



The Four Sisters in the Waipoua Forest. Photo: Bert Bourgeois

**PASS IT ON.** Please spread the word by sending this newsletter through your networks via email or print off hardcopies to pass on to those you meet.

Are you new to *KauriKonnnect*? Go to [www.kauridieback.co.nz](http://www.kauridieback.co.nz) and put in your details at the bottom of the page – you'll never miss a copy again!

# KauriKonnnect

## Kauri dieback: can we fix it?

**ONE OF THE FIRST QUESTIONS** people ask about kauri dieback is whether it's likely that one day there will be a cure. It's an obvious question, but a good one. And it's natural to want the answer to be yes.

For now at least the answer's not the one that any of us want to hear (you can read more about that on page 3).

But the good news is that kauri can and will be saved, by the ongoing dedication – amongst all those who live, work, and play amongst kauri – to stop kauri dieback. There's plenty of evidence of that in this edition of *KauriKonnnect*: in the fantastic work of conservation groups such as Landcare Northland and the Chinese Conservation Education Trust; iwi, such as Te Rarawa and Te Roroa (page 5); and – yes – scientists (page 8). And then there're the people such as those who supported the effort to stop kauri dieback during Conservation Week (page 10). Humans might be the number one way in which the disease is spread, but clearly they will also be pivotal to the species' survival.

The crowds of people who took part in the inaugural Great Westie Walk from the Arataki Visitors' Centre in the Waitakere Ranges during Conservation Week weren't all Westies. Many were visiting from overseas. But without exception all of them were more than happy to take the time to ensure they weren't carrying any soil in or out of the bush that day. And the enthusiasm with which the children cleaned off every last pinhead of soil was heartening. That's a great thing, because the fight to save kauri from dieback will continue far into the foreseeable future; the need to automatically clean gear of soil will be just as important when those children are 60 as it is now.

Sometimes we might see people who don't show the sort of commitment that's needed, either through their actions or their words. But I strongly believe that it doesn't take much to make everyone part of the solution. After all, how could anyone deny that the functional extinction of kauri would be a terrible loss? How could anyone argue that cleaning gear and staying on the track are too arduous, given what's at stake?



These days, if someone fails to take the right actions to stop the spread of kauri dieback, it's unlikely to be because they have never heard of the issue. Instead, it's probably simply because they are misinformed. For example, because they never go near any symptomatic trees, they might think they are not going near the disease, and so they needn't clean their gear (the pathogen can be present in the ground or in a tree for a long time before it manifests itself). They might think the disease is spread by birds like kiwi, and so any efforts of theirs to stop the disease won't make a difference (as I've already said, humans are the number one way in which the disease is spread – it's most commonly found beside walking tracks). Or they might think that because their shoes have been sitting in a cupboard for ages, they don't need to clean "this time" (in its dormant state, the pathogen can survive for at least six years). Or possibly they might see people not bothering to clean their gear, and so think "if they're not, why should I?"

It's because of that last response that it's so important that we all make sure we're seen doing the right thing. Not just at the edge of a forest, but inside the forest, when going near kauri on private land, and – not forgetting it's almost 2017 – amongst our networks on social media.

Also, I implore you, as a reader of *KauriKonnnect*, to politely and constructively let others know if they aren't doing the right thing by kauri, or if they are labouring under one of the myths that exist out there (there's a **mythbusters document** here on the Kauri Dieback Programme website that addresses most of these).

That way, you – along with government, tāngata whenua, industry, and landowners – will most definitely be able to "fix it," and keep kauri standing.

Ngā mihi

Mike Slater

Chairperson

Kauri Dieback Programme Governance Board



### Staying in the kauri loop

Interested in getting the latest research news, great kauri photos, and updates on the fight against kauri dieback?

Just go to the **Kauri Dieback Programme's Facebook** page, "like" it, and you'll start enjoying updates on these topics and others, via your Facebook news feed.



