



Prote

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Working together to ensure New Zealand is protected from the adverse impacts of invasive species

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# **Biosecurity: spread the word**

Editor's Note

The arrival once again of the Queensland fruit fly to our shores has ensured biosecurity remains in the news.

The Institute too has attempted to keep the word before the public. This issue features two stories generated by the Institute to raise awareness of the work of its members. One appeared at New Year highlighting the threat of escaped or unwanted pets given at Christmas. The other, released at Easter, draws attention to the threat of introduced pest in general and focuses on the bad Easter Bunny. Earlier this year some Canterbury members were treated to a lively debate between some This country just doesn't know much about what animals and plants are already here, let alone whether they are good or bad. of the nation's biosecurity heavyweights on the subject "The Great Pest Invasion". One point that jumped out of the robust debate was that this country just doesn't know much about what animals and

plants are already here, let alone whether they are good or bad. Some of the key thoughts of the panellists are summarised in this issue. As well, this issue celebrates a convincing win for biological control, and the success of a rat eradication programme. There is an interesting story on the links between some animal pests and the spread of wilding pines. In addition, a brief look back into the Institute's archives shows just how far the Institute has evolved.

Chris Macann, Editor

# **Proactive on our profile**

FROM THE NZBI EXECUTIVE

#### The Executive met by telephone on 18th March.

Planning for this year's NETS2015 in Dunedin 26-28 August with the theme "The Learning Never Stops" is going well. An excellent number of abstracts have been submitted and planning the programme is underway. Registration is likely to open in May. The Northland Auckland Branch is planning NETS2016. Venues in Auckland city are currently being discussed. NETS2016 will likely be held in July.

This Institute has released two media releases since its last meeting in response to members' requests for the Institute to be proactive on raising its profile and on promoting biosecurity in general. An article at Christmas covered preventing escaped pets from becoming pests. Another at Easter suggested the Easter Bunny was not an ideal icon given its history in New Zealand.

It is likely the Institute will pursue these themes each year.

The executive is presently planning ideas for promoting Biosecurity Month to be run in July in conjuction with NETS 2015. The next NZBI meeting will be held immediately prior to NETS2015 in Dunedin on Tuesday 25th August.

Rebecca Kemp, President



### Pest plants in a dry pastoral landscape:

### NZBI Top of the South Branch Marlborough Field trip – 27 Jan 2015

#### Contributed by Lindsay Vaughan

Top of the South members of the NZ Biosecurity Institute attended a field day in Marlborough on 27 January organised by Marlborough District Council staff to look at the challenges of managing pest plants in a dry pastoral landscape.

The morning session comprised a series of presentations and the afternoon session involved a field trip.

#### Assessment of the efficiency of Taskforce on some hard-to-kill pest plants

Jono Underwood (MDC) described the work that has been undertaken by Marlborough DC biosecurity staff over several years on assessing the effect of a selective Australian Herbicide Taskforce on three pest plants - Chilean needle grass (*Nassella neesiana*), nassella tussock (*Nassella trichotoma*), and kangaroo grass (*Themeda triandra*). It is claimed to be able to kill germinating seedlings for up to five years after application with little impact on non-target species.

The trials indicated effective control of Chilean needle grass, limited control of nassella tussock, and little effect on kangaroo grass.

The variable results indicated that further work was needed to investigate the timing and water rates, soil and foliar uptake, the limited control period (2 years) and how to minimise the effect on non-target species (vineyards).

#### Management of Chilean needle grass in Marlborough

**Shone Sam** (MDC) outlined the destructive impact of Chilean needle grass seed on sheep's wool, pelt and internal organs with its ability to slowly spiral inwards. It is spread by movement of sheep and of hay and there are rules in place to stop its spread from infested land. The Council was also using a number of non-regulatory methods to encourage control by landowners, refund of herbicide costs, education and advocacy, establishing and supporting a local Action Group, a vehicle wash-down site, and a clean vehicle certificate scheme.

#### Aquatic weeds

**Paul Champion** (NIWA) provided a comprehensive and informative presentation on new aquatic weeds, assessments on different methods of surveillance and control, and the results of some results on the modelling of dispersal of some aquatic weeds in waterways. He summarised the results of trials on the effectiveness of existing herbicides (metasulfuron, haloxyfop, trichlopyr amine, imazopyr) and was awaiting approval for a new herbicide. He also discussed the effectiveness of grasscarp and the situations when they should be used.

