.

He makes a point of contacting Biosecurity managers regularly and keeping in touch with what's going on.

Both Stewart and John are great examples of the priority for us in biosecurity of bringing in the wider public. We need all New Zealanders to contribute to the defence of our environment.

These two are pioneers, and the 2007 MAF Biosecurity New Zealand Awards are recognition of their contributions.

Information from *The Importance of Science to Biosecurity* (speech) – http://www.progressive.org.nz/index.php

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Biosecurity and banquets in the Pacific

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If you ever feel like the biosecurity challenges here in New Zealand are too daunting then spare a thought for our smaller Pacific neighbours who have far fewer resources and much less well developed infrastructure to cope with many of the same problems! However, there is one bright ray of hope – the Pacific Invasive Learning Network (PILN).

PILN was launched in May 2006, with the aim of building capacity among invasive-species workers in the Pacific to help reduce the impact of invasive species on biodiversity and sustainable development. Initially seven countries signed up; American Samoa, Guam, Kosrae, Niue, Palau, Pohnpei and Samoa, and more recently French Polynesia, Hawaii, Fiji, Kiribati, Marshall Islands, New Caledonia and Yap have joined too. It is hoped that additional Pacific Island nations will join over time, but this has not been actively pursued because of insufficient resources.

In September, I attended the first annual meeting of PILN, as Landcare Research has been given the status "Friend of PILN", to explore ways that it might be able to help. The meeting was held at the University of California, Berkeley, Gump Field Station, which is sited on Moorea, near Tahiti, and it was attended by 70 people from 14 Pacific countries.

The PILN teams from each country outlined progress to date and areas where they want to focus or are still struggling (see table below). Discussions were held on emerging issues, how to get projects funded, weed risk assessment models, the roles of various organisations involved in the Pacific, and what needs to be done next, particularly in relation to weeds, rats, general biosecurity and marine biosecurity.

French Polynesian botanist Jean-Yves Meyer standing in a* miconia *forest and holding a leaf damaged by the fungus (*Colletotrichum gloeosporoides *f. sp.* miconia*) released six years ago to attack the plant.
Photo: Lynley Hayes

Table 1: Key projects for PILN Teams

American Samoa	Tamalingi (*Falcataria moluccana*) control, trapping feral pigs
Fiji	Rat eradication on Viwa Is and Vatu I Ra, Nature Fiji launched = first local NGO.
French Polynesia	Miconia (*Miconia calvescens*) biocontrol, fruit flies, glassy-winged sharp shooter, little fire ant.
Guam	Cocos Island restoration – rat eradication
Hawaii	Biosecurity strategic plan, varroa bee mite, guava rust (*Puccinia psidii*).
Kiribati	Invasives survey and plan, want to eradicate mynas and control rats, cats and rabbits.

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Biosecurity and banquets in the Pacific Continued

Table 1 cont'd: Key projects for PILN Teams.

Kosrae	Eradication of mile-a minute (*Mikania micrantha*), Siam weed (*Chromolaena odorata*), leucaena (*Leucaena leucocephala*).
Marshall Is	Strategic plan, ants – surveys to confirm species, Siam weed, merremia and mile-a-minute control, ballast water and marine issues, breadfruit pests and diseases, rats, and pigeons.
New Calendonia	Deer exclusion fencing, rat eradication, control of miconia, mignonette vine (*Anredera cordifolia*), and Opuntia.
Palau	Merremia (*Merremia peltata*) control, baseline marine survey, radio show.
Pohnpei	Strategic action plan; eradication of false kava (*Piper auritum, P. aduncum*), mile-a-minute, ivy gourd (*Coccinia grandis*), chain of love (*Antigonon leptopus*), Honolulu rose (*Clerodendrum chinense*), octopus tree (*Schefflera actinophylla*); Siam weed biocontrol, tipapia (marine fish pest) survey, feral pigeon control, white fly (*Aleurotrachelus trachoides*).
Samoa	Aliepata project – pig eradication, baiting trials for rats, distribution of yellow crazy ants, seeking funding for mynas, invasive species plan revised, seeking funding for ivy gourd biocontrol, marins invasives survey, invasive plants database, eradicate rattan palm (*Calamus caesius*).
Yap	Control of mile-a-minute, eradication of cogon grass (*Imperata cylindrical*).

