

Open Space

FOREVER PROTECTED

The people at the heart of conservation on private land



QEII NATIONAL TRUST

Ngā Kairauhi Papa Forever protected

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New packaging

You may have noticed that the outer packaging for this issue of Open Space is a bit different to previous issues. We previously used a degradable film wrap for our magazines, however following feedback from our members and some further investigation, we have made the change to fully recyclable paper packaging.

Because we send magazines to all our members across the country, from urban centres to remote rural delivery locations, the packaging we use needs to meet our needs. Our investigation saw us test several different options, including home compostable bags, which did not stack up when put to the elements.

Let us know what you think about our new packaging – did your magazine arrive in good condition? What do you like about it? What don't you like about it? We welcome your feedback at editor@qei.org.nz.

Our new packaging also gives us the opportunity to feature one of your special protected places. The photo you see on the front was taken in October 2018 at a Southland covenant owned by Gay Munro, who is also a former QEII regional representative. You can see a series of waterways meandering through mānuka shrubland. These were previously drains intended to dry out this area, however Gay and her husband Ron blocked them up and reflooded them, creating large areas of open water. This area supports masses of native waterfowl and has a healthy population of giant kokopu (*Galaxias argenteus* - At Risk-Declining).

Word from the chair

What a year 2020 has been. The upheavals and tragedies caused by Covid-19 have changed the world and the way we live in it. Some things have changed for the better. International holidays won't be happening for a while, and less air travel is good for the environment. Virtual meetings are now the 'thing' and can help reduce carbon emissions, as well as freeing up our roads. Personal hygiene has become paramount, with sneezing and coughing being conducted more carefully, regular and vigorous handwashing and hand sanitiser readily available has become the new norm and overall, we're healthier because of it.



We're also seeing evidence that a world in turmoil makes us reassess what is important. Our relationship with nature, the protection of biodiversity, the importance of trees and our open spaces – the role that the QEII National Trust plays is front and centre to all these things. Our work is as important today as in any of the previous 43 years that we have been covenanting and protecting special areas of biodiversity on private land.

The QEII board of directors has also seen significant change. I was delighted to be appointed Board Chair by the previous Minister of Conservation in August after our previous Chair, James Guild completed his final term. James led the Trust since 2011 and was QEII's longest serving chair. James has made a significant commitment to QEII and gave great guidance and leadership to the Trust over the last nine years – he has left enormous boots to fill.

We also recently farewelled directors Sue Yerex and Gina Solomon. One of the great joys of being on the QEII Board is working with passionate and dedicated professionals like Sue, Gina and James. It has been an absolute pleasure working with them and on behalf of the whole QEII whānau, I extend our deepest appreciation and thanks to all three of them.

Replacing James, Sue and Gina we have three new members on the QEII Trust Board, appointed by the previous Minister – Alan Livingston, Karen Schumacher and Neil Cullen. You can get to know our new appointed board members on page 24 and I look forward to working alongside them.

In this issue, we have a feature on covenantors David and Sarah Smith from Otago. The Smiths are continuing conservation work initiated by David's father and extending it with potential new covenants and riparian plantings. We've also included an overview of

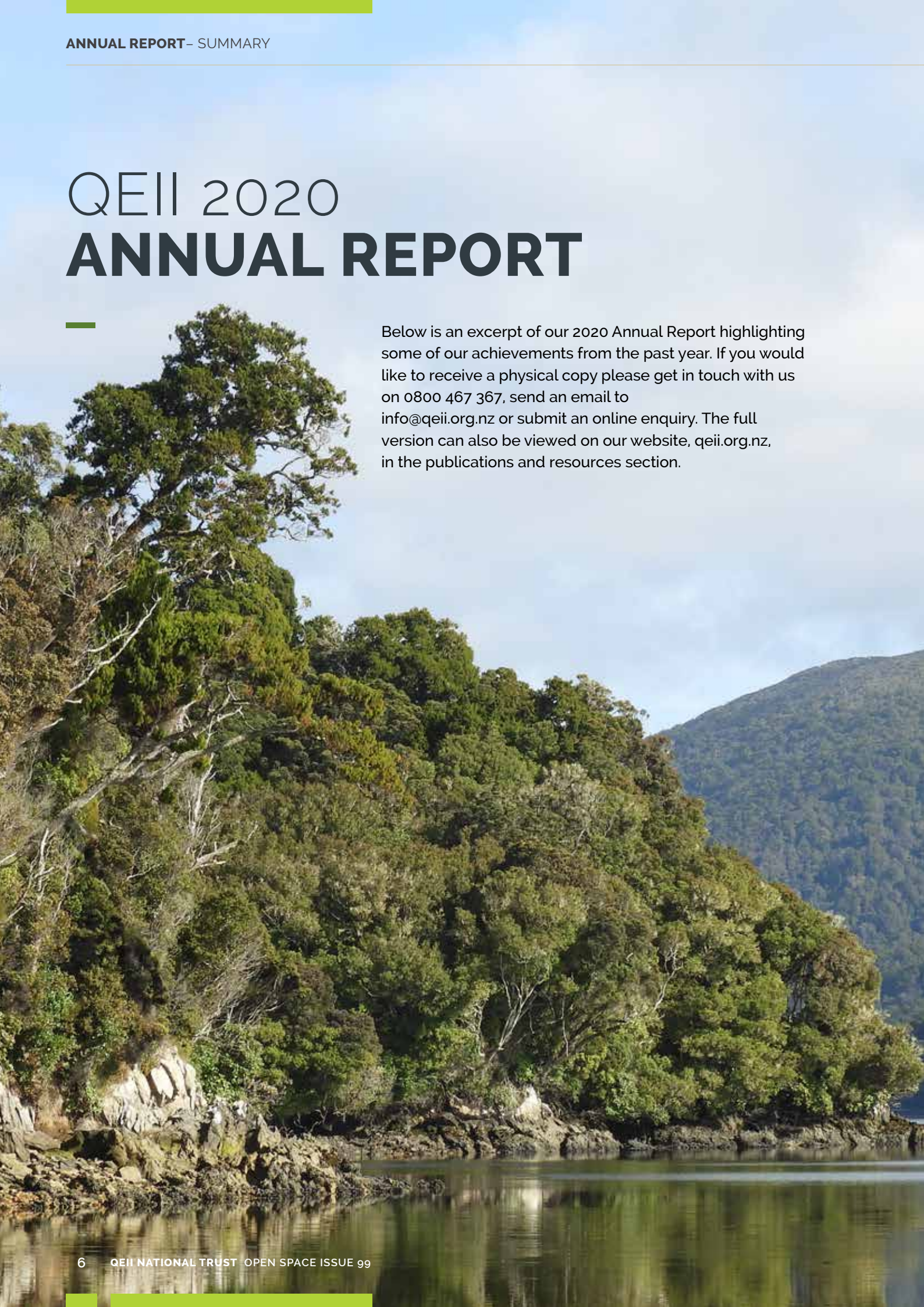
our Annual Report, including examples of new protection. The full annual report is available on the QEII website.

