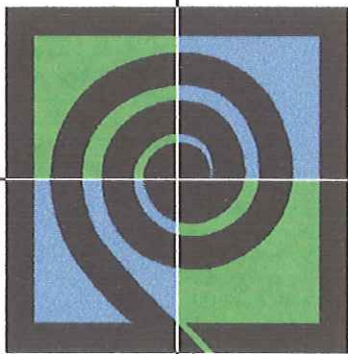


Spring — 2000

# Protect



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New Zealand  
**Biosecurity** Institute

# Protect

Spring 2000

Magazine of the New Zealand Biosecurity Institute

## Contents

Editor's Note	3
News from the Executive	
Three cheers for NETS	4
New logo showcased at NETS	5
NZBI in cyberspace	5
Question and Answer Forum	6
Member Profile: Peter Ayson	7
Seeds used in promotions concern biosecurity officers	9
Urban Auckland backyard yields potential pest	10
For peat's sake — a tale of exported spores	12
Caption Contest	14
If it croaks in the night it shouldn't be here	15
Membership list	17

## Editor's Note

Spring is moving into summer though the temperatures have not risen to what is normally expected in November.

This issue of *Protect* is a little different from the previous issues in a number of ways. Again the hard copy is printed and distributed with the assistance of Monsanto in Wellington.

As you will have seen, the Institute's new logo is in use and with it comes a redesign of the cover to better take advantage of the new logo's shape. The various elements of the logo are explained in the News from the Executive section.

Content-wise we have spread our wings a little with a story about an animal pest — the eastern banjo frog — which has been found in New Zealand. Although not strictly part of the Institute's immediate focus, animal pests are an associated area.

And once again in the eyestrain department is the Institute's complete and corrected membership list. In the unlikely event that there are any errors please get in contact with Dave Galloway.

If you are experiencing any problems with the electronic version of *Protect*, please contact the Editor so we can straighten them out. Likewise if there are problems with the hardcopy version.

If you have any ideas you want included in *Protect* don't hesitate to make contact.

Col Pearson  
Editor

# News from the Executive

## Three cheers for NETS

Thanks to all the hard work put in by the Auckland/Northland branch and in particular, Ian Rodger, NETS2000 was a great success. It was great to see so many new faces at our training seminar!

In keeping with the theme "Biosecurity in the Wider Perspective" participants were able to immerse themselves for two days in a wide range of biosecurity issues including insect pests (bee mites, fruit flies, ants, tussock moths, and web worms), marine and freshwater pests, vertebrate pests (possums and deer), as well as good old plant pests.

Most people stayed on to take advantage of the field trips offered on the third day. One group went to the airport to look at what border control is doing to keep nasties out, and the second did a bus tour to get an appreciation of some of the weed problems that the Auckland Region is grappling with.

At the conference dinner people were encouraged to "dob in" their colleagues with humorous

stories about incidents at work over the past 50 years, and the bottle of scotch at stake was won by Bill Bayfield (who was not backward at coming forward). Paul Champion's music quiz also brought the house down as people strove to gain bonus points by performing their own renditions of some of the songs.

A mini proceedings (abstracts only) is currently being put together and will be distributed soon. There is a feeling around the traps that the amount of work and cost associated with printing each paper in full is no-longer warranted.

There will be contact details provided with each abstract so you can request a full copy of the paper if you so desire. We will review how well this system works, so feedback please. We will also endeavour to feature some of the papers in future issues of *Protect*.

### Scenes from the NETS dinner



"Oh you are awful, but I do like you!" secretary Dave Galloway and quizmaster and vice-president Paul Champion.

A new executive was chosen at the AGM. It is made up of the following members. Additional members may be co-opted on if necessary. Our contact details are in the membership list at the back of this issue.

**Lynley Hayes — President**  
**Paul Champion — Vice President & Central North Island Branch Member**  
**Dave Galloway — Secretary**  
**Ken Massey — Treasurer & Auckland/Northland Branch Member**  
**Mike White — Immediate Past President**  
**Keith Crothers — Otago/Southland Branch Member**  
**Helen Braithwaite — Canterbury Branch Member**  
**Noel Proctor — Lower North Island Branch Member**



"Oh my God, its our turn next year" Robin Packe, Stuart Bennie and Mike Perry (Hawke's Bay).



"This is what people who haven't paid their subs yet can do," treasurer Ken Massey and Simon Fowler.



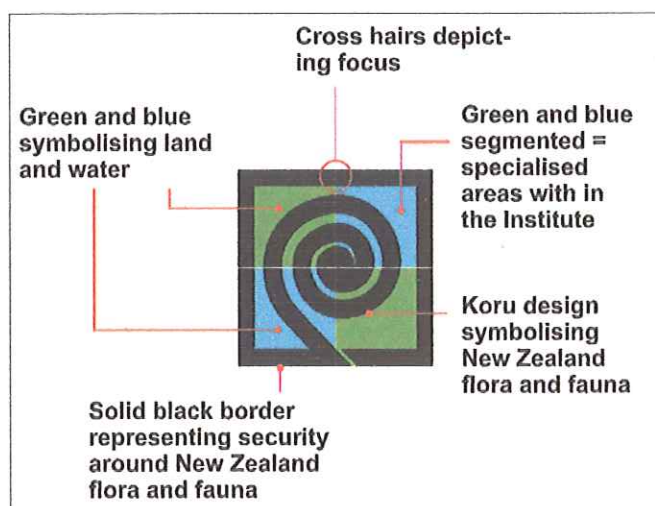
"Well you probably had to be there ...", special guest Annie Whittle and NETS organiser Ian Rodger.



## News from the Executive



## New logo showcased at NETS



An explanation of the elements comprising the logo designed by Chris Brown that got the most support from those attending NETS in Auckland in the winter.

Shortly before NETS, graphic artist Chris Brown was commissioned to design us a new logo. His best four designs were displayed at NETS and members were asked to vote for their favourite or for the option of sticking with the old "helping hands" logo.

Two of Chris's designs were clear favourites and in the end only a few votes separated first from second. The winning design is pictured above with an explanation of what the various components mean.

We will soon show off our new logo to the world on soon-to-be-printed letterhead and membership certificates.



## NZBI in Cyberspace

While most members seem to agree that it would be great to have our own website, deciding on the form it should take is another matter.

At one end of the spectrum, we could have a relatively cheap and simple website that exists primarily to serve us, the NZBI members (and hopefully

attract some new ones). At the other end of the spectrum, we could pursue a much more complex and expensive state-of-the-art option that would attempt to provide information for anyone out there in cyberspace wanting to know more about weeds and possibly other kinds of pests too.

## News from the Executive


Developing any kind of website would be quite a large financial undertaking for the NZBI, so it is important that we achieve consensus before we proceed.

How do we do this? Well first of all we need to take a step back. The NZBI has gone through a lot of changes in recent times (as reflected by our new name, logo and wider focus) and the time has come when we urgently need to clarify our roles and goals, or purpose for being.

The executive has agreed that we urgently need to develop a frame of reference to guide us, that can be expressed as a simple mission statement. If our mission statement is to be useful and meaningful

then we will need input from as many members as possible.

In the next issue of *Protect* we will ask you to answer a series of questions to explain your vision for the NZBI. A sub-committee will then review all the submissions and come up with some words that attempt to express these ideas. These words will be tossed around and revised until we feel comfortable that we have the right combination. Obviously this process will take some time, but please bear with us as we believe that it is vital for the success of our Institute.

Bye for now  
Lynley 

### Question & Answer Forum

The question in the last issue of *Protect* was:

- Is anyone concerned about climbing spindleberry (*Celastrus orbiculatus*)?  
What are the best methods of controlling the plant?

Des Pooley from Environment Bay of Plenty replies with a control method for climbing spindleberry indicating that it must be causing concern.

#### Herbicide control

##### Foliar spray

This method can be applied on large infestations, ensuring that care is taken to avoid affecting non-target species.

Apply: Grazon	400 ml:100 litres of water
Boost penetrant	100 ml:100 litres water

Found that October-November to be most suitable time for application.

