Winter – 2007
ISSN 1175-043X

Protect

New Zealand Biosecurity Institute

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Protect

Winter 2007

Magazine of the

New Zealand Biosecurity Institute

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Editor's Note

Welcome to the winter issue of *Protect* and thank you to all those who have contributed articles, ideas and reviews.

As we went to deadline for this issue, an Auckland aquarium owner had just been handed down a nine-month prison sentence and ordered to pay $25,000 towards reparation for illegally importing aquatic plants and aquarium equipment to on-sell through internet auctions. While the legal process is costly and perhaps the less preferred heavier hand of biosecurity management, it was good to see the New Zealand court system take offending against the Biosecurity Act seriously and set precedent. Hopefully this case will send a strong message and deter others from similar market niches.

In this issue Darren Kriticos at ENSIS talks about "sleeper" weeds, climate change and what New Zealand should be looking out for. Souad Boudjelas, ISSG, highlights the Pacific Invasives Initiative and local control programmes that we can learn from.

We have two examples of "pests" as resources with Bill Simmons talking on sambar deer and Peter Russell working with the Karioi Manawa Society where goats are being used to control environmental weeds.

Biosecurity New Zealand outlines its response programmes for national pests and outcomes from the recent Australasian Vertebrate Pest Meeting, and there is plenty of news from the regions and a media round-up from the past couple of months. We also remember the significant contributions to vertebrate pest management made by the late Peter Nelson.

Enjoy the articles, email your comments to me and remember to get your registrations in for NETS 2007 in Wellington.

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New Zealand Biosecurity Institute

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News from the Executive

National Education & Training Seminar

NETS2007 in Wellington is only a couple of weeks away! It is going to be a great three days so make sure you make plans to be there.

For the first time, online registration is possible, and credit card payment can be accepted – check out **www.biosecurity.org.nz** and click on the "NETS" button on the left hand side of the screen to start registering.

Changes to the constitution

Just a reminder for members to check over the proposed changes to the constitution that were sent to you earlier in the year and which will be dealt with at the AGM at NETS2007. Please send any comments to me at **cl.sb@xtra.co.nz**

Executive vacancies

There are likely to be a few vacancies on the Executive that will need to be filled at the AGM. Now is the time to start thinking of whether you would like to be more involved in the running of the NZBI. Nominations prior to the AGM would be preferred, but can also be taken from the floor at the AGM.

Carolyn Lewis
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NETS2007

25 – 27 July 2007
Wellington Town Hall
Wellington

Registrations open

NETS2007 is the annual seminar held by the NZBI. The NZBI has approximately 450 members representing government, science and industry. The Institute's mission is to preserve and protect New Zealand's natural resources from the adverse impacts of invasive pests. The conference is expected to attract more than 250 delegates from all over New Zealand and will include invited national and international speakers.

The theme for NETS2007 is "Capital Exposure" which aims to encompass wide-ranging topics that New Zealand is dealing with in relation to biosecurity and biodiversity. Focus will be on local, regional, national and international issues.

Keynote speakers include Minister of Biosecurity Jim Anderton; Dr Barry O'Neil, Assistant Director-General of Biosecurity New Zealand; Joe Starinchak Outreach Co-ordinator for the US Fish & Wildlife Service Branch of Invasive Species and the US Aquatic Nuisance Species Task Force; and Dr Sean Weaver from Victoria University of Wellington.

While New Zealand's biosecurity systems are considered some of the most robust in the world, the risks to our environment are constantly changing. We face new challenges on a daily basis to protect our economic, environmental, social and cultural values.

The NETS2007 organising committee now invites you to register for the 2007 seminar. A PDF of the full seminar brochure, and the link to the online Registration form can be found at the Biosecurity website: www.biosecurity.org.nz/nets

New Zealand Biosecurity Institute

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We look forward to seeing you at the seminar.

Capital Xposure

News from the Branches

Auckland/Northland Branch meets

The meeting was held at the Auckland Regional Botanical Gardens, Manurewa, South Auckland on May 23. After formalities were over we had a very informative talk by the Botanical Gardens Curator Manager, Jack Hobbs, and a tour of the gardens. The gardens are home to more than 10,000 plants from around the world, spread over 64 hectares. They provide visitors with ideas and inspiration for their own gardens.

Jack took us through the Threatened Native Plant Garden which features a series of simulated native plant habitats such as beach, gum land, lava field, and coastal rocky bluff. In each of these replica habitats threatened native plants are grouped together with associated non-threatened plants, much as they would be in their natural ecosystems.

Auckland Botanical Gardens, threatened plants growing in simulated natural habitats along with associated non-threatened plants.

This garden contributes significantly to the Botanic Gardens role in conservation and education, creating an awareness of Auckland's threatened plants and habitat loss. It also provides a tremendous opportunity for visitors to see and learn more about those plants in our distinctive and unique flora that are most at risk.

Securely housed: Weeds inside ARC Biosecurity Weed Collection Nursery at the Botanical Gardens.

Don McKenzie, Team Leader Biosecurity, Northland Regional Council, also gave us a talk on the Northland dune lakes and the results of recent NIWA surveys of aquatic weeds present in some of them. Weeds found include hornwort, egeria, Canadian pondweed and lagarosiphon. Tactics to control these weeds include herbicides, suction dredging and carp.

After lunch, Mike White, Biosecurity Officer, Auckland Regional Council, took us on a visit to the weed collection housed in a secure area at the Botanical Gardens' nursery. Mike has propagated a large number of pest plants banned from sale, distribution and propagation in the Auckland region. These plants are used for biosecurity displays at local A&P shows and field days, and also at garden club and school talks and other events, to educate the public about pest plants.

Greg Hoskins
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News from the Branches Continued

Central North Island meetings

Central North Island members at Rotorua lakes.