There was strong support for the preparation and publication of a Best Practice Framework for aquatic weeds that covered tools for strategic analysis, incursion detection, and control.

#### Taiwan cherry control programme in Nelson

**Peter Williams** had been heavily involved in a local programme involving the community and Nelson City Council to control Taiwan cherry in the Atawhai area, north of Nelson City.

#### It has been sold as an attractive garden tree for many years but has suddenly moved out of the sleeper stage and spread rapidly.

The seed is primarily spread by waxeyes and the seedlings are both shade- and cold-tolerant, growing rapidly through regenerating broadleaf species such as mahoe. He noted it was included in Pest Strategies of some upper North Island councils (Northland, Auckland, Waikato). It was easily controlled with stump treatment with glyphosate following felling.

# **NZBI** news

#### ➤ continued

#### **Controlling Tall Wheat Grass**

(Thinopyrum ponticum)

The first stop on the field trip was in the lower Wairau plains at a tall wheat grass site. Tall wheat grass is a native of Turkey and had been used in arid regions of the US and Australia as a fodder crop. It had been trialled in NZ in the 1960s and was introduced into a low-lying area of the Wairau Plains in the 1970s where other grasses had struggled to establish and thrive. Unfortunately, it was now invading saltmarsh sites. Hay from this site had been moved to other sites within a 30 km radius. Surveillance had identified the sites where it had established and glyphosate was proving effective.

# Containing Chilean needle grass on the urban fringe

The second stop on the southern boundary of Blenheim township demonstrated the difficulties of containing Chilean needle grass in an area of active urban development where soils was being moved around.



Rob Simons in a dense sward of tall wheat grass



NZBI members examining tall wheat grass that had established from seed in hay during feeding out operations on the lower Wairau Plains



Seedheads of tall wheat grass

# Nothing funny about Easter Bunny

It's part of Easter every year but it's not cute or cuddly nor is it a friend of farmers. The NZ Biosecurity Institute says it's a costly example of the effects of introduced plants and pests and it's high time the Easter Bunny was replaced.

Institute President, Rebecca Kemp said her members think it would be appropriate to find a heroic icon for Easter rather than the rabbit along with its villainous history in New Zealand.

The NZ Biosecurity Institute is the professional training and networking organisation for people involved in biosecurity. Its 450 members work for research organisations, educational institutions, regional councils and government departments.

All are involved in protecting NZ from invasive species.

Ms Kemp reckons it's high time the kiwi flew at Easter.

"The symbols around Easter have come from many historic and cultural origins, so why not put our own slant on Easter?" she said.

"The obvious choice would be the kiwi. It lays one of the largest eggs of any animal in the world, which is entirely appropriate for Easter".



Ms Kemp said equally significant is that it is endangered because of the effects of introduced predators.

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We're not trying to replace the Easter Bunny with an Easter Kiwi, but to give the commercial side of Easter a more New Zealand emphasis, and in so doing, help raise awareness of all pests, both plant and animal."

Every year the Biosecurity Institute's members spend hundreds of hours controlling or managing the risks to the economy and the environment of the effects of introduced pests.

"This is work which costs the country hundreds of millions of dollars each year through control, research and border control budgets. This money is coming out of all New Zealanders' pockets," she said.

The idea of replacing the Easter Bunny is not new.

In Canterbury, Institute members have in the past promoted a competition at Easter asking people to suggest a more appropriate icon to replace the Easter Bunny. Easter Kiwi was usually the frontrunner.

New Zealand is not alone in the call.

Australia has run similar promotions resulting in their Easter Bilby which has caught on to varying degrees.

"Like the Kiwi, the Bilby is endangered so what better Easter icon," Ms Kemp said.

NZBI members in the course of their work have been involved in other creative ways of promoting their animal and plant pest management work.

The call to replace the Easter Bunny is one of many animal and plant pest awareness programmes carried out over the years.

In Canterbury Instead of Easter eggs members have, in the past given away bar-b-qued rabbit



## NZBI news

#### continued

sausages (hot rabbits rather than hot dogs) and bunny burgers at the Mackenzie Highland Show in an area which has long suffered the rabbit scourge.

In Northland members have used a variety of food made from pests as a way of raising awareness including wasp larvae ice-cream, as well as possum and goat meat pies, crackers topped with possum pate, wild rabbit sausages and breakfast sausages flavoured with spicy native plants.