##### Stump treatment

Cut the stem above ground level. Immediately apply a 25% solution of Grazon and water to the remaining stump.

Because of the extensive seed reserve ongoing inspections to treat new plants is most important.

Cheers, Des Pooley.  
Des@envbop.govt.nz

**This issue's question derives from the article on page 10 about the prevalence of *Polygonum perfoliatum* after its discovery in an urban Auckland garden. The article's author, Euan Cameron, would like to hear from anyone who thinks they may have seen this species growing in New Zealand.**



## Member profile: Peter Ayson

Many years ago the following birth notice appeared in the *Southland Times*:

Born at Otautau 6<sup>th</sup> October 1934 to Walter and Elva Ayson Twins: A Boy 3¼lbs (Peter) and Girl 2½lbs (Elinore) A brother and sister for Mary and Margaret.

My father was overjoyed to father a son after three girls and also someone to carry the family name of Peter Ayson into the forth generation.

For those who are not sure where sunny Otautau is on the map it is a small town situated in the centre of western Southland, population 840-900.

I was reared on a 44ha dairy farm – a small block of land which my father drew in a 1920 returned soldiers' ballot after the First World War. No buildings or fences, just a block of land covered in tussock and gorse.

After attending Otautau Primary School, I travelled daily to Invercargill for three years post-primary education at Southland Boys High School. Playing for the 1<sup>st</sup> XV and competing in the athletics team were my only notable achievements.

Schooling was cut short after my father suffered a severe heart attack and I was needed at home to keep the farm running.

Being a teenager in the 1950s was great fun. There were more jobs than people, we played rugby when country rugby was stronger than the cities, competed at country sports meetings, went to country dances every Saturday night in a 10HP Austin car, after consuming a few jugs of Speights in the local pub after hours.

The time comes when life becomes more serious and it came to me when I was introduced to Zola, a pretty nurse from Kew Hospital, at a dance after

I had played in a victorious country rugby team which had beaten town a few hours before. The next day I needed to have a rugby injury X-rayed and she just happened to be the nurse on duty.

We married in 1961 and began milking for town supply. At that time 50 cows, 200 sheep (to control



Retiring Environment Southland biosecurity officer Peter Ayson.

the ragwort) produced a reasonable living for one family. We had had enough of town supply after 10 years during which we had spent only one weekend away off the farm. The following six years we supplied the local cheese factory and enjoyed time off during the winter.

Although the first 10 years of our marriage was busy we found time to produce three children – one boy and two girls. Yes, we named our son, Peter Mark – the fifth generation).

1977 was a year of considerable change for us. The 44ha was too small and as Mark showed no interest in farming, I decided to see if there was life after dairying.

The position of assistant noxious weeds inspector with the Wallace County Council was advertised for which I applied and was successful. The farm was sold and we built a new house in Otautau.

Ken Johnson was the senior inspector and we worked together carrying out weed inspections. We were stock control officers, parks and reserves officers, forestry officers, and wasp control officers as well.

There was never a dull moment. We were out and about in the field continuously — if we were in the office for more than one full day in a week we were asked the reason why by the county clerk! Ken retired in 1982 and I was appointed as the sole officer, a parks and reserves and forestry officer was employed as well.

Local body amalgamation in 1989 saw the Wallace and Southland County Councils merge as one council. The new Southland District Council employed me as a noxious plants officer based in Otautau. Keith Crothers was appointed senior officer and Sue Patterson worked under Keith from the Invercargill office also.

Although the Southland Regional Council had the legal responsibility for noxious plant control they contracted the work to the district council for three years following amalgamation.

Following the contract expiry date in 1991, the Southland Regional Council decided to appoint two noxious plants officers and take over responsibility for noxious plants control. Keith and I were appointed, Keith being the senior officer while I was permitted to work from my old office in Otautau.

Every three years the political opposition party say its time for a change. I felt that after 23 years of local government employment it was again time for a change with the result that on July 7, 2000 I retired from my position as biosecurity officer (plant pests) with Environment Southland.

I will still have some involvement with pest plant control as I will be doing some biological control work under contract to Environment Southland.

Well, "that's my life" to date. I haven't mentioned my involvement in community or sports administration and achievements as that is another story.

I did however, take my turn as secretary, president and national executive member of the Otago-Southland branch of the Institute.

On reflection there have been many changes over the past 23 years in the world of pest plant control. Firstly, we were noxious weeds inspectors, then noxious plant officers, followed by the title of biosecurity officers.

The act has been changed three times, the paper work has increased three-fold at the expense of time spent in the field. Administration costs have increased dramatically. To compensate for the increase there has been a considerable reduction in staff in the field — all in the interests of more effective and efficient weed control, we were told.

Yet despite all these changes gorse is still gorse, ragwort still looks the same and broom is still a troublesome weed, etc., etc. Control methods are still the same.

It is sad to see so much knowledge and experience lost with the officer reductions which have taken place. Clever as computers are, they will never replace the vast knowledge and experience the likes of people such as Murray Furns and Doug Gordon have acquired over the years. It is tragic that they were not given the opportunity to train and pass on their field knowledge. There will be a price to pay someday, I am sure.

In the meantime, I intend to remain a member of the Institute and maybe at the next South Island-hosted seminar I will look forward to meeting again the officers who's company at past seminars are fond memories to me.

To date I've found retirement a very busy career what with a bit of community work, gardening, Lions, bowls and greenkeeping — I wonder how I ever had time to work!

Take care and good health to all.

**Peter Ayson**



# Seeds used in promotions concern biosecurity officers

It's worth keeping an eye out on the shelves at the wine shop and the bookseller if recent sales promotions are anything to go by.

An Australian wine producer has demonstrated how easy it is to move seeds across international borders by attaching packets of them to their bottles and then shipping the wine as normal.

Environment Southland biosecurity officer Keith Crothers noticed that a packet of red bottlebrush seeds was on a neck tag around a bottle of Banrock Station wine last Christmas. As the plant is not illegal in New Zealand he took no action until he heard that the seeds had found their way to Micronesia in a similar promotion.

When contacted, Banrock Station reportedly got in touch with its overseas' distributors asking them to remove the seed-containing necktags from the bottles they had left in stock.

In a similar promotion, necktags on Banrock Station containing seeds of golden wattle (*Acacia pycnantha*) have been reported from the New England state of Connecticut on the Atlantic Coast of the United States of America. On the packet the wattle was described as a "fast growing" species.

A similar situation arose earlier this year when an issue of *New Zealand Geographic* had a packet of barley well attached inside as part of a beer advertisement. Authorities in Western Australia were alerted by a number of people who received the magazine there. The magazine's editor was embarrassed and apologised for the incident, saying that it was partly due to the separation of functions between the publication's advertising and editorial arms, and that a closer liaison has been established between the two.

Similar packets have been attached to gardening books in Australia, on occasion containing seeds of plants such as horehound (*Marrubium vulgare*) which is a target for biocontrol there.

Ironically, winemaker Banrock Station and its parent company, BL Hardy, appear to be an environmentally aware company which is involved in habitat restoration, particularly of wetlands. The necktag seed packets promotion is in keeping with that approach, going under the banner of "Celebrate our good earth – plant a tree".

Hopefully the biosecurity issues will be thought through first in future.

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# Urban Auckland backyard yields potential plant pest

E K Cameron

Auckland Museum, Private Bag 92018, Auckland,  
Email: [ecameron@akmuseum.org.nz](mailto:ecameron@akmuseum.org.nz)

A plant recently found in an Epsom, Auckland, backyard has the potential to become a pest in the north of the North Island. How wide spread *Polygonum perfoliatum* is is not known. The author would like to hear from anyone who believes they have seen it.

On April 5 this year, Juliet Richmond handed me a specimen of a new plant that just appeared in the back of her urban Epsom property in Auckland. Although distinctive, this spiny climber with blue fruit was unknown to me. I passed it on to Rhys Gardner who placed it in *Polygonum* but could not match it with any specimens in the Auckland Museum herbarium (AK).