The Central North Island Branch held two meetings during the autumn. The first was hosted by Environment Waikato and held at its office in Taupo. A small but select group discussed proposed changes to the constitution, the merits of becoming GST registered, NETS and the various RPMS's currently under review. A gold coin collection and raffle (generally of large quantities of chocolate and similarly healthy nibbles) at each meeting has had a two-fold benefit: selected members have enlarged their waistline and the branch has enlarged its coffers.

Kevin Loe led us on a fascinating tour of the cherry trees of Taupo, sadly not flowering but very much berrying. Acacia Bay is being over-run by rum cherry, *Prunus serotina*, which has prolific large black berries. It appears to out-compete just about all other vegetation and the repeated mowing of some of them simply encourages them to sucker. Other parts of the town are host to a number of other prunus species, all looking very similar to Taiwan cherry, and which even our resident taxonomist had trouble identifying. A ramble around a reserve near the Spa Hotel saw us admiring the results of Kevin's *Rhododendron ponticum* control work. This was another alarming weed but "new" for many of us.

A larger group gathered at the Environment Bay of Plenty offices in Rotorua for our AGM in May. Andy Laurenson stepped down as chairperson — thanks Andy for your term. Willie Shaw (not a regular attendee of our meetings) made the mistake of faithfully turning out for the AGM and was promptly rewarded with election as chairperson. In other business, Biosecurity New Zealand featured prominently as we looked at the regional partnership arrangements for didymo response in the North Island and the proposed export of *Gunnera tinctoria* to Japan. We also discussed the new, longer list of notifiable plants. The National Aquatic Pest Awareness Group was remembered fondly and we looked forward to the time when Biosecurity New Zealand replaces it. Once again there were new weed incursions to share: hornwort and egeria in the previously pest-free Lake Rotomahana, horse nettle (*Solanum carolinense*) at two sites in the Bay of Plenty and the increasing problem of yellow bristle grass (*Setaria pumila* subsp. *Pumila*) in the Waikato.

A handsome specimen of rum cherry (*Prunus serotina*) which is over-running Acacia Bay at Taupo.

After lunch Richard Mallinson led us to Lake Rotoiti and looked at the site of the diversion wall being built, at some considerable cost, by EBOP to divert the nutrient-rich water from Lake Rotorua straight into the Kaituna River in an attempt to clean up Rotoiti. At Okeri Falls Richard showed us the work of a local Care Group who have cleared a huge tangle of all kinds of weeds from the lake margin and replanted natives. The trees for this were paid for by the Honda Tree Fund. The sale of every Honda car in the Bay of Plenty results in a number of trees being bought for roadside revegetation.

We look forward to seeing each other again at NETS in Wellington.

Tim Senior
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News from the Branches Continued

Lower North Island AGM

Lower North Island Branch members enjoyed the chance to catch up with each other at our AGM after a hectic summer season. Most of our discussion was on the new strategies which are all pointing to a change in direction to our style of working. A common theme was the move towards more project-focused work such as bush remnant protection through a more holistic approach. We're all looking forward to getting our new documents into the field and testing them, hopefully without being too testing on us!

Following our AGM elections, Craig Davey is our Executive Representative, Pedro Jensen has taken on the Chairman position and Neil Gallagher is our new secretary. Good luck, guys.

The NETS 2007 team is very busy organising and preparing for the big event in July. From what we've heard, it's going to be fantastic. A big thank you to those of you who have taken it on and we're really looking forward to seeing the results of all your hard work. Cheers guys, we owe you a beer or three!

I would like to take this opportunity to farewell Stu Bennie from Hawke's Bay Regional Council. He has decided to retire after many years battling weeds up in Waipukurau. We wish you all the best Stu, and we'll miss you hugely.

That's it from us, see you in Wellington.

Ruth Fleeson
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Top of the South AGM

Top of the South Branch AGM was held on April 13 and attended by nine members (with apologies from one). Mike Taylor was re-elected to Chair/ Branch Representative. Other matters discussed were: NETS2007; didymo and Biosecurity New Zealand's control strategy, especially with regard to potential spread to the North Island; and a proposed branch event for June to which it was planned to invite a Branch member and someone from Biosecurity New Zealand to give presentations, as well as a local field trip.

Mike Taylor
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"Pines, pines, everywhere!" Nick Ledgard talking about the systematic control regime based on how the pines grow and spread.

Canterbury

A great day was had by all who took part in the Canterbury Mini Education Training (METS) Day. The sun was shining and the food was fantastic! (Thanks to Errol Barnes's Darfield Lotto shop).

A morning seminar was held at ECAN with a range of interesting topics from plants and insects, alien invasions, how gorse and broom might create different forest biodiversity, through to controlling possums and rabbits.

The field trip on the big red bus to Craigieburn was a great opportunity to catch up with, and make new friends, as well as view some spectacular scenery. A stop for lunch and then it was all on for a tip-toe across the stream and a walk up the hill to check out what's "bugging" hieracium up in the hills with Lindsay Smith. This was followed by an opportunity to check out some gorse and broom issues on the hills with Errol Barnes who explained the RPMS with real-life examples of what complied and what did not.

The day was finished off with Nick Legard discussing the large task of hand controlling wilding pines. By 3pm it was time to roll on home to Christchurch where a number of participants got together for a good meal out.

Gemma Bradfield
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Member Profile: Pedro Jensen

Role: Biosecurity Officer (Pest Plants)
Agency: Greater Wellington Regional Council
Email: pedro.jensen@gw.govt.nz

How has your role in biosecurity evolved?

After finishing an ecology degree at Victoria University I spent six months volunteering at the Karori Wildlife Sanctuary before joining Greater Wellington Regional Council in 2002. I am currently the pest plant officer responsible for Wellington city, a regional co-ordinator for Weedbusters and recently elected chairperson for the Lower North Island Branch of the NZBI.

Over the last five years at Greater Wellington I have developed a passion for environmental education. Inspiring young people to value the uniqueness of New Zealand's natural environment is the most rewarding aspect of my job. Introducing pest plant awareness into schools and getting students out of the classroom and into the environment weedbusting is also a great way to get the message out to their parents.