In the past members have dressed rabbits up in bandages, and as witches, devils, gangsters and pirates. Unfortunately in some people's eyes that just made them look even cuter she said.

All are friendly ways to promote the more serious side of Institute members work.

"It is very hard to get the message across that although these look like cute cuddly creatures they are not welcome here".

Ms Kemp said an animal or plant is a pest because of where it is, not what it is.

The rabbit haemorrhagic disease (RHD) introduced into New Zealand illegally in 1997 is still having some effect on keeping rabbit numbers down, but Ms Kemp said Canterbury and Otago members are reporting 70 per cent of rabbits now being immune to it, so it is no longer the major player it was.

Ms Kemp said It is timely that Institute members from local and government authorities, and research organisations have recently been involved managing the discovery of a pest which must never be allowed to establish here the Queensland fruit fly.

#### Do you want to help keep the NZBI on track?

Every once in a while, an opportunity arises for a change of personnel within the NZBI Executive. Now it's time for a new Treasurer and Membership Officer to come on board. The role is essential for the NZBI to remain financially viable and to help keep its members up to date.

The role can tick the Professional Development box for your career, and is also useful for keeping in touch with others in the biosecurity field. It's helped me manage my time better, and allowed me to liaise with people I wouldn't usually come into contact with during normal business.

If you want to know more about the role, send an email to treasurer@biosecurity.org.nz. The NZBI will need someone at the AGM in August to put their name forward.

Randall Milne

Treasurer/Membership Officer, NZBI



# Pets not pests this summer

It's not just abandoned felines which cause problems over the holidays. Lizards, turtles, parrots and goldfish all cause problems.

The New Zealand Biosecurity institute is asking all Kiwis for assistance over the holiday season in making its members work easier.

Every year the Biosecurity Institute's members spend hundreds of hours controlling or managing the risks to the economy and the environment of the effects of the pet industry.

The NZ Biosecurity Institute is the professional training and networking organisation for people involved in biosecurity. Its 450 members work for research organisations, educational institutions, regional councils and government departments.

All are involved in protecting NZ from invasive species.

Institute President, Rebecca Kemp has some very simple messages regarding taking good care of pets this summer whether they be cats dogs fish, birds or even reptiles.

"Dumping of unwanted kittens after the Christmas excitement and abandoned pets over the festive break becomes an issue every summer.

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

Aquariums too need to be considered.

Ms Kemp said just tipping the contents of an aquarium down the drain or into a waterway is almost certain to have far reaching consequences.



"Goldfish ending up in waterways is becoming an increasing problem. They are rampant in many waterways."

Pond species such as perch, tench, rudd, cat fish and carp all degrade the quality of New Zealand's freshwater habitats.

Aquarium plants too have become well established in New Zealand waterways and are now declared pests. Many water weeds look very similar to aquarium plants.

Many plants such as hornwort, *Lagrosiphon*, *Egeria* and *Hydrilla* are on The National Pest Plant Accord list of plants that cannot be sold, propagated or distributed in New Zealand.

Ms Kemp said some of these are in tanks or ponds that have been maintained well over the years even decades.

"Problems may arise when such well-maintained tanks change hands and a new owner is unaware of the biosecurity risks."

"The best rule is, don't dispose of unwanted aquarium plants or fish into water ways, either compost the plants or dispose as green waste.

"Buy your aquarium plants and fish from reputable dealers," she said.

Earlier this summer pond and aquarium owners in the Bay of Plenty were asked in to check for the invasive pest plant hornwort, following the

# NZBI news

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accidental sale of the aquatic weed from a pet store.

Hornwort is easily mistaken for the common aquarium plant oxygen weed but it grows much more aggressively. It grows easily from the smallest fragments and can take over freshwater ponds, lakes and waterways

It doesn't end with felines and fish.

Released pet birds too can easily become pests. Ms Kemp said Canterbury members are reporting increased numbers of peacocks in the wild on Christchurch's Port Hills as well as sulphur-crested cockatoos and eastern rosellas which have also established elsewhere.

Reptiles too are threatening to become a nuisance.

Ms Kemp said in the course of their work NZBI member are finding non-native reptiles like bearded dragons, along with red eared slider turtles in numerous locations across Northland and Auckland and other parts of the country.



Lagarosiphon

Hornwort

Gardeners too can help make the work of Biosecurity Institute members easier. Ms Kemp said members spend many hours controlling or managing the effects of garden escapes.