When Bill Sykes returned from the Cook Islands via Auckland in August, I showed the specimens to him. Bill immediately recognised it from China and after a short look through the *Flora of Japan* (Ohwi 1965) determined it as *Polygonum perfoliatum* L. (syn. *Persicaria perfoliata* (L.) Gross). The name *perfoliatum* means "with a leaf surrounding or embracing the stem" (from Stearn, 1996), referring to the sheath-like membranous stipule (ochrea) which is leaf-like and orbicular in this species.

The vine appeared in a rather weedy corner of the garden (west-facing) among wandering jew (*Tradescantia fluminensis*) and ox tongue (*Helminthotheca echinoides*). It covered an *Actinidia* vine on a frame (c.2m tall) and spread out climbing over itself forming a patch nearly 4m x 4m and 1 to 1.4m tall away from the frame. It appeared to be a single plant.

What makes this species particularly undesirable in the wild is the retrorse prickles on the stem, petiole and leaf lamina nerves. The perianth segments appear on short flowering spikes (c.2 cm long) and are initially greenish-white, ripening to blue. Perhaps the attractive fruit is the reason for its introduction to New Zealand? Ohwi (1965) records the branched, elongated stems as 1-2 m long.

Juliet first noticed the plant in early March 2000, and since then it has flowered and fruited up until August 6, when she mulched up the entire plant. Although she noted that it had slowed down in July-August, it was still growing at the tips. Ohwi (1965) records *P. perfoliatum* as an annual, but it has been a very mild winter in Auckland, perhaps explaining why it did not die right back by August. So far, no other plants of *P. perfoliatum* have been observed at Juliet's property [see end-note] and the adjacent neighbour's property has since been cleared by a bulldozer.

Its native habitat in Japan is wet thickets and along rivers in lowlands (Ohwi 1965). There is plenty of habitat like this in New Zealand, another reason why it would be an undesirable species to naturalise here. Ohwi (1965) gives its native range as India, the Malaya Peninsula, China, Korea and

Japan. I wonder what the origin is of the Epsom plant?

It would be good to know if this is the first record of this species in New Zealand (cultivated or otherwise) so that its eradication can be considered. I would be interested in receiving information and/or specimens of any other occurrences.

In the meantime, the Epsom site will be searched this spring for seedlings. Let's not let this one escape any further!

[Note: The author adds: Since the above article was printed, a few seedlings have appeared where the adult was. The site is being monitored.]

Voucher specimens: AK 246413-14 (J Richmond, April 5, 2000), and AK 246414 (EK Cameron 10173, April 20, 2000, duplicate CHR).

#### Acknowledgements

Juliet Richmond for bringing the plant to my attention, and Bill Sykes and Rhys Gardner for the identification.

#### References

Ohwi, J. 1965: *Flora of Japan*. Washington, Smithsonian Institute

Stearn, W.T. 1996 *Stearn's dictionary of plant names for gardeners*. London, Cassell

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Editor's note: Unfortunately a picture of *P. perfoliatum* could not be sourced.

A quick search of the Internet for *Polygonum perfoliatum* brought up a number of sites. Other names it goes by are; mile a minute weed, minute weed, tearthumb.

For more information on this plant check out:

<http://www.nps.gov/plants/alien/fact/pope1.htm>

<http://www.magi.com/~ehaber/factmile.html>

<http://www.gacaps.org/docs/mileamminute.html>

For photos of the plant go to:

[http://www.mbr-pwrc.usgs.gov/herbarium/polygonum\\_perfoliatum.htm](http://www.mbr-pwrc.usgs.gov/herbarium/polygonum_perfoliatum.htm)

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# For peat's sake — a tale of exported spores

P.J. de Lange

Science & Research Unit  
Department of Conservation  
P.B. 68908, Newton, Auckland

M. A. Christian

Australian National Parks and Wildlife Service  
Norfolk Island National Park  
PO Box 310, Norfolk Island

The identification of *Hypolepis distans* on Norfolk Island indicates that New Zealand Hauraki peat as used by nurseries and gardeners can be problematic.

The Australasian distribution of *Hypolepis distans* has been summarised by Brownsey & Chinnock (1984) and Brownsey (1998). Both accounts stress that this species is very uncommon in Australia, being known there only from King Island in the Bass Strait and one locality in Tasmania. Otherwise, these authors considered the species to be reasonably common in the northern half of the North Island of New Zealand.

In New Zealand, the preferred habitat seems to be swamp margins (Brownsey & Chinnock 1984; P.J. de Lange pers. obs.), where following drainage activities or peat disturbance it can be extremely common, e.g., along the margins of the Torehape and Kopouatai Peat Bogs, in the Hauraki Depression.

The species, along with *Pteridium esculentum* and *Histiopteris incisa* may also occur as a casual in some nurseries, e.g., Auckland Regional Council Botanic Gardens, and University of Auckland's Holding Compound. In these locations plants are frequently found where potting up is done, e.g., near stock supplies of potting media, most notably, bales of Hauraki peat moss. It is presumed that in the process of bagging up the peat, the spores

of this weedy fern become incorporated into the bales. That this is a possible source of plants is further suggested from our own observations of the fern sprouting out of ruptured bales within commercial nursery stockpiles, e.g., Kings Plant Barn, Mt Albert, Auckland.

However, the possibility that this could also happen with peat bales exported from New Zealand was also demonstrated, when in November 1998 while conducting field work on Norfolk Island, a small population of *Hypolepis distans* (P. J. de Lange NF124 & G. M. Crowcroft, AK 237660) was identified as a casual weed in the gardens and shade houses of the Norfolk Island Forestry Nursery.

After some inquiries, it soon became evident that here too the *Hypolepis* had appeared following the importation from New Zealand of a pallet of Hauraki peat moss.

On Norfolk Island, the peat is imported for use in local gardens, and also by the Forestry Nursery to mix with local soils to provide a more suitable germination and potting-up medium. It was in the Forestry Nursery, from the vicinity of where pallets are stored that *Hypolepis distans* was first detected,

although when exactly, no one seems certain (M. A. Christian unpubl. data). Interestingly, although the identity of the fern remained unknown until our visit, it was already suspected of originating as an impurity in the New Zealand peat.

Accordingly, as a precautionary measure, importation of Hauraki peat moss was temporarily halted in favour of using twice-sterilised cocopeat. In addition, an attempt to eradicate the species from the nursery and adjacent grounds was undertaken. However, eradication has only been partially successful, as new plants arise following periods of heavy rain wherever the ground has been disturbed. Furthermore, until the identity and foreign origin of the fern was confirmed, there had been some reluctance to fully eradicate it from the nursery area (M. A. Christian unpubl. data). Although this attitude may strike New Zealand people as a little odd, it is quite understandable. Many Norfolk plants are still poorly known, and some hitherto believed to be extinct have reappeared following disturbance, e.g. *Diplocyclos palmatus* subsp. *affinis* (Green 1994). Under these circumstances a naturally cautious stance toward any "new" discoveries has been adopted.

As far as *Hypolepis distans* is concerned, we now hope that having clarified its identity, and confirmed its presence on Norfolk as a casual New Zealand introduction, it will now be eradicated before it manages to spread further than the nursery area.

This is particularly important, for at present the close proximity of fertile individuals of *Hypolepis distans* to rows of potted-up Norfolk Island plants destined for local trade and restoration planting means that uncontrolled spread is likely. Although wetlands are scarce on the island, should this unpalatable fern reach, for example, the extensive wetlands around Kingston, there can be little doubt that it will seriously impact on the marginal turf communities of this virtually unique habitat.

While a direct link between the Norfolk Island *Hypolepis* appearance and imported New Zealand peat has been established, what of the Australian, King Island and Tasmanian occurrences?

Although many New Zealand ferns are shared with Australia, comparatively few of these have primarily New Zealand distributions with only sporadic Australia occurrences (P. J. Brownsey pers. comm.). In this regard the apparently natural pres-

ence of *Hypolepis distans* on King Island, coupled with the subsequent discovery of it growing down wind of that island in the north-western extremity of Tasmania has always been viewed with some suspicion (R. J. Chinnock & P. J. Brownsey pers. comm.). So the possibility that similar Australian imports of New Zealand peat moss might also account for these otherwise anomalous King Island and Tasmania *H. distans* occurrences has been suggested (R.J. Chinnock pers. comm.).