What key project are you currently working on?

The most challenging project I am currently involved in is Greater Wellington's KNE (Key Native Ecosystem) programme which is an initiative to protect and enhance native flora and fauna in areas selected to represent a range of indigenous biodiversity within the region (prioritised primarily on ecological criteria). In partnership with local authorities, volunteer groups and stakeholders, the goal of the programme is to remove the adverse affects that pest plants and animals have on these ecosystems by focusing pest management on the site rather than on the individual species within it.

What is one important issue for biosecurity in the future?

In my opinion an important issue facing biosecurity in the future is the question of which approach (site-led or species-led) provides the best value for biodiversity, especially when resources are limited.

What motivates you to be involved in biosecurity?

My main motivation for involvement in biosecurity is the belief that we can all make a difference for the environment if we just get out there and do it!

Pedro Jensen

Weeds wander as climate changes

By Dr Darren Kriticos
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As the global climate changes, slowly but surely the range of plants will change with it. This could result in the spread of weeds into new areas. Another serious threat is from "sleeper weeds" — plants not currently posing problems. With rising temperatures, these plants could become serious problems and cost future generations millions of dollars to eradicate or control.

Many farmers, foresters, and land managers will face the challenge of dealing with weeds they have not encountered before. As a general rule of thumb, New Zealanders should look to the north (and possibly to the east coast of Australia) to see what sort of weed problems to expect and to understand control measures. Proactive managers can avoid incurring major problems and significant additional costs in the future by identifying potential problem plants on their properties and eliminating them now.

Buddleja davidii*: A fast-growing deciduous plant that grows as a large woody shrub or tree up to 5m tall. Its attractive purple flowers make it a popular garden ornamental but it is considered a major threat to many ecosystems, and is likely to spread south as temperatures increase.* Photo: ENSIS

Given the range of potential responses, it is important for decision-makers, land managers, farmers and others affected by weeds to have tools with which to assess the likely impacts of climate change on the future potential distribution and relative abundance of weeds. Climate-based models used for weed risk assessments are the most effective tools for this task.

Global climate modelling has now reached a sufficient level of maturity that regional climate models can be used with greater confidence to apply future climate scenarios to biophysical models. A climate modelling study was recently undertaken by Ensis researchers to examine the potential impact of climate change on the distribution of weeds in Australia up to the mid-2080s. Although this project focused on Australian conditions, the general findings apply equally to New Zealand.

The team of Ensis researchers used climate models to predict how three important weeds with contrasting climatic requirements might expand their range in response to climate change in Australia. The weeds were prickly acacia (*Acacia nilotica*), a dry tropical species; Siam weed (*Chromolaena odorata*), a wet tropical species; and buddleia (*Buddleja davidii*), a temperate species, which is also a major weed problem in central North Island forests.

Researchers used data from four global climate models using four greenhouse gas emission scenarios to develop a framework for generating climate change surfaces for the three weeds in the study for use in a climate model known as Climex (see **www.hearne.com.au**). The Climex model uses five climate variables: monthly averages of daily precipitation, daily maximum temperature, daily minimum temperature and relative humidity at 9am and 3pm. It has proven robust and ideally suited to projecting the potential distribution of invasive species at an early stage of the invasion when the information is of most use to decision-makers.

The results of this study showed that all three weed species would tend to move south as temperatures increased. These predictions could change as

Weeds wander as climate changes Continued

climate models improve or if patterns of future global greenhouse emissions change. Nonetheless, there seems to be sufficient agreement among the simulation results on broad patterns of change.

When interpreting the future climate suitability projections, it is important to bear in mind these are not predicted future distributions but are potential distributions.

The actual ranges of the weeds will probably lag behind the potential, depending on factors such as the dispersal potential of the species and any management efforts to slow their spread.

As global climates experience rapid changes and species' ranges respond, challenges will emerge in projecting further future potential distributions. This study assumes the species' distributions reflect the 1961–1990 climate. But there is already evidence species' ranges have changed in response to climate changes since 1990.

If the distribution data used to build the current climate distribution include records from locations that have been only recently invaded, then the usefulness of the modelling approach will be undermined. In this case the potential distribution could be overestimated. Another problem will be the fact that species' ranges are likely to expand and contract at different rates.

As climate changes allow a species' range to shift, it is possible the range could be expanded rapidly. In other cases, a weed problem might diminish in an area or shift completely in response to rising temperatures.

Key findings

- Climate change will alter the climatic limits that will eventually constrain the range of a weed species.
- Increasing temperatures might allow some "sleeper" weeds to become invasive.
- Climate models can predict the likely impacts of climate change on the future distribution and relative abundance of weeds.
- Predictions could change as climate models improve or if global greenhouse emissions patterns change.

Scientific joint venture

Ensis is a joint venture between Australia's CSIRO and New Zealand's Scion, focusing on scientific research and development. It involves Australasia's leading forestry research organisations pooling their knowledge and expertise. See **www.ensisjv.com**

Possum biocontrol research – bait-delivered fertility control vaccines

By Janine Duckworth
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Biocontrol research is being undertaken to develop new cost-effective technologies that will reduce our dependency on non-specific poisons for control of possums in New Zealand. This article describes recent progress in the development of biocontrol for possums based on bait-delivered fertility control vaccines.