# When will there be a cure for kauri dieback?

**Kauri dieback kills most if not all the trees it infects, making it a serious and current threat to the species' functional survival. But given that there is a huge amount of research going into the disease and its spread, isn't it just a matter of time before a cure for the disease is found?**

Unfortunately there's nothing the scientists are aware of which might allow them to ever say "yes." Of all the research done in New Zealand and overseas to find a cure for other, related pathogens, no cure has yet been found – so there are few leads to follow in the search for a possible cure for kauri dieback. Research is being done to find ways to slow the spread of the disease and to minimise its impacts on kauri; such as treatments to improve kauri health, searching for some possible genetic resistance to the disease, and exploring alternative control measures. But as for something that would eradicate the disease... as they said in the Sopranos, "forget about it!"

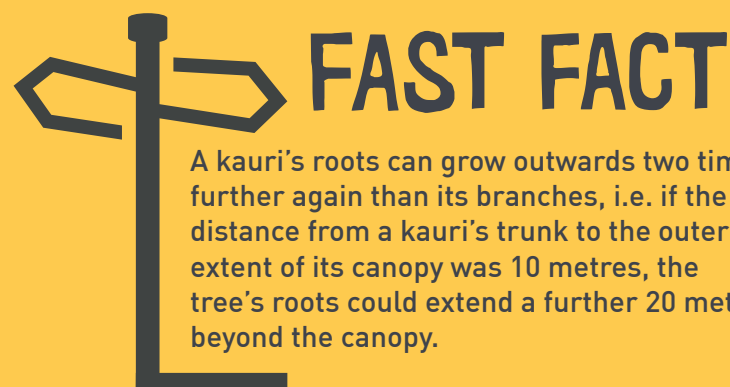
Even if there was something – a chemical, bio-control agent, or traditional remedy – that only needed to be applied occasionally, which killed the pathogen, or somehow stopped the fungus from killing the tissues of the trees' roots, such a "cure" would have to be deliverable, regardless of whether an infected tree was in the middle of a mountain range on the Coromandel, on a ridgeline in the Waipoua Forest, or deep in a valley on Great Barrier Island/Aotea.

It might be that it could be applied from the air, but then there would be challenges in ensuring the material made it down below the trees' canopies. And once on the ground, it couldn't affect any of the other organisms that live in the soil, and which have a positive if not vital role to play in the ecosystem. Obviously it couldn't affect the birds, insects, and other trees either. In other words, there would be a raft of potential fishhooks in the potential use of such an agent – again, if one existed.

You may have heard that scientists have been trialling the injection of the chemical phosphite into the trunks

of infected kauri (phosphite is already used to treat avocado trees infected with a different *Phytophthora* to the one that infects kauri). The trials have shown some potential in using phosphite against kauri dieback, but the chemical will only ever slow the spread of infection within a tree. Phosphite doesn't control the disease directly, but it will boost a tree's immune system, helping it tolerate the disease. The phosphite needs to be injected at regular intervals in multiple spots on the trunk – making it impractical and very costly as a potential treatment for whole forests.

If something is ever revealed as a cure that offered a practical, non-toxic, and pathogen-specific means to combat the disease, it will likely be put to good use. But for the foreseeable future, the only 'cure' is people like you continuing to clean your gear before entering and after leaving native forests, and by staying off kauri roots. The onus is on all of us – forest users, land owners, employees, iwi, and government – to make sure kauri are kept standing.



A kauri's roots can grow outwards two times further again than its branches, i.e. if the distance from a kauri's trunk to the outer extent of its canopy was 10 metres, the tree's roots could extend a further 20 metres beyond the canopy.



**A kauri's roots can grow outwards 3x as far as its branches. To avoid damaging these roots, DO NOT GO onto the root zone.**



# DIEBACK NEVER SLEEPS...

Kauri dieback has recently been detected in several new areas, including on private land near the Kaipara Harbour; at Ruawai, Tinopai, and at Kaiwaka (at two sites). Earlier this year it was also detected for the first time near the Warawara Forest (in the far north).

Remember that you can never assume a particular area is free of the disease. The pathogen that causes kauri dieback can “hibernate” in the ground for several years. And a kauri tree can be infected for a long time before it shows any signs of that infection. That said, the vast bulk of the land that sustains native forest is judged to be free of the disease. So it's just as important to make sure you're not introducing the disease into an area where it isn't – by cleaning your gear on arrival – as it is to make sure you're not spreading the disease further – by cleaning your gear as you leave an area with kauri.