As *H. distans* was first discovered on King Island in 1973, and later discovered on Tasmania in 1987 (Brownsey 1998), the possible mechanism (R.J. Chinnock & P.J. Brownsey pers. comm.) is that the species might have been introduced to King Island, from where it spread to nearby Tasmania.

However, we have been unable to ascertain if New Zealand peat has been imported to King Island, although it has been imported by Tasmanian's who use it for their gardens and as a potting medium for nurseries. One of these importers is Tasmanian fern botanist Mike Garrett, who refutes the suggestion that these Australian *H. distans* populations are exotic. Garrett (in litt.) states that on King Island *H. distans* occurs in a remote and relatively undisturbed site well away from areas of human occupation.

On Tasmania, the species is known from two sites; one, a small population, occurs within a logged forest, while the other, 5000m<sup>2</sup>, is known from within "regenerated forest in a natural bushwalk part of a tourist garden".

Garrett advises (in litt.) that while all these populations are very restricted this could be due to the amount of available habitat. Flat swampy habitat of the type favoured by this species is apparently only found in the extreme north west of Tasmania and King Island.

Nevertheless, despite his firm views on the subject, Garrett (in litt.) has also observed that on one occasion, which he concurs "may" have been around the time he was using New Zealand peat moss, he was mystified by the sudden appearance of *H. distans* plants growing around his nursery.

Either way, from this story one thing is clear, based on the Norfolk Island experience at least, New Zealand peat moss is not entirely sterile. Should people wish to import it, they would be wise to take

further precautions to prevent spreading alien ferns into their countries.

#### Acknowledgments

We thank Patrick Brownsey, Bob Chinnock, Alex Buchanan, and Mike Garrett for their comments on this article.

#### References

Brownsey, P. J. 1998: Dennstaedtiaceae. Pp. 214-228. *Flora of Australia*. Vol. 48. *Ferns, Gymnosperms and Allied Groups*. Canberra, Australian Government Publishing Service.

Brownsey, P. J.; Chinnock, R. J. 1984: A taxonomic revision of the New Zealand species of *Hypolepis*. *New Zealand Journal of Botany* 22: 43-80.

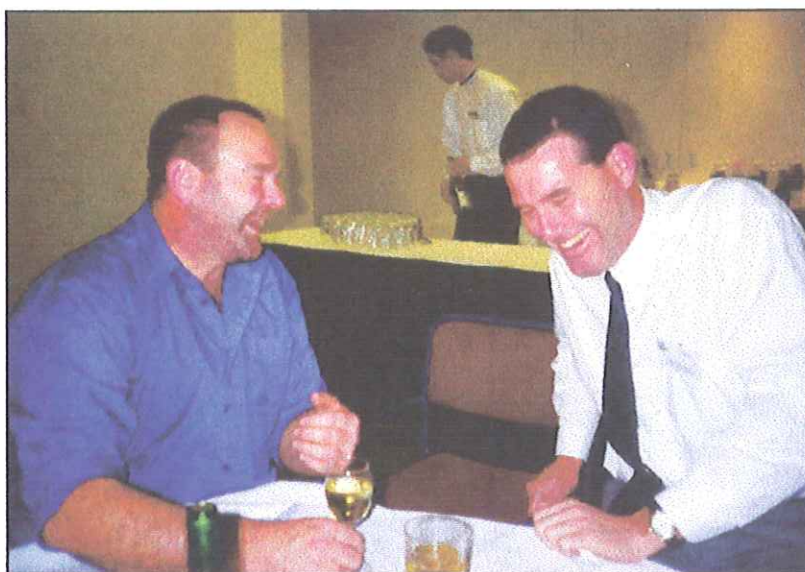
Green, P. S. 1994: *Flora of Australia*. Vol. 49. *Oceanic Islands I*. Canberra, Australian Government Publishing Service.

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## Caption Competition

Put your thinking caps on and write a witty caption for the picture at right.

Send it to the editor:  
col.pearson@caverock.net.nz  
The best caption will win a prize



Hey, these should reduce the constipation.

Lindsay Scott, Dannevirke



# If it croaks at night it shouldn't be here

A new species of Australian frog has been found in New Zealand and the public are asked to keep their ears and eyes open for it as it represents a serious biosecurity risk to New Zealand insects and our native frogs.

Tadpoles and froglets of the eastern banjo frog, *Limnodynastes dumerilii grayi*, which were found in a stream near Huia in the Waitakere ranges late last year represents a biosecurity threat to New Zealand's native insects and indigenous frogs, according Ministry of Agriculture and Forestry officials.

Being prolific breeders and able to occupy a variety of habitats, the eastern banjo frog could poten-

tially become established anywhere north of the Waikato River, particularly around Auckland and the Coromandel, where temperature and humidity conditions are similar to their native range in NSW. The species also presents a risk as it can carry the chytrid fungus and could pass it to other frog species, especially to Hochstetter's frog which is also present in the creek in the Waitakeres where the eastern banjo was found.

If you hear a frog at night it isn't one of ours – native New Zealand frogs don't call at night. Any frog you hear at night will be an introduced species from Australia. Below is a brief guide to four species of Australian frogs.

	Size	Sound	Eggs	Tadpoles	Colouring
<b>Banjo frog</b> <i>Limnodynastes dumerilii grayi</i>	Up to 8cm	"Bonk" (one frog) "Pobblebonk" many frogs in spring and summer	In a floating, foamy mass about 10cm round	Up to 15cm	Grey or brown with black- ish marblings. Pale yellow gland from mouth to base of forelimb
<b>Green frog</b> <i>Litoria aurea</i>	Up to 8.5cm	Drawn out descending three syllabled drone, in or near water	In a mat that sinks to the bottom of the pond	Up to 10cm	Similar to Golden Bell frog with less extensive gold markings and no stripe on back
<b>Golden Bell frog</b> <i>Litoria raniformis</i>	Up to 9cm	"Aw aw awk"	In a mat that sinks or floats	Up to 10cm	Bright green with golden markings, pale stripe along mid line of back. Thighs bright blue
<b>Whistling tree frog</b> <i>Litoria ewingii</i>	Up to 5cm	Rapid pulsing whistle "Cree cree cree" through- out year, often far from water	Wound around sub- merged stems and stalks	Up to 5cm	Dark-brown stripe from nostril through eye to shoulder. Groin pale yellow with black spots. Orange on thighs

It is not known who introduced the frogs to the site in the Waitakere Ranges but it is possible that they may be available through the pet trade.

In NSW where it is native, the frog is commonly called the "poddlebonk" as the adult males' breeding calls sound like the plucking of banjo strings. The males call prior to mating from late August until January on warm nights after two or three days of rain.

Well-built with short thick limbs and a broad rounded head, the eastern banjo has a large yellow gland by the edge of its mouth which forms a conspicuous stripe extending to the base of each forelimb. These glands secrete a poison as a deterrent to predators. Its body is rough and warty, ranging in colour from pale grey to a dark brown or black. They take two years to mature and once mature can live up to five years. As adults, the males range from 5.2 to 7cm long and the females from 5.2 to 8.3cm long. The males are capable of migrating up to 1km to find a good breeding site.

The banjo frog burrows into the ground during the day, emerging at dusk after rain to feed when the ground temperature is above 10°C. They predate on beetles, worms and insect larvae as well as eating small frogs and lizards.

The eggs are laid in slow-moving water a minimum of 10cm deep – wetlands, dams, swamps, and

ponds – during spring and early summer. They are laid after dusk in a mass of 1000 or more at a time, in a frothy foam that floats on the surface of the water. Just before they hatch the foamy mass breaks up and disperses.

Eastern banjo tadpoles are very large—up to 15cm in length—and may change from black when born, to brown, and have leopard spots and stripes on the tail.

The stream in the Waitakeres where the eastern banjo was found will be monitored for at least two years from the time they were discovered. If only young frogs were present then it could be 2001 before they begin calling and then it may be only sporadically. The males often will respond by calling when they hear a loud noise such as a car door banging, or clapping, and can heard and then found. The egg masses are highly visible and can be easily scooped off the surface of the water.