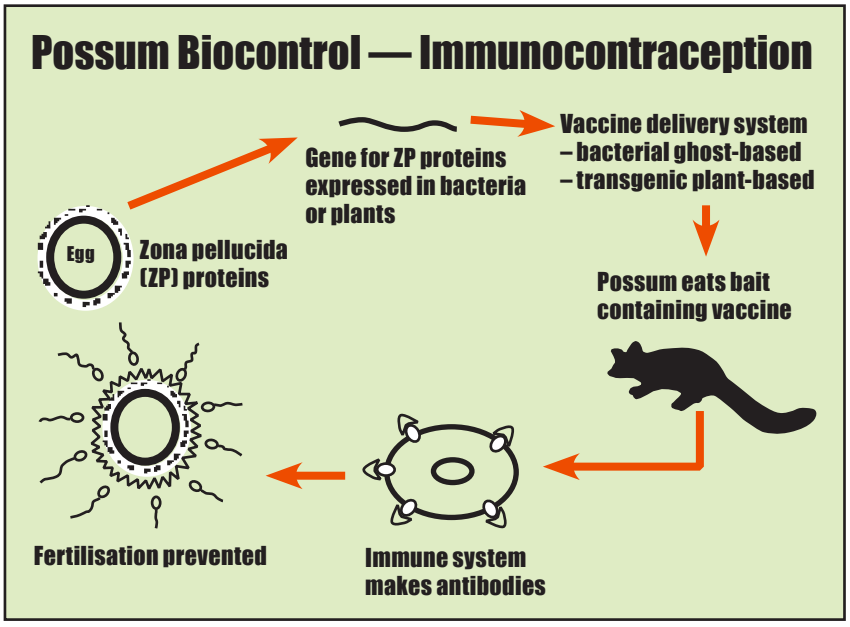
In July 2005, the National Research Centre for Possum Biocontrol (NRC Possum Biocontrol) was formed through a partnership between the major research providers, AgResearch and Landcare Research and key end-user organisations including the Department of Conservation, Ministry of Agriculture and Fisheries, regional councils and the Animal Health Board.

The programme is funded by the Foundation for Research, Science and Technology and is supported through direct co-funding and in-kind support from end-user organisations and others (University of Otago). Research themes include bait-delivered fertility control vaccines, hormone-toxin conjugates and a transgenic possum-specific nematode (or virus) expressing proteins that inhibit possum reproduction, as well as novel possum gut ion transporter system toxins (For further information see **http://possumbiocontrol.agresearch.co.nz/**).

Fertility control vaccines

Vaccines can be used to reduce the breeding success of possums by a process called immunocontraception. This technology has been used already to develop contraceptive vaccines for other species such as pigs, deer and horses. The possum egg is surrounded by a protein layer called the zona pellucida (ZP), which is made up of three different proteins: ZP1, ZP2 and ZP3. Vaccines targeting the ZP proteins have the potential to stop female possums producing eggs and/or interfere with the fertilisation of any eggs produced. That way very few possums will be born, and the number of possums will decline as the adults die off and there are insufficient young to replace them. The contraceptive vaccine, based on egg coat proteins, will be delivered in non-toxic baits fed to possums from bait stations.

Experimental contraceptive vaccines developed by Landcare Research show the potential of this approach for controlling possums. In trials on captive



Possum biocontrol research Continued

possums, vaccinated females were four times less likely to produce offspring than untreated females. Two egg-coat proteins, ZP2 and ZP3, reduced breeding by 70–80%. Ideally, the proteins chosen for a vaccine should not occur elsewhere in the body (so the vaccine will only affect fertility) and should occur only in possums (so the vaccine will not affect other species). Research has shown that parts of the possum ZP3 and ZP2 proteins (epitopes) appear to have a structure unique to possums suggesting that immune responses triggered by the vaccines will not affect other species. Initial trials indicate this to be the case: vaccines that decreased fertility in possums did not affect the fertility of mice or chickens.

Although these early tests have been successful, there is still a lot of research to be done to work out how to deliver the vaccines to possums. Delivery in a non-toxic bait, as an oral contraceptive, is the current goal. We are investigating the use of "bacterial ghosts" to package the vaccine. This uses a genetically modified, harmless strain of bacteria with possum ZP proteins inserted into their cell walls. The bacteria are then killed and the shells of the empty bacterial cells or "ghosts" are given to the possum. The possum's immune system reacts to the bacterial ghosts, and produces antibodies against them and against the possum egg coat protein inserted into the bacterial ghost, making female possums less fertile. Bacterial ghosts genetically modified to include contraceptive proteins are suitable for inclusion in non-toxic baits to be fed to possums in bait stations. We have recently finished testing bacterial ghosts containing possum ZP2 and found that these reduced breeding significantly. We aim to have a "prototype" contraceptive bait for limited testing by 2009, and a product for field use by 2013.

Two frequently asked questions are "Why not just use poisons or traps?" and "How safe will it be?" When possums are controlled using poisons or traps, the surviving animals may breed better and live longer because there is less competition for food and nest sites. Possum populations then build up again quickly. Using fertility control in addition to conventional lethal control will slow down the rate at which possum numbers build up. We estimate that a combination of fertility control and conventional control might need to be done only one-third as often as current control with poisons or traps alone.

There are likely to be other benefits as well. Using fertility control in conjunction with conventional lethal control has the potential to reduce the amount of poison used for conventional control, further minimising risks to non-target species and of environmental contamination.

It is impossible to guarantee absolute species specificity and safety of any technique. However, the fertility control vaccines will not contain any live genetically modified organisms. The risk to species other than possums will be minimised by targeting specific parts of egg proteins that are only likely to affect possums, packaging the vaccine in non-toxic baits and using bait stations that restrict access by other species. In addition, the safety of the bait will be thoroughly tested before it is made available for controlling possums, both to protect other species and to make sure it has no unwanted side effects in possums.

Sambar deer – pest and resource

By Bill Simmons
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On May 14, 2007, the restrictions on the hunting of sambar deer in the Manawatu region were lifted allowing them to be hunted by any means, all year round and without any restriction other than the need for hunters to obtain landowners' permission. The restrictions had been in place since September 1988 and followed a six-year moratorium on hunting the species in the area while the population was studied.

Sambar deer (*Cervus unicolor Kerr*) are the largest of the Asiatic deer species, native to Sri Lanka, India, Tibet, South East Asia and southern China.

