



Kaitiaki Connecting

Ancient solutions to a modern problem?

Could mātauranga Māori (Māori ancient and modern knowledge and knowledge systems) hold a key to understanding, managing, or responding to PTA?

That's a question tāngata whenua asked when first learning of the disease and, earlier this year, Tāngata Whenua Roopū (TWR) members commissioned an initial study into cultural health indicators of kauri ecosystems.

The first phase of the project was a review of what is known about cultural indicators for kauri. Tui Shortland of Repo Consultancy, who completed the first phase, observed that, "Rather than focusing only on the kauri tree itself, initial research and interviews with kaumātua confirms our understanding of an holistic approach to considering kauri ecosystems. Kaitiaki who spend time in kauri forests are aware of many characteristics of a healthy forest. There is no "one size fits all" group of indicators as different hapū have their own unique relationship with different kauri ecosystems, however, the possibility of a consistent monitoring methodology can be tested in the next stage."

TWR Chair, Hori Parata said, "We are considering, through the cultural health indicators work, whether the absence of any indicators of a healthy forest is linked to the presence of PTA."

The next phase will be to develop the cultural health indicators framework further, develop and confirm

potential indicators and measures, and then test the indicators and measures. This work will integrate with other surveillance and monitoring work.

"It may be that there is something about a healthy kauri ecosystem that contributes to a tree's ability to avoid or survive a PTA attack. This links closely to our understanding of some of the ecological and ecosystem research that is underway," said Mr Parata. "We are looking forward to discussing this work further when we meet with kaumātua at our Kāhui Kaumātua wānanga in early February at Motatau Marae."

Anyone wanting more information about the Kāhui Kaumātua wānanga can contact the TWR secretariat, Tipene Wilson on 021 476645 or tipene@maximize.co.nz.



Newsflash¹

» A trial run of promotional pens is being produced for summer. They incorporate the logo and a shorthand version of the most important behaviour we need to encourage – **remove all soil (from footwear and equipment) before AND after forest visits.**

» Remember **informational brochures**, bumper stickers, posters and other items are available from E&BC members Stacey Hill (AC), Waitangi Wood (TWR), Ian Mitchell (Relationship Manager), Gina Williams (DOC Whangarei), Katherine Mabbitt (NRC), Stephen Ward (Waikato Regional Council) and Yvonne Rooney (BoP Regional Council).

» Auckland Council will be having **Kauri Ambassadors** on their walking trails over summer. Face-to-face interaction with forest visitors, especially in and around cleaning stations, will help spread the word.

Old trees, Young talent

We are surrounded by kauri that are hundreds of years old.

We are also surrounded by colleagues and kaumātua that, through their passage of time, have accrued wisdom that comes with grey hair (or no hair for that matter!)

But there is re-invigoration all around us.

For kauri it is the rickers – the young saplings.

For us it is our rangatahi youth – especially our emerging scientists.

Alvina Pau'uvale is one such scientist. She has been creating quite a stir lately and all because of her passion for kauri.

The 18-year-old Tamaki College student has won the 2011 Auckland Science and Technology Fair, been selected for The Royal Society of New Zealand/Genesis Energy school science and technology "Realise the Dream" competition, and been awarded a First Foundation scholarship which pairs students

with mentors and helps transition students from secondary school to tertiary study by providing financial support and work experience.

She started researching kauri dieback disease two years ago and this has built to become her award-winning work. Alvina was given the opportunity to undertake this research through a scholarship into the Liggins Education Network for Science (LENScience) Junior Scientist programme which has provided her with a structured learning environment to develop her research skills. LENSscience Director Jacqui Bay, says

that "Alvina's personal determination to achieve has been a key factor in her development as a young researcher." It's also led to working with our own Stan Bellgard at Landcare Research every Thursday as part of her studies. She's been helping provide scientific evidence about the spread of the disease from soil movement. Alvina is hoping the practical work will help her when she starts her science degree next year. We wish her all the best – may she become a kauri giant in the forest of science.

Left: East and Bays Courier
<http://eastandbayscourier.realviewdigital.com/?iid=54960>

Right: The Aucklander
<http://www.theaucklander.co.nz/news/kauri-dieback-science/1176747/>

Alvina gets to root of kauri disease

A schoolgirl scientist finds a way to save dying kauri — and officials are taking note, writes Andre Hueber.

WHILE watching the news, Alvina Pau'uvale had a brainwave that would lead to an award-winning science project — and may save our most precious trees. The report said a disease was killing kauri in the Waitakere Ranges. Tamaki College's head girl looked at how the problem was being contained and found room for improvement.