For further information, and to listen to taped calls of the eastern banjo frog visit

<http://www.parks.tas.gov.au/wildlife/frogs/banjogf.htm/>

<http://dehaa.sa.gov.au/epa/frogcensus/dumerili.htm>

<http://www.tased.edu.au/schools/claremop/frogs/banjo.htm>

<http://www.maf.gov.nz/MAFnet/press/171199frg.htm>

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NAME	POSTAL ADDRESS	EMPLOYER	PHONE	FAX	MOBILE	EMAIL	
Mr D GALLOWAY	PO BOX 138, WELLSFORD	AUCKLAND REGIONAL COUNCIL	PRIVATE BAG 92 012, AUCKLAND	09-426-7643	021-222-9060	1, dgalloway@arc.govt.nz	
Mr M D WHITE	P O BOX 1290, PAPAKURA	AUCKLAND REGIONAL COUNCIL	PRIVATE BAG 92 012, AUCKLAND	09-292-4819	021-222-9063	1, mwhite@arc.govt.nz	
Mr L VERVOORT	104 AWA RD, KUMEU	AUCKLAND REGIONAL COUNCIL	PRIVATE BAG 92 012, AUCKLAND	09-366-2155	1, lvervoort@arc.govt.nz		
Mr C EDMISTON	686 GLENBROOK RD, RD 4 PUKEKOHE	AUCKLAND REGIONAL COUNCIL	PRIVATE BAG 92 012, AUCKLAND	09-373-9863	09-373-9861	021-222-9074, 1, cedmiston@arc.govt.nz	
Mr S HIX	38 HATHERLOW ST, GLENFIELD	AUCKLAND REGIONAL COUNCIL	PRIVATE BAG 92 012, AUCKLAND	09-373-9864	09-373-9861	021-222-9064, 1, shix@arc.govt.nz	
Mr R GRIBBLE	21 BERTRAM ST, WARKWORTH	AUCKLAND REGIONAL COUNCIL	PRIVATE BAG 92 012, AUCKLAND	09-426-7643	021-222-9067	1, rgribble@arc.govt.nz	
Mr M HARRE	PRIVATE BAG 92-012, AUCKLAND	AUCKLAND REGIONAL COUNCIL	PRIVATE BAG 92 012, AUCKLAND	09-237-1004	09-238-8091	021-222-9071, 1, mharre@arc.govt.nz	
Mr G HOSKINS	74 O'NEILLS RD, SWANSON	AUCKLAND REGIONAL COUNCIL	PRIVATE BAG 92 012, AUCKLAND	09-832-6881	09-832-6840	021-222-9068	1, ghoskins@arc.govt.nz
Mr C MCKAIN	P O BOX 2, GREENHITHE	AUCKLAND REGIONAL COUNCIL	PRIVATE BAG 92 012, AUCKLAND	09-832-6882	09-832-6840	021-222-9069	1, cmckain@arc.govt.nz
Mr R SMART	22 CAMROSE PL, GLENFIELD	AUCKLAND REGIONAL COUNCIL	PRIVATE BAG 92 012, AUCKLAND	09-832-6880	09-832-6840	021-222-9061	1, rsmart@arc.govt.nz
Mr A STEIN	PRIVATE BAG 92-012, AUCKLAND	AUCKLAND REGIONAL COUNCIL	PRIVATE BAG 92 012, AUCKLAND	09-832-6883	09-832-6840	021-222-9070	1, astein@arc.govt.nz
Mr G WRIGHTSON	42 BOTANY RD, HOWICK	AUCKLAND REGIONAL COUNCIL	PRIVATE BAG 92 012, AUCKLAND	09-272-4819	021-222-9062	1, gwrightson@arc.govt.nz	
Mr P JOYNT	WESTLAKE ROAD, RUAWAI	NORTHLAND REGIONAL COUNCIL	PRIVATE BAG 9021 WHANGAREI	09-439-6862	025-931-613	1, PeterC@nrc.govt.nz	
Mr K MASSEY	ROSS RD 1, PARUA BAY	NORTHLAND REGIONAL COUNCIL	PRIVATE BAG 9021 WHANGAREI	09-438-4839	025-943-490	1, KenM@nrc.govt.nz	
Mr J CRAW	KEITH TURNBULL RESEARCH INST, P O BOX 48, FRANKSTON	VICTORIA 3169, AUST.	6139765011	1, jack.craw@nra.vic.gov.au			
Mr B MILLER	P O BOX 177, WHANGAREI	NORTHLAND REGIONAL COUNCIL	PRIVATE BAG 9021 WHANGAREI	09-438-4839	09-438-0012	025-716-782	1, BrettM@nrc.govt.nz
Mr D FOSTER	7 TASHMAN PLACE, KERIKERI	NORTHLAND REGIONAL COUNCIL	PRIVATE BAG 9021 WHANGAREI	09-408-6600	025-767-983	1, dougf@nrc.govt.nz	
Mr A MacARTHUR	76 HINAI ST, NEW LYNN AK	AUCKLAND REGIONAL COUNCIL	PRIVATE BAG 92 012, AUCKLAND	09-386-2000	09-366-2155	1, amacarthur@arc.govt.nz	
Mr C WINKS	245 SANDRINGHAM RD, AUCKLAND	LANDCARE RESEARCH	PRIVATE BAG 92170, AUCKLAND	09-815-4200	09-849-7093	1, WinksC@landcare.cri.nz	
Dr J FROHLICH	LANDCARE RESEARCH	PRIVATE BAG 92170, AUCKLAND	09-815-4200	09-849-7093	1, FrolichJ@landcare.cri.nz		
Mr A GIANOTTI	LANDCARE RESEARCH	PRIVATE BAG 92170, AUCKLAND	09-815-4200	09-849-7093	1, GianottiA@landcare.cri.nz		
Dr S FOWLER	LANDCARE RESEARCH	PRIVATE BAG 92170, AUCKLAND	09-815-4200	09-949-7093	1, FowlerS@landcare.cri.nz		
Ms K BODMIN	24 LAINGHOLM DRIVE, LAINGHOLM	WEEDFREE WAITAKERE TRUST	14 WAIKUMETE ROAD, GLEN EDEN	09-818-6803	09-818-6894	1, kbodmin@hotmail.com	
Mr D MORGAN	"PARKVALE", R D 3 WARKWORTH	09-425-7974	09-425-7976	025-271-8423	1, 09-278-2182		
Mr G STANISH	58 ALLENBY RD, PAPAOTEOE	LAND MANAGEMENT SERVICE	09-278-2182	025-921-754	1, land.management.service@xtra.co.nz		
Mr I RODGER	90 UXBURIDGE RD, HOWICK	09-534-7104	025-996-000	1, Jollyroger@bigfoot.com			
Mr G JAMIESON	6 SAVOY RD, OREWA	N Z WATER MANAGEMENT	P O BOX 41, OREWA	09-426-5143	09-426-5170	1, Weedkill@nzum.co.nz	
Mr D RHODES	1535 S.H.16, R D 2 HELENSVILLE	09-420-7392	09-420-7382	025-747-159	1, 09-412-9182		
Mr M DOUGLAS	DOW AGROSCIENCES (NZ) LTD	POSTAL CENTRE, NGUNGURU	09-434-4227	09-434-4229	025-451-784	1, DOUGLAS@dow.com	
Ms L FORESTER	RAUHAUJAMAU RD, TUTUKAKA	DEPT OF CONSERVATION	P O BOX 842	09-438-9886	1, lforester@doc.govt.nz		
Mr T McCLUGGAGE	P O BOX 10068, TE MAI, WHANGAREI	DEPT OF CONSERVATION	P O BOX 842, WHANGAREI	09-438-0299	09-438-9886	1, tmccluggage@doc.govt.nz	
Mr E BOLTON	43 MERLOT HEIGHTS, HUAPAI R D 2, AUCKLAND	09-412-9182	1, 09-412-9182				
Mr G CHAMBERS	PATUA STH RD, R D 1 ONEHAU, WHANGAREI	DUPONT NZ LTD	98 KERR RD MANUKAU, AUCKLAND	09-268-5500	025-934-216	1, gregory.chalmers@nz.dupont.com	
Mr R RENWICK	DIGGERS VALLEY RD, R D 1, KAITIAI	DEPT OF CONSERVATION	P O BOX 569, KAITIAI	09-408-6014	09-408-6019	1, renwick@doc.govt.nz	
Ms C WOOLDRIDGE	WAY, DEPT OF CONSERVATION	P O BOX 128, KERIKERI	09-407-8474	09-407-7938	1, cwooldridge@doc.govt.nz		
Mr A WILKE	412A VIEW ROAD, MOUNT EDEN, AUCKLAND	AUCKLAND REGIONAL COUNCIL	PRIVATE BAG 92 012, AUCKLAND	09-373-9862	09-373-9861	021-222-9076	1, awilke@arc.govt.nz
Mr K CATT	ROYAL FOREST AND BIRD SOC., P O BOX 45-144, TE ATATU	09-834-6214	09-834-6214				
Mr B WARD	688 MATANGI RD, R D 4, HAMILTON	HORT RESEARCH	PRIVATE BAG 3123, HAMILTON	07-856-4766	07-858-4705	2, bward@hort.cri.nz	
Mr R HENZELL	33 DALETHORPE AVE, HAMILTON	HORT RESEARCH	PRIVATE BAG, HAMILTON	07-858-4684	2, rhenzell@hort.cri.nz		
Ms ALISON POPAY	AGRESEARCH CORPORATES, PRIVATE BAG 3115, HAMILTON	09-412-9182	1, 09-412-9182				
Ms G COLE	P O BOX 4055, HAMILTON	PLANT PEST ADVISORY SERVICES	P O BOX 4055, HAMILTON	07-856-9893	025-434-434	2, ppas@wave.co.nz	
Mr H VERBERNE	14 HOMESTEAD PLACE, GLENVIEW	HAMILTON, AGRICULTURAL NZ LTD	PRIVATE BAG 3080, HAMILTON	07-838-5782	07-838-5846	025-942-522	1, verberneh@agquality.co.nz
Ms K SANDERS	P O BOX 4303, HAMILTON	DOW AGROSCIENCES (NZ) LTD	47 B BROWNING ST, CAMBRIDGE	07-846-6462	025-451-782	1, sandersS@dow.com	