About 100 years ago, Sri Lankan sambar deer were liberated at Carnarvon Estate, not far from what is now the Ohakea Air Force Base, on the south bank of the Rangitikei River, near Bulls.

A strong hunting tradition soon developed and huge stags of trophy class were relatively common.

Despite the hunting pressure, sambar multiplied and extended their range south to Paraparaumu, north to Wanganui and inland to Ohingaiti, with the occasional animal being taken further afield.

Most of the habitats occupied by sambar were already modified by grazing or forestry development but a few remnants of semi-intact native marshland, wetland and coastal hardwood forest occurred within the sambar range. The impact of sambar on these areas was observed to be either undetectable or light; with stock trespass or invasive weeds being the major impact in every case. This includes the Round Bush Scenic Reserve (approx 25ha) near Foxton, the only remaining area of intact coastal hardwood forest on the coastal strip between the Manawatu and Wanganui rivers.

The establishment of a game meat industry during the late 1960s saw much more intense hunting pressure put on sambar. The high carcass weights were an irresistible temptation to meat hunters, particularly those using spotlights on four-wheel-drive vehicles.

The 1980 NZ Deerstalkers Association survey showed that the sambar deer population in the region was being decimated by meat hunters selling the carcasses to game meat buyers. The NZDA lobbied the Minister of Forests, Venn Young, who placed a moratorium on the hunting or killing of sambar deer in the region. He announced that the deer would be protected while a study was conducted on the distribution and status of the herd; a significant recreational hunting resource, highly valued by sport hunters.

Open season: The status of sambar deer has been changed to allow year-round hunting to alleviate damage the species is doing within its range in the Manawatu region. Photos: Dept. of Conservation

As the chap on the spot, I was involved in this study, which lasted approximately six years and involved researchers including Malcolm Douglas, Simon Kelton, Peter Lo and Jan Benes. Shortly before he joined the team, Simon had recently completed his masters thesis on sambar deer in the Moutou wetland. His contribution was invaluable.

Two things became evident early in the study. Firstly that the biology and behaviour of sambar deer was quite different in many ways to the more common deer species in New Zealand. These animals could use a minimum of cover very effectively; laying up during the day and travelling and feeding after dark. The second discovery was that sambar deer were actually quite plentiful across inland Marton-Whangaehu and they were causing significant damage to tree crops and fodder crops in some areas where landowners had previously been able to manage their numbers.

Rubber bullets, scare guns, capture and relocation

Sambar deer – pest and resource Continued

and limited official culling were among the techniques employed to alleviate damage in areas where landowners demanded protection during the protection period.

The most innovative defence against sambar deer was tiger poo which at Simon's request was delivered to our Palmerston North office from the Auckland Zoo. When Simon enthusiastically opened the plainly wrapped package, the odour which quickly escaped made our office uninhabitable for at least a couple of hours!

The tiger poo also proved quite effective in deterring sambar when it was smeared on fence posts surrounding brassica crops. Although these sambar had never seen their native predator, they had apparently inherited an instinctive fear of tiger odour!

In 1987, the Sambar Deer Management Foundation was established to promote the management of sambar deer as an important hunting resource. By September 1988, the foundation convinced the Minister of Conservation to allow limited hunting of sambar deer under license according to regulations governing hunting methods, hunting times, season length and bag limits.

For the last 20 years the Sambar Deer Management Foundation has been involved in promoting sambar deer hunting within the framework of the regulations and carrying out a wide range of tasks aimed at increasing knowledge and improving sambar deer hunting opportunities.

But over recent years, farmers and forest growers (including those on public lands within the region) have suffered unsustainable damage from an increasing number of sambar deer. The hunting restrictions were clearly too effective in allowing the recovery of sambar deer from the meat hunting era of the 1970s. This has lead to the decision to allow hunting without restrictions.

The Sambar Deer Management Foundation potentially retains a key role in assisting landowners to manage sambar at a level compatible with land use and acting as advocates for sambar deer hunters.

The foundation's success in raising an awareness and appreciation of the region's sambar deer population combined with the decline of the game meat industry, arguably, have eliminated the need for conditions and restrictions to be imposed under legislation.

Manawa Karioi and Tapu Te Ranga Marae, in Island Bay, Wellington, viewed from across the valley in 2007. The main gully contains a small natural spring which is thought to have contributed to the pre-European name for the site — "Manawa Karioi" — which can be translated as "the heart desires to linger". Photo: Manawa Karioi Society

Goats help control environmental weeds

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Several goats are being used to help address a challenging weed problem in a 1.5ha block within a forest restoration project on the edge of suburbia in Island Bay, Wellington City.

The Manawa Karioi Society manages a 12ha ecological restoration project which occupies about two thirds of Tapu Te Ranga Marae. The project began in 1990 and is the vision of marae founder and kaumatua Bruce Stewart. It is open to the public and relies mostly on volunteers to achieve its aims.

Peter Russell, the author, with one of the released goats. Photo: Chris Walsh

One of the society's main tasks is controlling numerous species of environmental weeds (most of which are garden escapes), including large infestations of Japanese honeysuckle and old man's beard. We do not consider gorse to be an environmental weed in this context, and blackberry isn't so much of a problem in itself.

Bruce Stewart at Manawa Karioi, Tapu Te Ranga Marae, in 2007. Photo: Manawa Karioi Society

Goats help control environmental weeds Continued

Attempts were made to control the target weeds with hand tools for a few years, which proved futile. The weeds are intertwined with dense vegetation including the native vine pohuehue (*Muehlenbeckia australis*) which can smother regenerating bush, gorse and blackberry. Human access was very difficult and it was impossible to deal with the masses of severed weed material without leaving vines in contact with the ground, where they often took root and re-grew.