Auckland Council agrees. It's looking at closing walking tracks in winter, installing more raised wooden paths and installing some tracks in the ranges from October to December 12.

Alvina, 18, won first prize at the 2011 Auckland Science and Technology Fair. She is one of four Aucklanders chosen for Genesis Energy's Realise the Dream for Science school science and technology competition — a quest to find the country's best high school scientists.

"I found research that had already been done and started thinking about how PTA [the killer fungus attacking the trees] was spread and whether humans were transmitting it."

Alvina explains that PTA — Phytophthora taxon Agathis — was dominant from 1974 until it began causing kauri dieback in 2006.

"I wanted to find out if the dieback-



test spray the council were using killed the other specimens as well. It does suppress them, but it could clump up in soil, so more tests need to be done to see how effective it is in the forest."

The Glen Innes teenager collected soil samples from shoe-walking tracks, hiker's boots and from a damaged tree, then sent them with help from plant pathologist Dr Stanley Bellgard of Landcare Research. The results showed a range of Phytophthora.

Dr Bellgard says Alvina's study showed the first definitive link between Phytophthora pathogens on the track and those in the grass. She also showed

footwear could transport Phytophthora species from the dirt track. "If you don't drop dirt from your shoes into the hygiene stations, you'll risk putting it on the floor of your car, drive home and put it in your garden... it could be taken anywhere."

Dr Bellgard saw that first hand. While the team was washing their shoes, several people walked past without doing so. "The possibility exists that these people have carried the disease on their unwashed footwear," he says.

Auckland Council biosecurity manager Jack Caw says Alvina's study is important. "It is likely to impact on future track



Saving the forest: Tamaki College student Alvina Pau'uvale has spent the past two years researching a disease that kills kauri trees. Photo: JASON OXENHAM

Alvina's a tree doctor

She won the 2011 Auckland Science and Technology Fair and has been identified as one of the country's top young scientists.

Most importantly the Tamaki College student's research is helping to save the kauri tree.

For the past two years Alvina Pau'uvale, 18, has been studying the spread of Phytophthora taxon Agathis — a disease that is slowly killing kauri.

Her research not only won the science fair but got her selected for the Royal Society of New Zealand's Realise the Dream competition in December.

She will tear some of the North Island's forest most developmental and research centres before an awards ceremony in Wellington.

Alvina has been working with Landcare scientists as part of the

Junior Science Mentoring Programme run by the Liggins Institute. The year 13 student spends every Thursday working on her project in the lab at Landcare Research.

She says juggling school, her duties as head girl, her research and other extra-curricular activities is difficult but she wouldn't have it any other way.

"It's been fun working here," she says. The Glen Innes resident wanted to find out if the disease could be transported by people.

She found the organism in soil stuck to the bottom of a shoe after walking through a part of the Waitakere Ranges known to have contaminated trees. Her experiment is the first to prove that people may be contributing to the spread of the disease.

Landcare scientist Stanley Bellgard says Alvina's research is incredibly helpful. "Auckland Council needed this sort of scientific evidence," he says.

Mr Bellgard says Alvina may also have found a new type of the disease. "There's a chance that we've discovered something we have expected was here but have never found before," he says.

Alvina says the best thing about the research is that her findings are being used to save the kauri.

Knowledge of the lab techniques will be useful at university next year too. Alvina was also awarded a First Foundation scholarship last year. It is a four-year programme which pairs students with a mentor, helps them get paid work experience and financial support.

Community Konnects

Ian Mitchell, Kauri Dieback Programme's Relationship Manager, shares his perspective of recent work following on from the soil sampling led by the Planning and Intelligence team. The follow-up has brought together key stakeholders to manage sites that have tested positive for PTA (kauri dieback disease).

Risk assessments were recently undertaken at sites at Glenbervie, Omahuta and Punaruku.

The purpose of the risk assessment is to look closely at a kauri dieback positive site and work out ways to manage the site in order to minimise the risk of spreading the disease.

John Beachman has been leading the development of the risk assessment process on behalf of the Joint Agency. John comes from a background in the NZ Forest Service and Department of Conservation management and his institutional longevity is valuable to the process. My role is providing support in arranging the meetings and liaising between the parties. John comments, "If we can involve the right people resource in the process, we can gain valuable traction for the programme, reducing the risk of the spread of the disease. I have been very happy with the support provided by the stakeholders, the way everyone is engaging, and it looks like we can make a difference".

By getting key stakeholders who are committed to the future health of kauri populations, around the table at the same time, management and containment of the disease can take precedence at these known sites.