## **Kauri dieback from above**

Fortunately, there are still plenty of areas where kauri dieback has not been detected (although all kauri should be treated as though they are infected).

In the areas where the disease has been detected for some time, the impact's obvious – especially from the air. Earlier this year the Kauri Dieback team hired a drone operator to take video and still images of dead and dying kauri in the Waipoua Forest in the far north.

Not all the individual trees have been tested for the pathogen that causes dieback, but they are all from areas where the pathogen has been detected – so are highly likely to have been killed by the disease.

All photos by Toby Ricketts.





# Tindall and Aotearoa Foundation grants: helping the community save kauri

**Thanks to \$60,000 worth of funding from The Tindall and The Aotearoa Foundations, four community groups were contracted in the last financial year to broaden the kauri dieback advocacy work they were already doing.**

This funding came on top of another \$100,000 granted to share the costs with landowners of protecting kauri on their properties.

At the time the grant was made, Sir Stephen Tindall, whose family created the Tindall Foundation, said: "Kauri are a national treasure and an iconic part of our landscape. Unless we take urgent action to stop the spread of this deadly disease, kauri trees could be completely wiped out.

"We are very pleased to support this initiative and in particular to work in partnership with the Aotearoa Foundation and the Government to help protect and preserve kauri for future generations."

The four community groups were chosen in part

because they were all already doing work to help stop the spread of kauri dieback.

- » **The Chinese Conservation Education Trust** worked with visitors from China and Chinese New Zealanders to support them in cleaning their footwear and equipment before and after visiting areas with kauri. The groups engaged people by running bus tours, having stands at community events, and making appearances in Chinese-language media. Trust members spoke face to face with 940 people about the public's role in helping stop the spread of kauri dieback.
- » **The Landcare Trust** works with farmers, landowners and community groups to improve sustainability across New Zealand. The Trust's Northland division used its grant to get kauri dieback protocols incorporated into its pest control guidelines and contracts, and into the workshops it runs (such as its kiwi aversion training courses for dogs).
- » **The Queen Elizabeth II National Trust** also

received a small grant, as well as training from Programme staff, to support it in educating the owners of covenanted land on protecting their properties from kauri dieback. This work took place in Northwest Auckland, and in the Far North, Kaipara and Whangārei districts.

- » **Te Runanga O Te Rarawa**, whose rohe takes in the Warawara Forest in the Far North, was supported in its work talking to trappers, hunters, school children, and local farmers, in hui, at A and P shows, and at community events, about how they can be a part of keeping kauri standing.

Both The Aotearoa and The Tindall Foundations have committed to the same level of funding for the 16/17 and 17/18 financial years; their total contribution will be \$480,000 towards helping save kauri. The Kauri Dieback Programme, landowners and the community groups supported so far thank the Foundations for their amazing generosity! Already, it's made a huge difference in the fight to save kauri.



Photo: Chinese Conservation Education Trust.



Photo: Te Runanga O Te Rarawa.



# Fighting *Phytophthora* in the big country

The pathogen that causes kauri dieback – *Phytophthora agathidicida* – is one of more than 80 *Phytophthora* species found around the world. A number of these cause dieback amongst indigenous species, including in Australia, where they have been struggling to manage *Phytophthora cinnamomi* for several decades (*P. cinnamomi* is also in New Zealand, but probably because of the different conditions here, it does not cause the same issues as it does in Australia).

Back in July, two staff from the Kauri Dieback Programme – Kim Brown and Travis Ashcroft – travelled to Perth to learn how *P. cinnamomi* is managed in Western Australia. During the trip they met key members of the government-run Dieback Working Group; learnt about the Dieback Group's operations and research programmes; and found out about how industry in Western Australia is meeting its dieback responsibilities.

Dieback caused by *P. cinnamomi* affects 40 per cent of the native plant species and half of the endangered species in the south-west of Western Australia, with more than one million hectares infected so far. Because the disease kills such a wide range of bush species, it's not just having a marked impact on the area's forest, but on the animals inside them too. It's believed the disease first arrived in Australia in the soil in which European settler's favourite plant species were carried. Travis describes the effects of dieback in Western Australia as shocking; the bush ahead of a "dieback front" will look healthy, whereas behind the invisible line the sight is akin to that seen after a bush fire.