Egeria

"People are dumping green waste in riverbeds and other open spaces."

She said Canterbury Biosecurity Institute members report continual problems in the Waimakariri Riverbed where there is clear evidence of pest plants establishing following the tipping of garden waste.

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



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### Working together to manage the risks of abandoned and wild kiwifruit

November 2014 marked four years since the virulent form of bacterial disease *Pseudomonas syringae* pv. actinidiae (Psa-V) was identified in a New Zealand kiwifruit orchard.

Over those years the disease has spread rapidly and almost 80 percent of New Zealand kiwifruit orchards are now affected by the disease that is not going away. It has been a tremendously challenging period in the industry's history.

But despite this figure, crop yields are now on the increase and the industry's future growth is looking more positive than ever. By considering a combination of equally important factors including plant variety, orchard management techniques and individual orchard environments, kiwifruit productivity is certainly achievable in a Psa environment.

Kiwifruit Vine Health (KVH) was established in December 2010 shortly after Psa-V was identified in New Zealand. While initially set up to respond to Psa-V specifically, KVH has more recently been given the mandate to lead wider biosecurity on behalf of the kiwifruit industry.

This means KVH proactively undertakes readiness and response planning to prepare for future biosecurity incursions that might affect the industry. This includes assessment of emerging risk organisms, assessing their potential entry pathways and providing input to improve border biosecurity intervention where necessary. It also includes working together with other horticultural industries and MPI to develop operational plans for specific organisms, such as fruit fly.

While the wider biosecurity role is a significant focus for KVH into the future, grower education of Psa-V best practice management and industry compliance with the National Psa-V Pest Management Plan (NPMP) remains an important part of the overall KVH function.

The primary objective of the NPMP is to prevent the spread of Psa-V and minimise its impacts on kiwifruit production.

KVH's NPMP Analyst and Compliance Officer, John Mather, said a key component of the NPMP is the management of abandoned and unmanaged orchards.

"As these vines are unlikely to receive any form of crop protection, they are high-risk sites for potential establishment and spread of Psa, especially to other orchards. They are also a source of bird-borne

seeds which may result in wild kiwifruit infestations. Wild kiwifruit is a fastgrowing weed harmful to both exotic forest and native biodiversity values".



"Over the last couple of years KVH has been working collectively with Regional Councils, local grower committees, postharvest and landowners with the focus on significantly reducing the number of abandoned and unmanaged kiwifruit orchards around New Zealand. By partnering up, an effective and robust framework for working through these orchards and reducing their risk is now in place.



"In particular, KVH has received outstanding cooperation from Northland, Auckland and Bay of Plenty Regional Councils, and Gisborne and Tasman District Councils, who have contributed funding or work in-kind," said John.

Since the National Psa-V Pest Management Plan was introduced in May 2013, significant progress has been made.

More than 100 kiwifruit orchards have come to the attention of KVH, and while some were ruled out as not being unmanaged or abandoned, 87 of these orchards have either been removed to eliminate the Psa-V risk they pose; or have returned to a situation where they are being effectively managed. Removal or return to management of the remaining orchards is currently underway.

#### ➤ continued

#### Wild kiwifruit

In the last 12 months to October 2014 contractors have controlled almost 1,500 wild kiwifruit vines. Most of this work was within the Bay of Plenty and Auckland regions. KVH contributes towards the cost of wild kiwifruit control through formal Memorandum of Understanding agreements with councils. The Bay of Plenty Regional Council is a key partner in the wild kiwifruit programme, controlling thousands of wild vines yearly since 1998. Further infestations have been mapped and are ready for control over the 2014/15 year.

For more information contact KVH on 0800 665 825 or email info@kvh.org.nz.

CONTRIBUTED BY KIWIFRUIT VINE HEALTH

Bay of Plenty abandoned kiwifruit orchard before (above) and after removal.



### 1080 aerial drop knocks rats

The Department of Conservation reported at the end of last year that rat numbers in the Eglinton Valley in Fiordland National Park have dropped significantly since an aerial drop of 1080 over the area.

Nationwide between August and December the department completed 25 aerial 1080 drops over about 550,000 hectares to combat the extreme rat numbers that were fuelled by beech seeds.

In December it finished the 1080 aerial drop over 10,300 hectares in the Eglinton Valley. Biodiversity ranger Gerard Hill said the Eglinton 1080 drop, which covered a large amount of steep, difficult terrain, was very well organised.