At **Glenbervie**, for example, representation was made by MAF, Department of Conservation scientists and managers, Northland Regional Council, private forest managers Rayonier/Matariki, and tāngata whenua representation from Ngāti Wai. The day consisted of a round table discussion of the history of the site, who the forest users are, a field visit to the sites in question, and a review of how forest users can be managed in order to contain the disease.

Glenbervie is mainly a large exotic forest plantation but contains pockets of planted kauri. Forest users include: the general public (including schools) who use an adventure/confidence course on site, mountain bike riders, trampers and walkers, pig hunters, private forest contractors, right down to an old couple who collect small amounts of kauri seed annually for a small conservation nursery. The Glenbervie site is relatively close to the Whangarei urban district and can attract large numbers of visitors at times (for example, a Fun Run is an annual local event that can attract up to 500 people or more at a time).

Management options discussed included tramping/ biking track closure and re-routing to avoid kauri trees (keeping people within the exotic forest), providing wash stations for forest users to undertake good hygiene practises such as washing their shoes, bike tyres and other gear going into and out of the forest, allowing only pig hunters who register with the private forest managers (who will get some information and training on the disease), and stopping or limiting kauri seed collection.



Joint agency discussion at Glenbervie.



Risk assessment process underway at Punaruku, Northland.

Each site has its own unique range of risk factors and stakeholders, and these issues need to be identified, assessed and managed. At **Omahuta**, for example, the risk assessment brought together private forest managers (Juken Nisso), Department of Conservation land managers and scientists, MAF, and local tāngata whenua from Rahiri marae, to a site that is currently managed by DOC. There is, what appears to be, a relatively small infected area at the edge of one of Northland's largest kauri forests where important conservation work is being undertaken. The danger of spreading the disease into the main forest, which is one of Northland's greatest taonga, is palpable.

Forest users around the site include Juken Nissho, who intends to harvest pines nearby sometime in the next 18 months, horse-back riders, summer campers and dry-stock beef in the farm adjacent to the site. Tāngata whenua still undertake traditional practises such as eeling in nearby streams and swamps.

Management options discussed included moving the forest-gate away from the infected site, up-grading the roading and water-tabling at the edge of the site and the road, discussion with the adjacent farmer to upgrade stock proof fencing and excluding or limiting summer camping on the site. Upgrading the fencing and signs in and around the Omahuta site is already being arranged.

At the infected site at **Punaruku**, access to the forest is much more limited (one of the main access points to the forest is through Māori land) and therefore working closely with tāngata whenua became an important



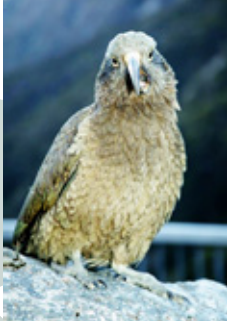
Inspecting infected tree at Punaruku (diagnosis doesn't look good). left to right: Clive Stone, kaitiaki, Ngāti Wai; Tony Beauchamp, Scientist, Department of Conservation; John Beachman, Manager, Department of Conservation; (obscured) Glen Coulston, Manager Biodiversity and experienced pig hunter.

factor, as with other sites in rural Northland. Future management options considered included providing 'hygiene kits' – a storage container with boot cleaning gear inside and good signs and information, creating board walks, encouraging people to stick to the tracks and discussing the issue with local people through local hui to ensure forest users such as local tour operators

and pig hunters are made aware.

The response has been very positive, the key stakeholders are engaging and resources are being made available from within the stakeholders own organisations, to make things happen.

Let's watch this space to see how things progress.



The KKK – Kakapo, kea and kauri

When DOC asked nearly 5000 people which species and places helped to define New Zealanders, their top picks came through loud and clear.

Kiwi, kakapo and kea were fly-away favourites. So too were the mighty kauri and New Zealand's favourite Christmas tree – the pohutukawa.

Naturally enough, our national bird the kiwi was by far the most popular choice. Other top choices included tui, tuatara, rimu and kowhai.

People's choices for the places they believe help define who we are as New Zealanders tended to be more scattered and very different in scale, ranging from the fairly specific, like a mountain peak, to whole regions. Favourites included Stewart Island, Cape Reinga, Rotorua, Fiordland, Aoraki/Mount Cook, and Milford Sound.

This is why we must all do what we can to stop the spread of kauri dieback. New Zealanders see kauri as being a huge part of who we are. Its taonga status derives from its mythical origins and present day importance to our bio-diversity, eco-tourism economics and our innate sense of what New Zealand and being a New Zealander is all about.