- Mr R DODD, KAREONE RD, RD 1, MORRINSVILLE, . . . . . 2.
- Mr M SEVERINSON, P O BOX 98, MATATA, BAY OF PLENTY, ENVIRONMENT BOP, P O BOX 364, WHAKATANE, 07-307-2544, 2, murray@boprc.govt.nz
- Mr D SCOWEN, 42 FAIRVIEW RD, KATIKATI, ENVIRONMENT BOP, P O BOX 4272, MOUNT MAUNGANUI SOUTH, 07-575-9098, 025-948-846, 021-649-821, 2, waiters@boprc.govt.nz
- Mr P CHAMPION, 913 LINCOLN ROAD, RD 8, INGLEWOOD, TARANAKI REGIONAL COUNCIL, PRIVATE BAG 713, STRATFORD, 06-765-7127, 06-765-5097, 2, darren.scown@trc.govt.nz
- Ms W BAKER, 85 C CHURCHILL RD, TAURANGA, ENVIRONMENT BOP, P O BOX 364, WHAKATANE, 07-574-8810, 07-575-9098, 021-649-803, 2, wendy@boprc.govt.nz
- Mr A LAURENSEN, 407 MANGAOTAKI ROAD, RD 1, PIO PIO, . . . . . 07-877-8912, 07-897-8913, 021-443-465, 2, as.laurenson@tra.co.nz
- Mr P DAVISON, . . . . . DEPARTMENT OF CONSERVATION, P O BOX 112, HAMILTON, 07-858-934, 2, pdavison@doc.govt.nz
- Ms C LAW, P O BOX 19, KAKAPONGA, TARANAKI, TARANAKI REGIONAL COUNCIL, PRIVATE BAG 713, STRATFORD, 06-765-7127, 06-765-5097, 2, cathrine.law@trc.govt.nz
- Mr A ENGLISH, 2 MIRANDA ST, STRATFORD, TARANAKI REGIONAL COUNCIL, PRIVATE BAG 713, STRATFORD, 06-765-7127, 06-765-5097, 2, allen.english@trc.govt.nz
- Mr P HUGHES, . . . . . TARANAKI REGIONAL COUNCIL, PRIVATE BAG 713, STRATFORD, 06-765-7127, 06-765-5097, 2, robin.hughes@trc.govt.nz
- Mr P INGRAM, 14 KNOX PL, TAURANGA, ENVIRONMENT BOP, P O BOX 4272, MT MAUNGANUI, 07-575-4098, 025-431-016, 2, peter@boprc.govt.nz
- Ms C LEWIS, P O BOX 4055, HAMILTON, PLANT PEST ADVISORY SERVICES, P O BOX 4055, HAMILTON, 07-858-9933, 025-434-431, 2, pcas@wave.co.nz
- Mr J MALLINSON, P O BOX 1754, ROTORUA, ENVIRONMENT BOP, P O BOX 4772, MT MAUNGANUI SOUTH, 07-575-0475, 07-575-9098, 2, richardm@boprc.govt.nz
- Mr J MATHER, NGAPEKE RD, TAURANGA, ENVIRONMENT BOP, P O BOX 248, OTOROHANGA, 07-873-8130, 025-488-558, 2, robertm@ecofx.co.nz
- Mr R MEEHAN, . . . . . ECOFX PEST SOLUTIONS, P O BOX 248, OTOROHANGA, 07-873-8130, 025-488-558, 2, robertm@ecofx.co.nz
- Mr D POOLEY, 100 HAMLET ST, STRATFORD, TARANAKI REGIONAL COUNCIL, PRIVATE BAG 713, STRATFORD, 06-765-7127, 06-765-5097, 2, lin.payne@trc.govt.nz
- Mr B POPE, 5 ALPHA AVE, PIRIPAI, WHAKATANE, ENVIRONMENT BOP, P O BOX 364, WHAKATANE, . . . . . 2, des.pooley@boprc.govt.nz
- Mr B CALDER, 7 GRANT PL, MATAMATA, . . . . . 07-888-8019, 07-888-8019, 025-717-019, 2.
- Mr K LOE, 14 LOGAN AVE, TALPO, . . . . . 07-378-1930, 025-946-386, 2, Kloe@tra.co.nz
- Mr C HALE, P O BOX 704, CAMBRIDGE, . . . . . 07-827-4083, 07-827-4919, 025-404-251, 2, chrisht@hug.co.nz
- Ms MERLYN MERRETT, 9 HOWDEN ROAD, FAIRFIELD, HAMILTON, LANDCARE RESEARCH, PRIVATE BAG 3127, HAMILTON, 07-858-3700, 07-858-4964, . . . . . philip.brown@ew.govt.nz
- Mr K SALTER, 15 WEST STREET, TAUMARANUI, HORIZONS MW, 34 MAATA STREET, TAUMARANUI, 07-895-5209, 07-895-5279, . . . . . john.salter@horizons.govt.nz
- Mr K WORSLEY, 65 HILLCREST ST, MASTERTON, WELLINGTON REGIONAL COUNCIL, P O BOX 41, MASTERTON, 06-378-2484, 06-378-7984, 3, KEVIN.WORSLEY@WRC.GOVt.NZ
- Mr D BAYLY, 75 MAKORAS ST, MASTERTON, WELLINGTON REGIONAL COUNCIL, P O BOX 41, MASTERTON, 06-378-2484, 06-378-2146, 3, DAVID.BAYLY@WRC.GOVt.NZ
- Ms R DOOLE, . . . . . WELLINGTON REGIONAL COUNCIL, P O BOX 40 847, UPPER HUTT, 04-526-5324, 04-526-4171, 025-741-989, 3, ROSIE.DOOLE@WRC.GOVt.NZ