Field trips went to the port and airport, looked at little fire ant control, rat control and weeds. Naturally it poured with rain that day! I attended the weeds field trip which involved driving right around the island of Tahiti. I saw the botanic gardens from where *Miconia calvescens* escaped and has gone on to become a serious weed. I saw *Miconia* forests where little else was getting a look in. However, it was also good to see that the fungus (*Colletotrichum gloeosporoides* f. sp. *miconia*), released six years ago to attack the plant, is causing damage to the leaves. There is some evidence to suggest it is reducing the number of seedlings but additional agents will be needed for this target some of which are currently being tested in Hawaii. Other weeds seen included merremia (*Merremia peltata*), wedelia (*Sphagneticola trilobata*), African tulip tree (*Spathodea campanulata*), giant sensitive plant (*Mimosa diplotricha*), lantana (*Lantana camara*), strawberry guava (*Psidium cattelianum*), *Ageratum conyzoides*, leucaena (*Leucaena leucocephala*), and *Rubus rosifolius*.

Quel horreur – I saw Japanese honeysuckle (*Lonicera japonica*) for sale at the market! There is unfortunately no equivalent to the National Pest Plant Accord anywhere in the Pacific yet! It is hoped that a workshop can be organised for early next year to develop a biocontrol strategy for the Pacific, as this is really the only hope for many widespread weeds.

At the end of the week there was a banquet with traditional Tahitian food (great if you like raw fish) and dancing. I thoroughly enjoyed the opportunity to visit French Polynesia and meet so many interesting and passionate people. It is a very beautiful place but if you are thinking of taking a holiday there be warned that it is hideously expensive as many items are imported from France.

See www.sprep.org/PILN/Index.htm
If you think you might have something to offer PILN please feel free to contact co-ordinator Jill Key (jillk@sprep.org). All offers of help are gratefully received and you might even get to go to a really nice place…

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New tools to fight pests

New biocontrol agents gnawing thistles and ragwort

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The first releases of the green thistle beetle (*Cassida rubigthosa*) were made in November in Otago and Southland. This is the first of two new biocontrol agents for thistles in New Zealand.

This project is run by the Californian Thistle Action Group and is funded by the Otago/Southland community and MAF Sustainable Farming Fund. The stem-mining weevil (*Apion onopordi*) will hopefully be released this time next year.

The first official recorded establishment of the ragwort plume moth (*Platyptilia isodactyla*) was made in the Horizons region in October at a site looked after by Hilary Webb. Hils, Don Clark, Lynley Hayes and myself were present and found many larvae and many damaged plants at the site. The moths were released there November 2006.

The site had been fenced to protect the release point from sprays, cattle, grubbing etc. This is the first time I have done this sort of release and looked at fencing off a release area.

However, I discovered that fencing was not such a good idea because inside the "enclosure" (fenced-off area) the grass had grown so well due to lack of cattle/sheep grazing and no spraying that there were no new ragwort plants appearing through the very healthy grass sward. Most larvae were found outside the fenced-off area and up to 300m away from the release point.

Left: The green thistle beetle (*Cassida rubiginosa*) which has been released in Lawrence and Southland for the biocontrol of thistles.

Above: Damage done to a ragwort plant by ragwort plume moth (*Platyptilia isodactyla*) larvae feeding in the root crown. Photos: Landcare Research

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BIOSECURITY NEW ZEALAND **News**

Fiordland marine biosecurity programme

MAF Biosecurity New Zealand (MAFBNZ) has a programme in place to prevent the spread of marine pests into Fiordland waters. Marine pests that foul vessel hulls and marine equipment, (e.g. dive gear, crayfish pots) have a high risk of being spread to new places such as Fiordland, where they can cause havoc. Therefore the programme is helping boaties keep their hulls and equipment clean. MAFBNZ provides hull and equipment-cleaning advice, marine pest awareness and identification information, and will continue to carry out vessel hull inspections and surveillance for marine pests in southern ports.