Areas of Western Australian bush both with dieback (left) and without dieback (right).



Kim and Travis say some of the highlights of their week included visiting a composting facility where compost was being heat-treated to destroy dieback spores; seeing how lime was being used as a substrate beneath tracks and cleaning stations (the alkalinity of lime does not allow *P. cinnamomi* to survive); a trailer-mounted wash-down station designed to be used to spray-clean trucks; and a visit to look at how dieback guidelines have been implemented by one of the largest wholesale nursery suppliers in Australia.

Kim Brown says that the trip was of particular benefit because of how long dieback has been a problem in Australia. "They've been dealing with dieback in Australia for years. As a result they have – amongst other things – a standardised training course for those people working in and around kauri. With the benefit of the advice received from the Australians, we will be devising a course for kauri dieback in the near future," Kim says.



A track with a lime substrate.



A mobile vehicle wash station.

» Now that summer's upon us, most of us will be getting into the outdoors even more than before. Remember that kauri dieback doesn't need mud to be spread... a pinhead of dry soil is just as capable of spreading the disease as a speck of mud.







# Science programme for this year

The Kauri Dieback Programme's science and research work for the financial year (beginning July) is now of course well underway. Some of the highlights of this year's work include the following.

---

## Prioritisation and Intervention Framework

The development of a tool to aid in deciding which factors need to be considered when prioritising areas for management, and determining which actions should be taken.

---

## Kauri Mapping Project

This is being done to establish a GIS database recording where the natural stands of kauri are located, as well as information on their abundance, composition and maturity, and the extent of anthropogenic disturbance (such as kauri planting, logging and clearance) This tool will be valuable to use in assessing the risk of the disease spreading.

---

## Iconic Tree Project

This involves creating the definitions for and a list of iconic trees, to make sure they get the extra protection they need.

---

## Rongoā (Traditional Māori Medicines)

This project is about establishing which traditional medicines may be useful as a treatment for individual kauri trees or kauri forests.



Photo: Bert Bourgeois

---

## Cultural Health Indicators

Determining which cultural health indicators can provide a measure of kauri forest health – for instance, tree foliage, reptiles, forest floor plant health, birdlife.

---

## Historical Pathways Project

Assessing what influence, if any, historic kauri nurseries, plantations and harvesting practices, as well as exotic forestry management, has had on the spread of kauri dieback.

---

## Possible treatments

This is aimed at determining (through lab trials) the effectiveness of ten commercially available agri-products to inhibit the growth and effects of the pathogen that causes kauri dieback. None of these are considered a possible cure for kauri dieback.

---

## Genetic Research – Healthy Trees Healthy Future

“Healthy Trees Healthy Future” is a six-year research programme aimed at finding management tools for three different *Phytophthora* that affect kauri, apples and commercial pine species. A major focus of the programme is on discovering whether kauri have any genetic resistance to the pathogen that causes kauri dieback.



---

### Origins of the disease

This is being done to find out where in the world the pathogen may have come from, if it did not originate in New Zealand (previous research has indicated that *Phytophthora agathidicida* may have originated from overseas). Soil samples have been taken from beneath trees in New Caledonia which are related to kauri, and which show similar symptoms to kauri dieback.

---

### Aerial disease surveillance

Establishing where the disease is and isn't will always be a priority for the Kauri Dieback Programme. Surveillance flights will be made over the Waipoua Forest and the Coromandel.

---

### Ground-truthing

Sightings of possibly symptomatic trees are continually being followed up with soil sampling. Samples are taken at eight points around a tree, before analysis is done by independent labs.



Photo: Waikato Regional Council



Photo: Zoe Lyle

---

### Remote sensing project

This is aimed at developing a method to identify kauri trees, and establishing whether they may be infected or not, by using special sensors on fixed-wing aircraft.

---

### Phosphite Projects

The chemical phosphite is used overseas and in New Zealand to slow the spread of different *Phytophthora* on a wide range of plant species, and to reduce the impacts of the pathogen. It is not a cure.

A number of phosphite research projects are underway this year.