The society minimises the amount of herbicides it uses because of potential impacts on human health and the environment, including the small population of koura (freshwater crayfish) in the gully. It only uses herbicides where it appears there is no other way it can realistically control weeds. The gully in question is so steep and the weeds in it are so dense that herbicides would have to be applied repeatedly by helicopter. The likely costs, non-target impacts and risk of spray-drift onto adjacent properties ruled this out.

A dense area of Japanese honeysuckle vines after three months of grazing by the first two goats at Manawa Karioi.

Photo: Manawa Karioi Society

After much contemplation the idea of using goats was proposed. Several ecologists and goat farmers were consulted and available literature was researched. It is well known that goats are often used to control agricultural weeds such as gorse on marginal farmland. In the past the biggest problems that have arisen seem to be related to inadequate fencing, resulting in escapes and insufficient grazing pressure on weeds.

The society fully acknowledges that goats are a serious threat to native vegetation and did not want to detract from Wellington City Council's attempts to control goats on the Wellington peninsula.

In October 2005 a trial was established with two goats released into a deer-fenced enclosure. Both were young, neutered males — relatively docile and unlikely to attempt to escape. Photo points were established to monitor changes in weed infestations.

In total, 10 young neutered male goats have been released into modified deer enclosures.

Photo: Manawa Karioi Society

After just a few months the results were very encouraging. Old man's beard and Japanese honeysuckle, along with less problematic weeds such as blackberry, pohuehue and climbing dock, had been eaten back more than expected. There was no evidence that either of the goats had attempted to escape. The small amount of native vegetation in the fenced area had suffered minimal damage. As the weeds were reduced it became possible to begin protecting selected native plants with wire mesh and 44 gallon drums.

In April 2007 an additional eight goats, which were also young, neutered males, were released. Members ensure there is food, shelter and fresh water available so the goats have minimal incentive to seek "greener pastures".

Thus far the results are very promising. Goats

Goats used to control environmental weeds Continued

may not completely eliminate the target weeds, but the society is confident they will digest the bulk of them and make the area accessible so that any remaining weeds can be removed and natives can be planted. It seems likely the goats will be removed from the site within two or three years.

It is considered that any risks associated with this project are outweighed by the certainty that, unless controlled, the weeds at Manawa Karioi will continue to grow and spread elsewhere.

The society is eager to work with relevant agencies and other community groups to encourage the public to get weeds under control — for everyone's benefit. It is pleased that Wellington City Council has promised to control weeds on adjacent council land.

Funding for the project was provided by the Environment and Heritage Fund of the Lottery Grants Board and the Habitat Protection Fund of WWF. For further information see www.mk.org.nz or contact the author.

Pacific Invasive Initiative – working with local communities

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The Pacific Invasives Initiative (PII) is a partnership of seven organisations with interests in conserving biodiversity and/or sustaining livelihoods in the Pacific. The organisations include: BirdLife International, Conservation International, Invasive Species Specialist Group, NZAID, Secretariat of the Pacific Community, Secretariat of the Pacific Regional Environment Programme and The Nature Conservancy. Governance of PII is provided through a Steering Group, comprising a representative from each partner organisation.

PII is a regional programme stemming from the Cooperative Island Initiative (CII) which was developed on behalf of island countries by the New Zealand Government and the Invasive Species Specialist Group (ISSG) under the umbrella of the Global Invasive Species Programme. CII aims to facilitate co-operation and build capacity of small island states to manage their invasive species problems. It is hosted and co-ordinated by ISSG at its headquarters at the University of Auckland.

The PII collaborates with various agencies and programmes such as the Pacific Invasives Learning Network, the New Zealand Department of Conservation, Landcare Research and Island Conservation.

The goal of PII is to conserve island biodiversity and enhance the sustainability of livelihoods of men, women and youth in the Pacific. PII is primarily focused on demonstration projects to raise awareness of the

PII demonstration project: Vahanga Atoll, French Polynesia

An example of the understorey on Vahanga Atoll where a PII demonstration project is under way with members of the local community being trained in biota surveys and rat control techniques.

Photo: Ray Pierce

The Vahanga Atoll is situated in the northern sector of the Acteon Group in the Tuamotu Archipelago, French Polynesia. Vahanga is a Key Biodiversity Area (Conservation International) and habitat for endangered species including the Polynesian ground dove (*Gallicolumba erythroptera*), Tuamotu sandpiper (*Prosobonia cancellata*) and Tuamotu kingfisher (*Todiramphus gambieri*).

Rats are one of the main problems on the island and are believed to be the reason the sandpiper and ground dove are not establishing.

An attempt to eradicate rats in 2000 was unsuccessful and a further eradication programme is under way.

Members of the local community are being trained in biota surveys and rat control techniques.

See **www.issg.org/cii/PII**

PII – working with local communities Continued

impacts of invasive species; generate support, and develop capacity for invasive species management. PII acts as a catalyst, co-ordinator and facilitator for invasive species management; provides and facilitates technical and scientific expertise; promotes and facilitates co-operation, networking and information sharing. PII supports local implementing agencies which are working with local communities to help them manage their invasive species problems.

PII is currently supporting demonstration projects in several Pacific island countries and territories. These projects are focused on a range of invasive species from mosquitoes to mynah birds, from ants to feral pigs and include:

- Multi-species mammal control on Mt Panie, New Caledonia;
- Singapore ant (*Monomorium destructor*) eradication in Hatohobei State, Palau;
- Challenging the yellow crazy ant (*Anoplolepis gracilipes*) on Tokelau;
- Assessment of potential threats to biodiversity from invasive mosquitoes in Tonga;
- Restoration of Vahanga Atoll, Tuamotu Archipelago, French Polynesia;
- Rat eradication on Vatu'I'Ra Island, Fiji, Ahnd Atoll, FSM and Kayangel Atoll, Palau;
- Protection of Tokelau Fakaofo from mynah (*Acridotheres* spp.) invasion.
- Prospects for biological control of Merremia peltata (vine in the *Convolvulaceae* family).