Also to help boaties, MAFBNZ is looking at novel techniques to stop pests from infecting vessels. Recently MAFBNZ contractors wrapped thick plastic around wharf piles in Bluff Harbour, the main feeder port for Fiordland. The wrap smothers marine life underneath it and can be left on for long periods to prevent the re-growth of pest species.

The Fiordland marine biosecurity programme is part of a larger programme to protect the Fiordland marine environment, and is run in partnership with the Fiordland Marine Guardians, Environment Southland, the Department of Conservation, the Ministry of Fisheries, and the Ministry for the Environment.

Plastic wrap is being used around wharfs and on boat hulls as a trial method for destroying pests. The wrapping creates anoxic conditions whereby the encapsulated water is depleted of oxygen rendering it uninhabitable for many species.

Photo: MAFBNZ

A new approach to biosecurity threats

A group of representatives from primary production sectors has joined MAFBNZ to work together on a framework for addressing biosecurity threats which impact primary industries.

The framework proposes joint decision-making and resourcing for readiness and incursion responses, and is based on the idea that those directly benefiting from an activity should be involved in decision-making and, in return, should contribute to the direct costs of that activity.

A public discussion paper has been prepared outlining the proposed framework and its guiding principles. It also describes MAF's current approach to incursion management and why a new framework is desirable and could be of benefit to both industry and MAF.

To view the discussion document and for more information go to www.biosecurity.govt.nz/strategy-and-consultation/consultation/discussion-documents

The closing date for submissions is Friday, December 14, 2007.

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Professional development

Plant pest officers urged to get certified

Peter Joynt
Biosecurity Officer
Northland Regional Council.

&

Jan Crooks
Biosecurity Officer
Environment Canterbury

Regional council employees regularly give advice on the control of pest plants, enter private land, cause work to be undertaken on private land and in public areas, and give advice on biodiversity issues. These are all areas where costly mistakes can be made so it is critical that those engaged in this work are adequately trained to a recognised national standard. The National Certificate in Compliance and Regulatory Control (Pest Plant Control) is a valuable tool in managing and mitigating that risk.

Level Four of the certificate was recently reviewed as a requirement from the NZ Qualifications Authority. The aim is to ensure the certificate continues to provide the baseline competency training for people employed as pest plant officers working under the Biosecurity Act 1993 and Territorial Authority Pest Plant Management Strategies.

The qualification recognises the specialist skills and knowledge required in the areas of pest-plant identification, control and management (regulatory and advisory), local-authority processes and policies, legislative and statutory requirements and the safe use, storage and disposal of agrichemicals.

All 18 unit standards were reviewed with a number of minor changes in wording recommended for four of the units. The new unit, "Release a biological agent for weed control", developed following a recommendation from a previous review, was added to the certificate. The unit, "Give evidence in a judicial hearing", was deleted from the qualification, as it was considered no longer a core activity.

With regard to agrichemical use, there are a variety of levels of training required by employers across the different regions. Some regions only require the completion of the Introductory Course and others need to do the Applied Growsafe Course. To ensure the needs of all the regions are met, the unit standards will not be specified. Learners will need to do 10 credits at level three or above from the Agrichemical Distribution part of the NZQA Framework to achieve this part of the certificate.

The review group considered that the qualification continued to provide employees with a very good baseline level of skills and technical knowledge to meet legislative requirements and ensure that those undergoing the training would be able to demonstrate competency to a national standard.

Concern was expressed at the number of employees actively engaged in pest-plant control who did not have the qualification. Some regional councils (e.g. Wellington, Hawkes Bay and Canterbury) make it a requirement that staff working in this area were to have, or be working towards the National Certificate and used the "Performance review process" to ensure this happened; other regional councils do not.

There had been some criticism that because many of the new employees were degree graduates, the units in the qualification were somewhat below what they had already achieved and questions were raised as to their relevance. This was rejected by the review group on the basis that those with higher qualifications, diplomas and degrees, would not cover areas such as compliance and regulatory process knowledge and skills in their university studies and that these critical skills could only be obtained by working in the sector. In addition, people with higher qualifications could easily achieve cross credits through the "recognition of prior learning" process for five to seven of the units based on their existing knowledge. A further three to five units could be achieved with a minimal degree of difficulty and included the Growsafe units completed by most pest plant officers already. The remaining eight units were crucial in demonstrating the competency and knowledge required by a pest plant compliance officer when giving advice on the control of pest plants and the powers and legislative requirements related to that work.