TOP 10 NATIVE PLANTS AND ANIMALS

Kiwi	66%
Tui	41%
Kakapo	38%
Pohutukawa	33%
Kea	31%
Kauri	31%
Tuatara	24%
Fantail	22%
Kowhai	19%
Rimu	16%

TOP 10 NEW ZEALAND'S SPECIAL PLACES

Stewart Island	20%
Fiordland	18%
Cape Reinga	17%
Aoraki/Mt Cook	14%
Rotorua	13%
Lake Taupo	12%
Milford	12%
Marlborough Sounds	12%
Southern Alps	9%
Mt Taranaki	9%

Mixed member first past the post

In a similar vein, the New Zealand Plant Conservation Network's (NZPCN) annual competition for 'New Zealand's favourite native plant' attracted thousands of votes.

With over 2350 species to choose from, New Zealanders picked kauri as the second favourite native plant this year.

It was a close race – with the bamboo rush eventually winning, providing awareness for this declining species and its shrinking wetland habitat. Apparently both kauri and bamboo rush received several hundred votes but the giant of the forest was pipped at the post with bamboo rush receiving about 10 percent more votes than kauri.

The top three plant species:

1. Bamboo Rush (*Sporadanthus ferrugineus*)
2. Kauri (*Agathis australis*)
3. NZ calceolaria (*Jovellana sinclairii*)



There were some great quotes left on the voting site:

"Like an old grandfather clock that in some odd way seems to be older than time itself the kauri is ancient and majestic" – Alistair

"Kauri is an extreme plant. It can grow extremely big, extremely old and is extremely beautiful. It also has extreme effects on its environment that allows a suite of allied and unusual species to grow with it" – Bruce

"The majestic presence of Tane Mahuta in the Waipoua Forest is an iconic image for Northland and NZ, standing for over 2000 years and watching over our growth. I like that kauri change over time, growing shoulder to shoulder with others for the first 20 years of its life, then begins to change and stand out from the crowd." – Sue

"Its majesty, its place in the forest community, its beauty and its mana make it stand head and shoulders above the rest (no pun intended!). Plus we need to amp up the PR around this tree to help save it from evil PTA!" – Rachel

The fight against kauri dieback was a common motive for voting for kauri. Many thanks to those who contributed to the voting!

For more information visit www.nzpcn.org.nz.

Healthy Hunua

With no large areas of kauri dieback disease detected from the recent aerial survey, the Hunua Ranges are currently a “healthy kauri area”.

As such, the Hunua region is one of the most important areas of kauri in the Auckland region. Ground teams will be sent in to follow up on the few areas of ill-thrift spotted by the helicopter in December.

Once this is complete, Auckland Council plans to launch a “Healthy Hunua” campaign and emphasise the need to clean gear before and after visiting tracks around kauri in the southern Auckland parks.

In the meantime, they are working to increase the awareness of the local community by increasing signage, attending community events and holding

community meetings. Roads leading into the Hunua parkland will soon have signs posted asking visitors to help keep the kauri healthy by using the cleaning stations. Notice boards in the surrounding community now all hold information and a mountain bike cleaning station is being developed on park. Staff will attend the Clevedon A&P show and a number of other events in the region to get the message out to locals.

Dr Nick Waipara (Biosecurity, Auckland Council) recently spoke to the Manurewa Forest & Bird club about this issue and was warmly received; further talks for other groups in the region are planned for the near future. The Hunua community and all visitors to the Hunua Ranges will play a vital role in helping to keep the Hunua’s Healthy.

Community backing track closures

In an associated move DOC is proposing closing the tracks in the Matakaitai Conservation Area in the Hunua Ranges to prevent the disease kauri dieback from spreading to the oldest and largest kauri forest in the Auckland region.

“Matakaitai reserve has 680 hectares of magnificent kauri forest that’s completely free of kauri dieback which can kill kauri of all ages,” says DOC’s Auckland Area Manager, Brett Butland.

“To stop this destructive disease from spreading to the healthy kauri in the Matakaitai forest we’re proposing closing the tracks in the reserve.”

“Matakaitai Reserve has a kauri that is more than 800 years old. We’re proposing closing the tracks in the reserve so no one infects this ancient tree without realising what they’ve done.”

“Kauri is an iconic tree for New Zealanders. It’s vital for its future that we keep this large stand of healthy kauri free of kauri dieback so we’re seeking support for our proposal to close the tracks in the reserve.”