BIOSECURITY NEW ZEALAND **News**

New response programmes for national interest pests

On July 1, 2005, the Ministry of Agriculture and Forestry became responsible for managing new response programmes for national interest pests, excluding animals managed under the Wild Animal Control Act, and freshwater fish.

The new response programmes aim to eradicate identified established pests and diseases from all of New Zealand, or in some exceptional cases exclude them from either the North or South Island, or contain them within a particular area.

Using an agreed process for deciding the new response programmes, based on advice from MAF Biosecurity New Zealand (MAFBNZ), regional councils, Department of Conservation, Land Information New Zealand, Ministry of Health and Ministry of Fisheries, and technical experts, the MAF BNZ is establishing programmes for the following 11 species:

Rank	Species	Response Goal
1	*Salvina molesta* Salvinia	Eradication
2	*Eichhornia crassipes* Water hyacinth	Eradication
3	*Sorghum halepense* Johnson grass	Eradication
4	*Moraea flaccida (syn. Homeria collina)* Cape tulip	Eradication
5	*Ehrharta villosa* Pyp grass	Eradication
6	*Phragmites australis* Phragmites	Eradication
7	*Hydrilla verticillata* Hydrilla	Eradication
8	*Ceratophyllum demersum* Hornwort	Eradication and exclusion from SI
9	*Bryonia cretica subsp dioica* White bryony	Eradication
10	*Tricoglossus haematodus* Rainbow lorikeet	Control to zero density in Auckland
11	*Zizania latifolia* Manchurian wild rice	Eradication of outlier populations, containment of large populations.

Implementation

The next step is to design and roll out these new response programmes between now and the end of 2007. Programmes will be implemented using the MAFBNZ's new Biosecurity Response System, applying the same approaches that are used for responding to new incursions, e.g. didymo.

Potential partner agencies are being consulted about the design of the programmes and the specific contribution their agency can make as a partner.

Integral to the design of programmes is a good understanding of the sites to be managed. Staff have visited a wide range of sites to make sure they understand the issues involved, e.g. visits to Northland's Manchurian wild rice sites, and phragmites in Canterbury.

Technical advisory groups are being established to assist design and ongoing review and improvement of programmes.

BIOSECURITY NEW ZEALAND **News**

Australasian Vertebrate Pest meeting update and notice of 2008 conference

MAF Biosecurity New Zealand represents New Zealand on the Vertebrate Pests Committee (VPC), an Australasian committee whose role is to provide co-ordinated policy and planning solutions to pest animal issues. It reports to several Australian ministerial committees and has representatives from each Australian state and territory, the Australian government, New Zealand, CSIRO, and the Invasive Animals Cooperative Research Centre.

The VPC convenes Technical Working Groups and New Zealand contributes expert advice to a number of these groups (e.g., Kate Littin from MAF is part of the Animal Welfare Working Group).

The last meeting was in Hobart in March. The NZ report and a summary of the outcomes are available from Philippa Griffiths, **philippa.griffiths@maf.govt.nz**

Items of interest from the March meeting include:

- Pest management and climate change: The VPC endorsed adapting current risk assessment approaches to ensure these incorporate likely scenarios for climate change in New Zealand and Australia.
- National indicators: National indicators to monitor the effectiveness of pest management activities in Australia have been agreed, with agencies now working to develop information systems that support national performance reporting.
- Animal welfare and the management of feral pest animals: Significant progress has been made towards developing national animal welfare Codes of Practice for the management of feral animals (including cats, goats, feral horses, pigs, foxes, rabbits and wild dogs).
- Increasing rabbit numbers: Australia has experienced an increase in rabbit numbers over the last three years. Emerging research indicates this is related to high levels of resistance in rabbit populations to the Czech strain of rabbit haemorrhagic disease virus.
- Ornamental Fish Strategy: See draft strategy **www.daffa.gov.au/brs/fisheries-marine/environment/ornamental**

Australasian Vertebrate Pest Conference

Darwin, June 2008

Ben Reddiex, Biosecurity New Zealand, is co-ordinating New Zealand's input into the next AVP Conference. Contact Ben at **ben.reddiex@maf.govt.nz** and let him know what you would like to get out of this conference (e.g., topics), and what you would like to contribute (e.g. presentations, posters).

For more information see, **www.feral.org.au/content/policy/VPC.cfm**

Andrew Harrison
NZ Representative on the VPC and Manager, Pest Management Group, Biosecurity New Zealand

Biosecurity Bits

In the round-up of biosecurity issues in the media, the court imprisons an offender for illegally importing aquatic plants and equipment, biosecurity exercises the polititians and taking steps to prevent the spread of didymo didn't rate highly among respondents in a survey last summer.

An Auckland aquarium owner has been imprisoned for nine months and ordered to pay $25,000 damages for illegally importing aquatic plants and aquarium equipment and on-selling through TradeMe. Judge Cadenhead commented that this was serious offending against the Biosecurity Act, and that the impact could have been catastrophic for New Zealand.

New Zealand has been granted the most favourable category for risk status of BSE "mad cow disease" by the World Organisation for Animal Health (OIE) thanks to the efforts of MAF Biosecurity New Zealand, the Veterinary Association and others. Results of samples collected by veterinarians around the country were part of the evidence used by MAF to lobby and convince OIE authorities.

National's agricultural spokesperson, John Carter, has suggested that the instant $200 fine for border biosecurity breaches should be increased to $1000 given the potential threats to the agricultural industry. The National Party's rural issues discussion paper, launched at the National Agricultural Fieldays, also promised to rein in red tape, reduce compliance costs and set up a sustainability fund of one billion dollars.

Hon. Jim Anderton lays down $840 million for biosecurity over the next five years stating that "protecting the environment from exotic pests is extraordinarily important". Mr Anderton recognised that climate change could worsen the already considerable challenges border control services as more exotic pests find their way to New Zealand.