The review group recommends that all regional council employees working in this area should be required to achieve the qualification.

A draft copy of the updated qualification is being sent to all regional councils for comment.

If anyone would like a copy of the draft, please contact the Local Government Industry Training Organisation (LGITO) admin@lgito.org.nz

The review group comprised: Kevin Wafer, CEO of the Local Government Industry Training Organisation (LGITO) and representatives from Wellington, Hawkes Bay, Horizons, Canterbury and Northland regional councils.

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Professional development

The Biosecurity Diploma is jointly presented by the University of Auckland and Landcare Research through the Centre of Biodiversity and Biosecurity (CBB). Students will benefit from the presence of the international headquarters of the IUCN/SSC Invasive Species Specialist Group, Landcare Research and Biosecurity New Zealand's Investigation and Diagnostic Centre at the Tamaki Campus.

New biosecurity postgraduate diploma established in Auckland

The new Postgraduate Diploma of Science (Biosecurity) (PGDipSci Biosecurity) is a one-year course providing candidates with advanced training in invasion biology and an appreciation for the science behind current biosecurity issues.

Science is critical to achieving the three main biosecurity goals: prevention and exclusion; surveillance and response; and pest management. Students participating in the PGDipSci (Biosecurity) programme will gain an understanding and a practical knowledge of the enormous role science has in managing the risks and uncertainties in biosecurity and ultimately in determining the effectiveness of biosecurity decisions.

Students who have obtained a PGDipSci (Biosecurity) will:

- Have an understanding of the science of invasion biology
- Be able to distinguish between the stages of the invasion process
- Be able to identify ecological interactions between species
- Be able to demonstrate an understanding of the impacts of invasive alien species in different ecosystems
- Be able to demonstrate an understanding of population and community ecology
- Understand and be able to select appropriate techniques for the management of invasive organisms in different ecosystem types
- Be able to demonstrate an understanding of approaches to the prevention, control and eradication of invasive species
- Have gained new analytical skills, proficiency in science communication and critical evaluation, and an appreciation for the integration of science into policy and decision-making

The diploma is designed to meet the needs of biosecurity practitioners in current employment by mostly consisting of intensive one-week modular courses. Course content is a mixture of seminar/lecture material and practical workshop exercises.

For information, contact Dr Mrgaret Stanley
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Professional development: Up coming events

Biosecurity Challenges for Australia and its Region

February 11-12, 2008 **National Centre for Biosecurity Australian National University**

The National Centre for Biosecurity was established at ANU in 2006 to facilitate greater academic engagement with biosecurity challenges facing Australia, its immediate neighbourhood, and the world.

The NCB almost exclusively deals with the human aspect of biosecurity. Interests include but are not limited to, infectious diseases, biological weapons, bioterrorism, biotechnology, nanotechnology, laboratory safety, environmental contamination and the impacts of disease on economies and governments.

For information see: http://biosecurity.anu.edu.au/

Symposium: Surveillance for Biosecurity

Monday, August 11, 2008 **Copthorne Paihia**

The New Zealand Plant Protection Society will hold a one-day pre-conference symposium in the Bay of Islands on surveillance for biosecurity.

The aim is to bring biosecurity practitioners together to present research and case studies on the wide range of surveillance activities within the biosecurity sphere.

The symposium will focus on response surveillance and actions and also include sessions on pre-border, post-border, and exotic pest management surveillance.

The Society will publish the proceedings of the seminar.

A call for papers will be announced shortly and research paper or case study titles and abstracts will be required by February 15, 2008.

Further details, when available, will be posted on the Society's website: www.nzpps.org

Anyone wishing to volunteer to help organise the symposium is welcome to contact Karyn Froud (karyn.froud@maf.govt.nz) or Ian Popay (ipopay@doc.govt.nz).