Brett says, “We’re talking to trampers, local residents and iwi in the area about the proposal. The feedback has been very positive and sympathetic towards the proposed closure of the tracks. There’s strong



recognition of the need to protect the kauri in the reserve from being contaminated with kauri dieback”. Manukau Tramping Club president, Janet Gibson says the club agrees “one hundred percent” that the kauri in the Matakaitai Reserve must be protected from kauri dieback.

“I’ve seen trees infected with kauri dieback. We want to work with DOC to ensure that the kauri at Matakaitai is protected so that these wonderful trees are kept safe from the ravages of kauri dieback.

Soil sampling revisited

Ian Mitchell's update on risk assessment was accompanied by the following reminder of what's going on.

The first part in managing the disease is to positively identify it. The Kauri Dieback Programme has been developing protocols around sampling and transport of samples to labs, and lab processes to give us every chance of detecting it, if it is present at a site.

The program has undertaken "surveillance" (that is, sampling at a range of sites around the natural range of the kauri) to positively identify the presence of kauri dieback disease via soil and, in some cases, plant samples sent to the lab for testing. When a lab result comes back as negative, it is not a guarantee that the site is free of the disease, and further sampling may need to be undertaken.

The first round of test results have come back from the labs involved. Where the results are positive, those sites are now known as kauri dieback positive sites. Once the disease is positively identified at a

site the next step is to undertake a plan to stop it from spreading. The plan must consider the options to **Eliminate** or **Isolate** the disease or to **Mitigate** its spread.

To eliminate it from a site is potentially very difficult as it is a soil-borne disease and it could potentially be found at considerable depth in soil. The next two options then become more viable. Isolating a site could involve, for example, fencing with lots of signs.

Mitigation is about managing access in and out of the site and understanding the potential traffic through a site, whether human or animal and then understanding their movements.

Risks are assessed in terms of the type of traffic (human, stock, machinery), the volume of traffic, the potential quantities of soil moved in and around a site, seasonal variations in traffic flows and weather, etc.

Hence the development of a 'Risk Assessment' process.

Blast from the past

Reminders of previous articles and other interesting items

Back in October 2010 Auckland Council's Nick Waipara (who works with the programme's Planning & Intelligence group to build our knowledge of kauri dieback) was convinced by Forest and Bird to appear in their video telling the kauri dieback story.

Just to prove the point of what awesome talent we have working with us, take the time to watch 7 minutes of magic – thanks Doctor Nick! <http://www.youtube.com/watch?v=Po4CLlloRw8&feature=youtu.be>

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

Contact nick.farland@maf.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!

The story so far...

Kauri dieback is a fungus-like disease specific to New Zealand kauri and can kill trees of all ages. It's a significant threat to our kauri taonga (treasure) that contributes to our national identity, spiritual wellbeing, economic prosperity from tourism and our overall biodiversity and interconnected forest ecosystems.

Microscopic spores in the soil infect kauri roots and damage the tissues that carry nutrients within the tree. It is believed to be spread by soil movement, so forest users must clean all soil off footwear and equipment and stay on tracks. Infected trees show a range of symptoms including yellowing of foliage, loss of leaves, canopy thinning, dead branches and lesions that bleed resin at the base of the trunk.

Since 2009, Māori, MAF, the Department of Conservation, Auckland Council, Northland Regional Council, Waikato Regional Council and the Bay of Plenty Regional Council have joined forces to cover research into the detection and spread

of kauri dieback, methods to control it and public awareness campaigns to help stop its spread.

Efforts are focused on limiting the spread of the disease and protecting uninfected locations. Information is being shared with landowners, visitors, community groups, journalists, clubs and event managers to help build awareness, understanding and action around kauri dieback. A surveillance programme is helping to assess and monitor locations of kauri dieback disease. Research is underway to improve detection methods, increase our knowledge of how the disease spreads and develop effective control methods. Work is also going into improving track construction, drainage and other man-made influences that will help reduce the spread of the disease.

If you think your trees have dieback symptoms, contact the Kauri Dieback Management Team on **0800 NZ KAURI (695 2874)**.

HELP STOP KAURI DIEBACK

Kauri dieback disease is killing our native kauri. It spreads by soil movement, but you can help prevent it.

ALWAYS:

STAY ON THE TRACK
and off kauri roots.

CLEAN YOUR GEAR
Before and after visiting kauri forests
clean your shoes, tyres and equipment.

For more information call 0800 NZ KAURI.

KEEP KAURI STANDING
STOP KAURI DIEBACK DISEASE SPREADING
WWW.KAURIDIEBACK.CO.NZ

KAURI DIEBACK PROGRAMME PARTNERS

NEW ZEALAND: IT'S OUR PLACE TO PROTECT

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