Rat numbers had been significantly reduced as a result of the operation, he said.

"They will basically stay there until the next significant beech seed drop."

A grid of poison bait stations were also in place in the lower valley for rats and possums, with a trapping network to keeps stoat numbers down.

Rats, mice and stoats feed off the beech masts and breed prolifically with the abundance of food.

DOC Fiordland Conservation services manager Lindsay Wilson said the poison bait stations had successfully



reduced rats to very low levels in the lower, more accessible parts of the Eglinton Valley but numbers outside this area had continued to climb.

"This is a nationally important area for bats and mōhua (yellowhead) and we need to use all the tools we have available to knock down the rat plague and keep on top of pests."

> Project director Mike Slater said protecting native species was an ongoing battle and DOC would analyse the results closely to refine plague response techniques.

"We know that rats and stoats will inevitably re-invade many areas over time, so the war is far from won."

Adapted from an original report in the Southland Times, 16 December, 2014

# For the love of trees: Symposium on kauri a success

Valentine's weekend this year in the far North was about the love of the tree kind rather than of the human kind, as Christine Rose from the Kauri Dieback Management Programme explains.

Roughly 90 people attended the 2015 Kauri Dieback Symposium at the Copthorne Hokianga Resort on February 14. All came to learn about and discuss the latest research and activities for protecting New Zealand's iconic kauri trees from kauri dieback disease.

Approximately 70 of the attendees also went on a field trip through Waipoua forest the following day which was hosted by Te Roroa.

The diverse range of speakers and attendees resulted in a great deal of discussion, which saw people become more aware of one another's viewpoints, and as a result, build strong connections. As well as the scientists involved in researching ways for managing the disease, community groups who work to protect or conserve kauri were also present, as were tourism operators who take visitors through native areas, and the various teams within the Kauri Dieback Management Programme.

One person said 'It was an incredible privilege to be there surrounded by so many people committed to understanding the issues around kauri dieback and working towards solutions. I have certainly left with a completely new level of understanding and awareness of the different perspectives... it was invaluable!'

Another theme was the need for everyone involved in protecting kauri to work together to share knowledge, resources, and to continue engaging people in removing soil and cleaning their gear before and after visiting kauri forests.

Many attendees also commented on the range of activities underway across kauri land and the diversity of people committed to protecting kauri.

Films of the presentations and interviews can be seen at: www.kauridieback. co.nz or www.facebook.com/TheKauriDiebackManagementProgramme



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It was an incredible privilege to be there surrounded by so many people committed to understanding the issues around kauri dieback and working towards solutions.

The Symposium Organising Committee was made up of the Kauri Dieback Programme partners as well as SCION, Plant and Food Research, Landcare and Bio Protection.

Thank you to everyone who made this year's Symposium a success and we look forward to hosting the next annual event.



### What's knocking on our door? The Great Pest Invasion

The Great Pest Invasion was the topic of a debate moderated by Kim Hill, held at Lincoln University, on 26 March. The annual environmentally-themed event which marks Earth Hour was well attended by many Institute members.

It would be fair to say that the line-up of panellists was heavyweight. Present to be put on the spot by Kim Hill were: Steve Gilbert, Director Border Clearance Services Ministry for Primary Industries; Grant Smith, Effective Detection and Response Programme Leader, Plant and Food Research; Bill Dyck, Forest Owners Association Biosecurity Manager; Barry O'Neil, Chief Executive of Kiwifruit Vine Health; Lindsay Burton, Risk Management Programme Specialist; Fonterra and Peter Silcock, CEO Horticulture NZ.

Informative, lively and frequently awkward discussion and debate on aspects of border control and internal biosecurity rewarded more than 200 people for their attendance (among them politicians, researchers, practitioners, and farmers).

The audience learned that forest owners believe they have the best system in place for biosecurity - possibly in the world. They also heard about the huge numbers of "invaders" knocking at New Zealand's door and those coming in without even knocking every year. The audience was reassured that new border responses were being put in place with dogs, mostly beagles playing a leading role. However it was discomforted by possible threats including some just blowing-in from Australia, and how little the public knew about it. One suggestion was that biosecurity should be taught in schools.

Another point well made was that the country knows relatively little about what organisms are already present, whether they be friends or foe. The clear message was that New Zealand needs to learn more about the taxa that are already here.