#### Toxicity and impact:

- » This is being done to assess whether a number of environmental factors can influence the uptake of phosphite after it is injected into a tree's trunk, as well as any negative effects the injections might have on the tree. Tests are also going on to determine when a tree might benefit from another round of treatment.

#### Trunk sprays:

- » This is being done to determine whether phosphite can be applied as trunk spray, rather than as an injection.

#### Phosphite barriers:

- » A feasibility study to determine what is required to undertake research into the possibility of using phosphite as a barrier treatment to contain the disease in an infected area and to prevent the disease from spreading to healthy trees.

#### Phosphite injections of large and juvenile trees:

- » To test the effectiveness of phosphite via injections into the trunks of kauri trees.



# The Great Westie Walk

The inaugural Great Westie Walk was held at the Arataki Visitors' Centre in the Waitakere Ranges during September's Conservation Week.

Walkers received personalised kauri dieback cleaning advice, home-baked scones, information from expert guides, and the chance to have their photo taken with our very own walking kauri. All photos by Jeremy Bright.



Kate Hatfield and Rose Sailor [2] taking in one of the many species to be seen on the Nature Trail at the Arataki Visitors' Centre.



DOC and Auckland Council staff pose with James, the Programme's walking kauri.



A Programme staff member answering questions on how walkers can help stop the spread of kauri dieback.

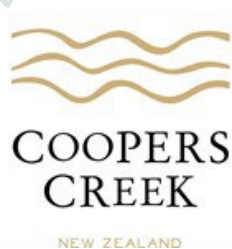


# The Kauri Dieback Programme thanks the following partners for their support

If you'd like to help spread the word about kauri dieback to your customers, staff and networks then please contact Ian Mitchell on **029 894 0773** or email **[imitchell@doc.govt.nz](mailto:imitchell@doc.govt.nz)**.

## Coopers Creek

Coopers Creek 'Lone Kauri' brand is an iconic Kiwi wine that has lent its support to the Kauri Dieback Programme. In an innovative messaging alliance, every Lone Kauri bottle helps raise awareness of kauri dieback and what we can all do to stop its spread. They are distributed throughout the Upper North Island and into Asian markets. We feature on their website and Facebook pages and promotional material at tastings, events and point of sale is also helping to spread the word. Cheers Coopers Creek!



## Soar Print

As an environmentally sustainable printer, Soar Print are putting their money where their mouth is by providing a generous printing sponsorship to the Kauri Dieback Programme. We're proud to join their portfolio of community programmes which help good things happen.



## Bivouac

Thanks Bivouac for getting the kauri dieback message to all your intrepid outdoorsy customers on your Facebook page. We really appreciate you letting us use your communication channels to raise awareness and encourage kauri-safe behaviours in the forest.



**SHARE THE NEWS.** Got a story to share on kauri dieback? Spread the word in *KauriKconnect*.

Contact **[jay.harkness@mpi.govt.nz](mailto:jay.harkness@mpi.govt.nz)** to pass on any news, updates or articles and photos.

If we all contribute we'll make this newsletter even more relevant and interesting!





# Kauri dieback is killing our forests



It can be spread  
with just a  
pinhead of soil.

[WWW.KAURIDIEBACK.CO.NZ](http://WWW.KAURIDIEBACK.CO.NZ)

TĀNGATA WHENUA | MINISTRY FOR PRIMARY INDUSTRIES | DEPARTMENT OF  
CONSERVATION | NORTHLAND REGIONAL COUNCIL | AUCKLAND COUNCIL  
WAIKATO REGIONAL COUNCIL | BAY OF PLENTY REGIONAL COUNCIL



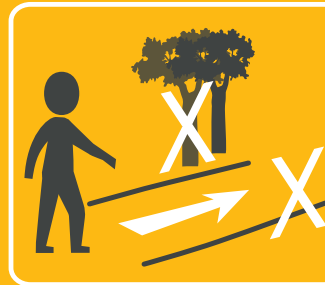
**KEEP KAURI STANDING**  
STOP KAURI DIEBACK DISEASE SPREADING KIA TOITU HE KAURI



**1 Clean ALL soil off your  
footwear and other gear  
EVERY TIME you ENTER or  
LEAVE a forest.**



**2 Use disinfectant only  
after you have removed  
all soil.**



**Stay on track and off  
kauri roots.**