- Ms N URQUHART, P O BOX 40-847, UPPER HUTT, . . . . . 04-526-4133, 04-526-4171, 025-741-987, 3.
- Mr L SCOTT, TOTARA-MANGA RD, RD 2 DANNEVIKIE, HORIZONS MW, DANNEVIKIE SERVICE CENTRE, WEBER RD DANNEVIKIE, 06-374-6700, 06-374-6922, 025-280-2410, 3, lindsay.scott@horizons.govt.nz
- Mr B DRAKE, CA-N-Z POST, FLYGER ST, KIMBOLTON, HORIZONS MW, CNR HAMMOND AND HAIR STS, MARTON, 06-327-7189, 06-327-7187, 3, brian.drake@horizons.govt.nz
- Mr B MORGAN, 9 OLSEN ST, EKATAHUNA, HORIZONS MW, CNR HUXLEY AND QUEEN STS, PAHIATUA, 06-376-7758, 06-376-7465, 3, bob.morgan@horizons.govt.nz
- Mr S BENNIE, 38 MCGREEVY ST, WAIPIA, HAWKES BAY REGIONAL COUNCIL, P O BOX 178, WAIPIKURAU, 06-858-8636, 06-858-8644, 3, bennie@hbrc.govt.nz
- Ms J PASTON, . . . . . HAWKES BAY REGIONAL COUNCIL, P O BOX 6006, NAPIER, 06-844-2495, 06-844-2494, . . . . . 3, robin@hbrc.govt.nz
- Mr R PACKE, 176 AVONDALE RD, GREENMEADOWS, NAPIER, HAWKES BAY REGIONAL COUNCIL, P O BOX 6006, NAPIER, 06-844-2495, 06-844-2494, 3, robin@hbrc.govt.nz
- Mr K BETTERIDGE, 72 PAHIATUA ST, PALMERSTON NTH, AGRESEARCH, P O BOX 11-008, PALMERSTON NORTH, 06-351-8053, 06-351-8047, 3, betteridge@agresearch.cri.nz
- Mr P MCGREGOR, POHANGINA VALLEY EAST RD, RD 4, ASHURST, LANDCARE RESEARCH, PRIVATE BAG 11-052, PALMERSTON NORTH, 06-356-7154, 06-355-9230, . . . . . mcgregor@landcare.cri.nz
- Mr P PETERSON, 44 MIRO STREET, PALMERSTON NORTH, LANDCARE RESEARCH, PRIVATE BAG 11-052, PALMERSTON NORTH, 06-356-7154, 06-355-9230, . . . . . peter@landcare.cri.nz
- Mr B BERBEN, P O BOX 271, WAIKANA, LANDCARE RESEARCH, PRIVATE BAG 11-052, PALMERSTON NORTH, 06-356-7154, 06-355-9230, . . . . . berben@landcare.cri.nz
- Mr B KIRKLAND, GROVE RD, RD 10, PALMERSTON NORTH, HORIZONS MW, PRIVATE BAG 11025, PALMERSTON NORTH, 06-357-8009, 06-356-7477, 3, bill.kirkland@horizons.govt.nz
- Mr B HERMON, P O BOX 1285, GISBORNE, GISBORNE DISTRICT COUNCIL, P O BOX 747, GISBORNE, 06-867-2049, 06-867-8334, 025-260-7300, 3.
- Mr P CLARSON, 58A JELLIHOE ST, GREY TOWN, HUTT CITY COUNCIL, LAINGS RD, LOWER HUTT, 04-570-6666, 04-570-6855, . . . . . 3.
- Mr W COWAN, 91A PLATEAU ROAD, TE MAURUA, UPPER HUTT, WELLINGTON REGIONAL COUNCIL, P O BOX 40847, UPPER HUTT, 04-526-4133, 04-526-4171, 3, wayne.cowan@wrc.govt.nz
- Mr J RANDALL, . . . . . M.A.F. P O BOX 2528, WELLINGTON, . . . . . 3, randall@mal.govt.nz
- Mr M PERRY, 16 KOPU RD, WAIROA, HAWKES BAY REGIONAL COUNCIL, PRIVATE BAG 6006, NAPIER, 06-838-8527, 06-838-8527, 025-546-506, 3, perry@hbrc.govt.nz
- Mr A HATTON, 71 POLSON ST, WANGANUI, HORIZONS MW, P O BOX 515, WANGANUI, 06-345-0705, 06-345-4011, 3, allan.martin@horizons.govt.nz
- Mr N PROCTOR, 10A MADRAS ST, WANGANUI, HORIZONS MW, P O BOX 515, WANGANUI, 06-367-8259, 06-367-8465, 3, noel.procter@horizons.govt.nz
- Mr C BUDDENHAGEN, . . . . . DEPT OF CONSERVATION, P O BOX 10420, WELLINGTON, 04-471-0726, 04-471-3130, 3, cbuddenhagen@doc.govt.nz
- Mr M HOLMBERG, 59 ELIZABETH ST, MT VICTORIA, WELLINGTON, WELLINGTON REGIONAL COUNCIL, P O BOX 40-847, 04-526-5322, 04-526-4171, 025-499-513, . . . . . MARTIN HOLMBERG@WRC.GOVt.NZ
- Mr M McALPINE, 8 ARGYLE GROVE, UPPER HUTT, WELLINGTON, WELLINGTON REGIONAL COUNCIL, P O BOX 40-847, WELLINGTON, 04-526-5325, 025-741-972, . . . . . Mark.McAlpine@wrc.govt.nz