**Protect** will report in more depth on the content of the debate in the next issue.



# A long haul on Queensland fruit fly eradication

#### NZ Biosecurity Institute members amongst others have again been busy this year with another unwanted appearance of the Queensland fruit fly.

This time confidence appears not to be high of an early reasonable certainty of eradication, with the Ministry for Primary Industries indicating it may be in for a long haul.

The Ministry reported in the first week of April that it remains confident that the isolated population of Queensland fruit fly will be eradicated from Auckland.

Since the first male fruit fly was trapped in Grey Lynn in mid-February, 14 adult flies have been located. The last find was on 6 March. The last detection of larvae in fruit collected from the affected area was on 13 March.

MPI's Director of Response, Veronica Herrera said this is good news but is not yet an indication that the flies are gone for good.

"We need some months yet to be quite sure this population has been eradicated. We believe that we will be working in the area until at least the end of November and we will need the community's support for the long haul," she said.

Dr Herrera said treatments of the five directly affected properties with insecticide spraying are now complete. But MPI will still need to regularly apply bait to attract and kill any flies present, plus maintain regular trap inspections to make quite sure the flies are gone.



As fruit flies go to ground over winter, MPI expects to stop the baiting treatments in the entire Controlled Area sometime around early June. However, to be quite sure they are eradicated, MPI is likely to need to resume baiting in spring.

The intensive network of surveillance traps will stay out over the winter but will be checked less frequently. This continued trapping is needed to verify that the fruit fly is gone.

"Until that time, the controls on the movement of fruit and vegetables outside of the Controlled Area will need to continue to make quite sure any surviving flies are not spread from the area."

MPI has now allowed customers to purchase fruit and vegetables at certain MPI-approved retailers within the Controlled Area that can be taken outside of the Controlled Area.

### **St John's What?**

#### BY LYNLEY HAYES

A plant that was at one time one of the top four agricultural weeds in New Zealand (along with blackberry, gorse and ragwort) is no-longer known or recognised by most New Zealanders. St John's wort was a serious pasture plant of non-intensively managed land, especially in the South Island. It contains hypericin which causes photosensitisation in sheep and cattle, and stock losses would occur when animals were dipped or driven through water as they became hypersensitive to water. Ironically the plant is best known today as herbal remedy for treating depression.

So what caused St John's wort to fade into obscurity? Recent studies by Landcare Research, Lincoln, have proven that beetles released as biocontrol agents in the 1940s and 1960s (*Chrysolina* spp.) are responsible for the decline of this weed. Trials set up by Dr Ronny Groenteman near Culverden, where small populations of the weed remain, showed when the plant is protected from the beetles with insecticide it quickly recovers and becomes more abundant. The trials also considered other factors that could cause this effect (e.g. rainfall, temperature, disease, insecticide effects, and other insects), but it was the beetles



Chrysolina beetle

that were responsible for the weed declining. St John's wort has also been successfully controlled in other parts of the world using the same beetles.

A recent economic analysis by Simon Harris (Harris Consulting) and Dr Simon Fowler of Landcare Research, shows enormous benefits from biocontrol of St John's wort. When the beetles were first released in the 1940s, St John's wort was rapidly spreading, particularly in high country pastures, but by the 1980s, the beetles had the weed under control. An ecoclimatic model was produced by Dr Grant Humphries (University of Otago) using data provided by Landcare Research to predict where the weed could have invaded if it had not been stopped. Land-use and habitat filters were applied to create a realistic scenario. The analysis suggested

# Research

#### >>> continued

that 660,000 ha of the South Island would have been badly infested with St John's wort by 2042 had it continued to spread. The negative impact from this level of infestation (based on loss of grazing) was calculated to be \$109/ha plus \$6/ha for limited manual weed control. The Net Present Value (NPV) of the biocontrol programme is between \$150 million (given a conservatively slow rate of weed spread) and \$1,490 million (with a faster rate of spread). The impressive benefit-to-cost ratios range from 10:1 to 100:1.

The savings provided by the St John's wort biocontrol programme, even at the lower end, have more than paid for all the other weed biocontrol programmes undertaken in New Zealand to date. Work to develop biocontrol for serious productive sector and environmental weeds is on-going led by Landcare Research. Only highly host-specific agents that will not damage desirable plants are considered and must be approved for release by the Environmental Protection Authority.