International Forest Biosecurity Conference

March, 16-20, 2009 **SCION/ENSIS, Rotorua**

A global focus on Forest Biosecurity. As international trade and travel expands, forest resources are under growing risk from pests including weeds, insects, and diseases). In recent times, climate change has added another level of uncertainty and risk.

The International Forest Biosecurity conference will provide a unique opportunity to bring forest biosecurity issues (science, practice and policy) into global focus for the first time. The term "biosecurity" refers to the exclusion, eradication, or effective management of pests to protect the diverse benefits gained from forests.

For information see: www.ensisjv.com/forestbiosecurity

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Interesting material at Perth conference

The 9th International Conference on the Ecology and Management of Alien Plant Invasions (EMAPi9), was held in Perth, from September 17 to 21. It was attended by DOC representatives Keith Briden, Kate McAlpine, and Ian Popay, who compiled this report.

The conference lasted four days, and followed a two-day workshop on weed-risk assessment the week before, so we were all "conferenced-out" by the end.

Papers were in three concurrent sessions for most of the conference, making getting from one room to another between papers a bit of a mission. New Zealand was well represented at the conference, with people from Landcare Research, AgResearch, NIWA, Ensis/Scion, Canterbury, Lincoln and Otago universities, DOC, Biosecurity NZ, and Environment Waikato.

New Zealand was mentioned as a leader by many speakers (not the Kiwis) in the management of alien plant invasions, with its ERMA and NPPA legislation and DOC's development of the weed-led/site-led concept. It helps, of course, that we don't have separate states, which makes national legislation of any kind difficult to achieve in both Australia and the USA.

The full conference programme is on the EMAPi website: http://www.congresswest.com.au/emapi9/program.html Most of the talks will eventually be available on: http://www.hear.org/. Talks from the weed-risk assessment workshop can be found on http://www.hear.org/iwraw/2007/.

Papers that we thought interesting included:

Evaluating progress in weed eradication programmes by Dane Panetta (Biosecurity Queensland), which examined ways of assessing the progress of programmes, especially in deciding when to give it up as impossible, or when to consider that eradication has been achieved. One suggestion was an economic approach, balancing the continued surveillance cost against the likely costs if survivors escaped.

A rare success story from New Zealand: No new agricultural weeds for many years! by Peter Williams, Ian Popay and Hazel Gatehouse, showed that most agricultural weeds were accidentally introduced in the early days of colonisation, and relatively few as ornamental or agricultural plants. Conversely, most environmental weeds came into the country as ornamentals, and fewer accidentally or as plants for agriculture.

Early Detection and Rapid Response (EDRR). New Zealand's lead in this area has been followed by some Australian and US states. The approach is logical, and an integral part of DOC's weed work. A paper by Randy Westbrooks (USA) and Sandy Lloyd (Australia) promoted EDRR as the preferred management strategy for new and emerging alien plants. They proposed an international working group with a principal function of sharing management and best practice procedures, as well as relevant publications. MAF/Biosecurity NZ and DOC may be involved in this.

That's an Australian "Woody Weed", Kate Blood, Ian Popay and Keith Briden.

A paper by Chris Buddenhagen outlined **early detection work programme in Hawaii**, resulting in the eradication of 12 weed species from one or more Hawaiian islands. Chris is ex-DOC and, many years ago, set up the weeds database in Bioweb.

A paper by Kate Blood, Victoria, Australia, outlined their **"Weed Spotter" programme**, with a budget of A$3.4m, which employs 14 people full-time who have trained some 1200 weed spotters from communities, government, and industry. This initiative is now used in Queensland and may go Australia-wide. They search for both environmental and agricultural weeds. MAF/Biosecurity NZ could investigate a similar programme here, but it is too big for DOC alone to lead.

Climate Change: Several papers covered weeds and climate change, and there was considerable discussion during breaks. Two papers were about predicting future weed issues as a result of climate change. One, by Italian Roberto Crosti, outlined how government policy based around climate change may cause new weed problems. In Italy, farm subsidies have been replaced by subsidies to plant biofuel crops. Fast growing and rapidly spreading species are being promoted for crops and short rotation forests, and some of these are known invasive weed species. Risk analysis and "cultivation criteria" are being developed to avoid new invasions in Italy.

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