The southern saltmarsh mosquito, first found at Shakespear Regional Park on the Whangaparaoa Peninsula north of Auckland, has been successfully eradicated. The mosquito is a known carrier of the Ross River virus. Meanwhile an extensive search of the Ports of Auckland has failed to find any other Asian tiger mosquitos, since the one found in March.

No Possums Cholecalciferol Gel Bait has been registered by Kiwicare Corporation in collaboration with Landcare Research. The bait, specifically designed for NZ conditions, is highly palatable by possums and has a low secondary poisoning risk for birds, insects, cats and dogs. Users do not require a license.

While didymo continues to spread through the South Island with the latest confirmations in the Kakanui, Hurunui and Rangitata rivers, the early detection surveillance programme based on DNA screening of algal samples is being trialled in the North Island. Scientists are also trying to identify genetic markers to help separate geographic populations. This will aid in identifying the didymo pathway to NZ. Other researchers are trialling ways of containing the algae once it is detected. Disappointingly however, results from a summer survey of upper South Island river users showed that only 24 percent of people checked, cleaned and dried their gear and some did not care about measures being taken to stop the spread of didymo.

'Aerogenomics' is the new label for engineering research coming out of Virginia. David Schmale, Assistant Professor of Plant Pathology, is using unmanned aerial vehicles (more commonly used for military purposes) to study plant and animal pathogens found tens of hundreds of metres above the ground. One of the species his team has collected appears to be a bacterium found only in a cavern in Arizona.

Australia has set up a new National Centre for Biosecurity focused on risks to human health via natural and bioterrorist attacks. The centre will address five key challenges: fast-moving natural disease outbreaks (such as pandemic influenza), bioterrorism, the risks posed by research into pathogens, the implications of emerging technologies, and the impact of disease on society.

New Zealand's zero tolerance of GE contamination in crops could potentially increase our market share in Europe with the recent decision by the Economic Union Ministers at the Agricultural Council to allow up to 0.9 percent contamination of organic food with "adventitious or technically unavoidable" genetically modified organisms.

Courage & triumph (in the name of biosecurity)

Trophy launched to honour pioneer

Peter Nelson had a founding influence in establishing professionalism within the field of vertebrate pest management in New Zealand and remained a cornerstone of the industry.

Although starting out in the printing trade, Peter became the Supervisor of the Patea-Waitotara Pest Destruction Board based at Maxwell, north of Wanganui, by 1967. Peter and his board were one of the first to seriously consider possums as a threat to agriculture and undertook intensive control programmes throughout their pest board district.

Peter Nelson

Peter's able administration, drive, enthusiasm and "why not" approach, ensured he was appointed as the first Field Advisor of the Agricultural Pest Destruction Council (APDC).

Peter had a founding role in establishing the pest destruction training boards, with the first trainee intake starting in 1970. At the same time Peter requested the APDC establish regular multi-day training courses for supervisors and selected staff. These staff also had the opportunity to study for a two-year Certificate of Competence in Pest Destruction recognised by the industry.

These training regimes continued until 1989 when local government re-organisation shifted the responsibility of vertebrate pest management to regional councils and unitary authorities. Many senior pest management staff today came through the APDC trainee programmes.

Peter took an avid interest in the politics and culture of vertebrate pest management. He was the first secretary and later long-time president of the Institute of Pest Management Officers, formed in May 1968. This later became the Vertebrate Pest Management Institute of NZ (VPMINZ), which is now fully integrated with the NZBI. Peter was also one of five key people behind forming the National Possum Control Agencies (NPCA).

Aware that industry change was looming, Peter established Pest Management Services Ltd in 1985. Initially the company's only products were Pindone rabbit and possum pellet baits but they successfully went on to capture the market for a large range of

Exotic reptiles look out

Congratulations to Heidy Kikillus, pictured above with a 'potential reptile pest', the most recent recipient of the NZBI Study Award.

Studying for her PhD at Victoria University, Wellington, Heidy aims to determine whether exotic reptiles currently traded in New Zealand are capable of establishing wild populations and what real threats they may pose to our environment and economy.

As part of this study she will investigate which exotic reptiles have the highest probability of establishing wild populations, where these might occur and whether these reptiles have the ability of transferring, exotic parasites or pathogens to NZ organisms. The results will ultimately identify which species may pose a threat to NZ's biodiversity and economy — important information for us all.

Heidy's interest in biosecurity evolved from a trip to the Galapagos Islands in 2001. She has also been a tour guide at the San Diego Zoo where part of her job was to inspire the public about conservation of endangered species. She holds a Master of Conservation Biology jointly from Macquarie University (Australia) and Victoria University.

We are really fortunate to have Heidy studying in New Zealand and look forward to hearing from her at NETS 2007.

Courage & triumph (in the name of biosecurity) Continued

pest control products for agricultural, domestic and industrial purposes.

Peter died of cancer in 1998 while still in his prime. He was a self-made man, enthusiastic, driven and bold. He had commanding presence with an assertive nature able to captivate an audience.

Nominations sought for the Peter Nelson Memorial Trophy

The trophy will be awarded annually by the NZBI to an individual or organisation for outstanding achievement in the field of vertebrate pest management.

Recipients can be members or non-members and may include field operators, administrators, researchers, government agencies or NGOs, companies and private individuals. Nominations (including supporting information) must be made by NZBI members to Bill Simmons by July 18, 2007 – email **simmo@pestoff.co.nz**

Ray Weaver (crafting the trophy) and Bill Simmons (on behalf of the former VPMINZ) will present the trophy for the first time at NETS July 2007.

We all know that working in Biosecurity can, at times, be extremely challenging, very time pressured, requiring constant innovation, and trial and error. There are hundreds of motivated, innovative and knowledgeable individuals and teams working to achieve biosecurity gains throughout the country. This column recognises the great work contributed by these folk.

Have you or your colleagues been nominated for or received awards/commendations for your work? Or is there an award coming up needs advertising? Contact the Editor and let us know.