For more information see: http://www. landcareresearch.co.nz/science/plants-animalsfungi/plants/weeds/biocontrol



St John's wort in lucerne, Ashburton 1981



Unprotected trial plot in foreground attacked by beetles compared with plot behind protected with insectide

# Invasional meltdown: Have introduced pests collaborated in order to spread others?

It's a very serious question - have introduced pests collaborated in their own natural evolutionary way to spread other introduced pests? It may not be rationalised in the way a human might think of collaboration, but Landcare Research scientists Jamie Wood and Duane Peltzer think something like this is happening.

New research has found pests may be assisting the spread of wilding pines which have invaded more than 1.5 million hectares in New Zealand.

Motion-sensitive cameras set up in the Canterbury foothills by Landcare Research scientists captured deer and possums eating fungi essential to the growth of the pines.

Landcare Research scientist Jamie Wood, who led the study recently published in the Journal of Ecology, said DNA analyses of the dung from the animals showed they contained traces of the fungi.

"Our results suggest that the pests may be helping wilding pines spread to new areas by dispersing the beneficial fungi through their faeces," Jamie said.

"Other studies have shown that when a pine seed lands on soil, it can only establish if the fungi are present too. So if you get rid of the fungi pine can't invade," he said.

The fungi provide several benefits to the pines including increased access to nutrients and drought tolerance. Once in the soil, the fungal spores can lay dormant for decades.

While the study focused on deer and possum consuming and dispersing the fungi, it was likely other exotic mammals such as pigs and hedgehogs could also do the same, he said.

He described the interaction between the pests, fungi and pines as an "invasional meltdown".

"A meltdown is when multiple things come in – so in this case pines, fungi and mammals - and they're all beneficial to each other and help each other spread. But if you take one of those things out they don't do so well."

Co-author Duane Peltzer also from Landcare Research said the findings suggested pest control, in conjunction with traditional methods, could slow the spread of wilding pines. Currently the invasive trees are cut down or sprayed with herbicides.

"Management aimed at slowing or containing invasive trees might be more successful if animals are controlled at the same time. Although this idea was not tested here, there is an intriguing possibility that managing animal



A possum captured eating fungi essential to the growth of wilding pines.

invaders concurrently with invasive trees might slow the spread or allow containment of wilding pines," Duane said.

Wilding pines are a problem primarily in the Marlborough Sounds, the South Island high country and central plateau of the North Island, but are also invading natural habitats in Otago. The affected areas are remote and difficult to access making control dangerous and costly. As a result, each year public agencies and farmers spend millions of dollars trying to control the spread which is vital to preserving native flora and fauna.

# The latest biosecurity research

Find out about the latest biosecurity research being undertaken at Landcare Research with partner organisations. A free workshop, limited to 120 people will be held at Brentwood Hotel in Wellington from 9:30 – 5pm on 25 May 2015. For more information please contact either: Andrea Airey aireya@landcareresearch. co.nz, phone 03 3219618 or Hugh Gourlay gourlayh@landcareresearch.co.nz, phone: 03 3219683.

# **From the Archives**

### It was a man's world

"I have not as yet heard any comment on the Ladies Pages. Perhaps members just don't want anything like this in the magazine. If you don't, let's hear your comments; don't just sit on them."

*Editor's Notes,* Noxious Weeds Inspectors Magazine 30th June 1975



# The tail

### Blood-thirsty tick stopped at Auckland Airport

The Ministry for Primary Industries reported in January that a blood-thirsty tick was plucked from a young girl's neck going through biosecurity in Auckland.

The girl's mother spotted the tick on her five-year-old daughter's neck as they passed through Auckland Airport having just arrived from Norfolk Island, Ministry for Primary Industries northern border clearance manager Craig Hughes said.

The "blood thirsty tick" was embedded in the daughter's neck.

"The mum saw the tick in the arrivals area and declared it to one of our quarantine officers.

"It was having a good chomp on her shoulder, so they allowed an officer to remove it in our lab with sterilised tweezers.

"It took a little time to get all the tick parts out of the young girl's skin, but she was very brave."

The tick was later identified as Haemaphysalis longicornis, (also called the bush tick) which was already found in New Zealand, Australia and parts of Asia.

"We're rapt the family declared the tick. Ticks like this can carry diseases dangerous to New Zealand livestock, pets or humans," Mr Hughes said.



Working together to ensure New Zealand is protected from the adverse impacts of invasive species