Ms A BERRY, OLD MAIN ROAD, UTUKU, TAIHAPE, HORIZONS MW, PRIVATE BAG 11025, PALMERSTON NORTH, 06-388-0192, 06-388-1387, 025-389-114, , angela.berry@horizons.govt.nz  
 Mr D KEE, MOONSHINE ROAD, R D 1, PORIRUA, , , 04-527-4093, , 025-248-8498, , weedworks@paradise.net.nz  
 Mr L SMITH, 36 DISLEY STREET, HIGHSBURY, WELLINGTON, WELLINGTON REGIONAL COUNCIL, P O BOX 40-847, WELLINGTON, 04-528-5321, , 025-741-997, , randall.milne@wrc.govt.nz  
 Mr R MILNE, , , ENVIRONMENT CANTERBURY, P O BOX 7, AMBERLEY, 03-314-9038, , 4, laurence.smith@ecan.govt.nz  
 Mr R VAN ZOELLEN, 78 WENSLEY RD, RICHMOND, NELSON, TASMAN DISTRICT COUNCIL, PRIVATE BAG 4, RICHMOND, 03-544-8176, 03-544-7249, , 4, info@tdc.govt.nz  
 Mr G STRICKETT, 8 BROADSEA AVE, RUBY BAY NAPUA, NELSON, TASMAN DISTRICT COUNCIL, PRIVATE BAG 4, RICHMOND, 03-540-2150, 03-540-2150, 025-965-116, , 4, gl.hpc.strickett@xta.co.nz  
 Mr B MCCAW, 11 BAY VIEW PLACE, CASS BAY, , ENVIRONMENT CANTERBURY, P O BOX 345, CHRISTCHURCH, 03-328-9958, 03-365-3194, , 4, rob.mccaw@ecan.govt.nz  
 Ms J CROOKS, , , ENVIRONMENT CANTERBURY, 38 HALL ST, CHEVOT, 03-319-8891, , 4, jan.crooks@ecan.govt.nz  
 Mr N CRUMP, CAVERHILL RD, CHEVOT, , ENVIRONMENT CANTERBURY, 38 HALL ST, CHEVOT, 03-319-8891, , 4, noel.crump@ecan.govt.nz nikava@xta.co.nz  
 Mr T CHARLES, KARETU DOWNS, R D 1, HAWARDEN, ENVIRONMENT CANTERBURY, P O BOX 7, AMBERLEY, 03-314-8014, 03-314-9038, , terry.charles@ecan.govt.nz  
 Mr J THACKER, 11 A WESTON RD, ST ALBANS, CHRISTCHURCH, ENVIRONMENT CANTERBURY, P O BOX 345, CHRISTCHURCH, 03-365-3828, 03-365-3194, , 4, john.thacker@ecan.govt.nz  
 Mr S BROWN, 19 SPRINGFIELDS RD, ST ALBANS, CHRISTCHURCH, ENVIRONMENT CANTERBURY, P O BOX 345, CHRISTCHURCH, 03-365-3828, 03-085-3194, , 4, stephan.brown@ecan.govt.nz  
 Mr A JOHNSON, 6 TEMPLE VIEW, RENWICK, , MARLBOROUGH DISTRICT COUNCIL, , 03-578-5249, 03-578-8886, , 4, ajo@marborough.govt.nz  
 Mr R TOFT, , , LANDCARE RESEARCH NZ LTD, PRIVATE BAG 6, NELSON, 03-545-7714, 03-546-6590, , 4, john@landcare.cri.nz  
 Mr D REES, GUBBS VALLEY, R D 1, WAKEFIELD, DEPT OF CONSERVATION, PRIVATE BAG, NELSON, 03-528-9117, 03-528-6751, , 4, drees@doc.govt.nz  
 Ms M NEWFIELD, 2352 HARDY ST, NELSON, , DEPT OF CONSERVATION, PRIVATE BAG, NELSON, 03-546-9335, 03-548-2805, , 4, mnewfield@doc.govt.nz  
 Dr MIKE TAYLOR, , , CAWTHRON INSTITUTE, 98 HALIFAX ST EAST, NELSON, 03-548-2319, 03-546-9464, , michael@cawthron.org.nz  
 Mr TIM DODGSHUN, , , CAWTHRON INSTITUTE, 98 HALIFAX ST EAST, NELSON, 03-548-2319, 03-546-9464, , timd@cawthron.org.nz  
 Mr ERROL BARNES, P O BOX 57, DARFIELD, , ENVIRONMENT CANTERBURY, , 03-365-3828, , 03-365-3194, , errol.barnes@ecan.govt.nz  
 Mr L SMITH, , , LANDCARE RESEARCH, P O BOX 69, LINCOLN, 03-325-6700, 03-325-2418, , 4, SmithL@landcare.cri.nz  
 Mr H GOURLAY, 7 MALET PLACE, HALSWELL, CHRISTCHURCH, LANDCARE RESEARCH, P O BOX 69, LINCOLN, 03-325-6700, 03-325-2418, , 4, GourlayH@landcare.cri.nz  
 Mr P RUSSELL, P O BOX 149, WESTPORT, , NATIVE FOREST ACTION, P O BOX 836, NELSON, 03-545-6040, , 4, philipsc@agresearch.cri.nz  
 Mr B MUDIMAN, 79 THE RIDGEWAY, STOKE, NELSON, NELSON CITY COUNCIL, P O BOX 645, NELSON, 03-546-0360, 03-546-0239, , 4, philipsc@agresearch.cri.nz  
 Ms L HAYES, , , LANDCARE RESEARCH, P O BOX 69, LINCOLN, 03-325-6700, 03-325-2418, , 4, HayesL@landcare.cri.nz  
 Ms P SYRETT, , , LANDCARE RESEARCH, P O BOX 69, LINCOLN, 03-325-6700, 03-325-2418, , 4, SyrettP@landcare.cri.nz  
 Dr R HILL, , , CROP AND FOOD RESEARCH, PRIVATE BAG 4704, CHRISTCHURCH, 03-325-6400, 03-325-2074, , 4, hillr@crop.cri.nz  
 Dr O SUTHERLAND, , , LANDCARE RESEARCH, P O BOX 69, LINCOLN, 03-325-6700, 03-325-2418, , 4, SutherlandO@landcare.cri.nz  
 Dr M PARSONS, 242A MAIN ROAD, MONCKS BAY, CHRISTCHURCH, , 03-384-9998, 03-384-6896, , 4, Parsons.whitau@ymx.co.nz  
 Mr A BANKS, "WILLOW LODGE", BUTCHERS RD R D 2, KAIPOI, , , 03-327-8952, 03-327-8956, , 4, tonybanks@xta.co.nz  
 Mr L GRUBER, 157 THORP ST, MOTUEKA, , TASMAN DISTRICT COUNCIL, PRIVATE BAG 4, RICHMOND, 03-544-8176, 03-544-7249, , 4, info@tdc.govt.nz  
 Mr T BROUGHTON, 3 SHERE ST, PLEASANT POINT, SOUTH CANTERBURY, ENVIRONMENT CANTERBURY, P O BOX 350, TIMARU, 03-688-9069, 03-688-9067, , 4, terry.broughton@ecan.govt.nz  
 Ms K FORD, 168 SOUTHAMPTON ST, SYDENHAM, CHRISTCHURCH, LANDCARE RESEARCH, P O BOX 69, LINCOLN, 03-325-6700, 03-325-2418, , 4, FordK@landcare.cri.nz  
 Mr T JESSER, "GREENPARK", R D 4, CHRISTCHURCH, , , , 4, ,  
 Mr P CROTTY, 2 RAYNER ST, TEMUKA, , ENVIRONMENT CANTERBURY, P O BOX 550, TIMARU, 03-688-9069, 03-688-9067, , 4, phil.croty@ecan.govt.nz  
 Mr J LEEUWERIK, 15 A COLLINGWOOD PL, RANGIORA, , ENVIRONMENT CANTERBURY, P O BOX 7, AMBERLEY, 03-314-8014, 03-314-9038, , 4, john.leeuwerik@ecan.govt.nz  
 Mr D BROWN, 128A MILLER RD, BLENHEIM, , , , , 4, ,  
 Mr FRIZZELL, 5 MONTROSE AVE, CULVERDEN, , , , , 4, ,  
 Mr A HEALY, 98 RATTRAY ST, RICCARTON, CHRISTCHURCH, , , , , 4, , HBrailthwaite@doc.govt.nz  
 Ms H BRAITHWAITE, 11 BAY VIEW PLACE, CASS BAY, , , , 03-328-9958, , , 4, ,  
 Mr D GORDON, ROXBURGH EAST, R D ROXBURGH, , , , 03-446-6268, , 5, ,  
 Mr D JOUBERT, 2 McMEAKIN RD, ABBOTSFORD, DUNEDIN, , , , 03-468-4575, , 5, joubert@esurf.co.nz  
 Mr R LORD, 208 ELGIN RD, MORNINGTON, DUNEDIN, OTAGO REGIONAL COUNCIL, PRIVATE BAG, DUNEDIN, 03-474-0627, 03-479-0015, , 5, richard@orc.govt.nz  
 Ms S PETERSON, 215 DRYSDALE RD, R D 2, INVERCARGILL, , , 03-218-7259, 03-218-9460, , 5, ,  
 Mr F ROSIE, 20 LEWIN ST, BALCLUTHA, , OTAGO REGIONAL COUNCIL, , 03-418-2031, 03-418-2403, , 5, frankr@orc.govt.nz  
 Mr C MURRAY, 80 WILSON ROAD, BALCLUTHA, , , , 03-418-0708, , 5, ,  
 Mr P AYSON, 39 MARY ST, OTAUTAU, SOUTHLAND, ENVIRONMENT SOUTHLAND, 176 MAIN ST, OTAUTAU, 03-225-8069, 03-225-8667, , 5, ,  
 Mr M TURNER, 23 ORCHARD RD, CLYDE, CENTRAL OTAGO, , , , 03-449-2533, , 5, ,  
 Mr K CROTHERS, 185 WILTON ST, INVERCARGILL, , ENVIRONMENT SOUTHLAND, PRIVATE BAG 90 116, INVERCARGILL, 03-215-6197, 03-215-8081, 025-343-842, 5, keith.crothers@envirosouth.govt.nz  
 Mr R BOWMAN, , , ENVIRONMENT SOUTHLAND, PRIVATE BAG 90 116, INVERCARGILL, 03-215-6197, 03-214-4486, , , richard.bowman@envirosouth.govt.nz  
 Mr M NIEUWENHUYSE, , , DEPT OF CONSERVATION, P O BOX 743, INVERCARGILL, 03-214-4589, 03-214-4486, , , mnieuwenhuyse@doc.govt.nz