As I reflect on what may lie ahead, I am reminded that QEII National Trust was established in 1977 at a time when we had a government that was encouraging and incentivising clearing bush from our hillsides and draining wetlands. A time when New Zealand's finances were poor and the focus was on more production, more sheep and more export dollars.

Fast forward to 2020 and hopefully we are a bit more enlightened. We have a government and a society that has the appetite to re-plant our hillsides and protect our remaining wetlands. With so much enthusiasm to look after our environment, the future for QEII and our covenantors looks as busy and exciting as ever.

Bruce Wills
Chair

QEII 2020 ANNUAL REPORT



Below is an excerpt of our 2020 Annual Report highlighting some of our achievements from the past year. If you would like to receive a physical copy please get in touch with us on 0800 467 367, send an email to info@qeii.org.nz or submit an online enquiry. The full version can also be viewed on our website, qeii.org.nz, in the publications and resources section.

Covenantee numbers

110

New registrations

2,577.9 ha protected this year

New proposals
approved
120 (3,276.7 estimated ha) will be protected

4,729

Total registered covenants

190,276.8_{ha}

Total area (approved and registered covenants
and formal agreements)

*View of the shoreline of the Natusch Family
covenant in the Patterson Inlet. Photo credit: Jesse
Bythell, QEII regional representative for Southland*

EXAMPLES OF NEW PROTECTION

North Otago – Anatini Fossil Valley Covenant

John Hore and his wife Margaret have lived at their property for over fifty years. Together they run a homestay on a beef and sheep farm at Duntroon in the lower Waitaki Valley. John and Margaret are passionate about their land and want its outstanding features looked after long after they are gone.



The covenant protects a wetland of just over 1 hectare dominated by *Carex secta*, bog rush and toetoe. The wetland is habitat for several rare plant species, including the nationally critical marsh arrow grass *Triglochin palustris*, found only on the eastern side of the South Island. The wetland has been fenced off from stock for over 20 years, originally with a temporary electric fence. This has since been replaced by a robust fence with assistance from Environment Canterbury, Waitaki District Council and QEII National Trust. John is also working to progressively control the willows in the wetland with support from Environment Canterbury and QEII.



The second part of the covenant is a spectacular 13 hectare limestone escarpment. This supports several threatened plant species including a population of an unnamed *Geranium sp.*, found only at limestone sites in Canterbury. The limestone area will continue to be lightly grazed by sheep as this is an essential management technique for preventing introduced grasses from outcompeting the rare native plants. Fortunately, the soil within the limestone remnant area has never been



ploughed and so it has retained much of the sub-soil biodiversity. John and Margaret are continuing to revegetate the tops of the cliffs and the wetland with eco-sourced plants.

The covenant is also able to be enjoyed by the public with the Alps 2 Ocean Cycle Trail passing through the covenant area. The site is also part of the Vanished World Fossil Trail with a range of fossils present within the limestone area including whale and dolphin bones. The fossils are regularly studied by university students and researchers. John notes there were also rock art sites, which unfortunately have eroded away over the years.

Thousands of visitors use these trails and they learn about the covenant as they bike or walk through the area. John and Margaret are also working with the Walking Access Commission to ensure that the public will always have access to the fossils on their property.

This covenant is one of very few that meet all four national priorities for protecting rare and threatened biodiversity on private land.

INSET FROM TOP:

John and Margaret Hore at their favourite place looking over to the limestone caves and honeycomb formations from the cycle trail.

Geranium sp., currently being described, only known from limestone sites in Canterbury.



West Coast, Mahināpua – Dave's Bush

Landowners Mike and Pip Meuli love the kahikatea forest and wetland complex block on their farm, located alongside the true left bank of the Mahināpua Creek, just south of Hokitika. The Meuli's are committed to permanently protecting this one hectare block of coastal wetland rainforest, recognising its important contribution as a valuable ecological corridor and wanting to share its intrinsic beauty with the public.



TOP: Typical kahikatea-dominated wetland vegetation.

ABOVE: Australasian bittern. Photo credit: Imogen Warren Photography.

BELOW: View of the covenant wetland from the West Coast Wilderness Cycle Trail bridge over Mahināpua Creek.

MAIN PHOTO LEFT: Aerial overview of the Anatini Fossil Valley Covenant.

Mahināpua Creek is a historic waterway, which provided passage to logging and goldfields in the past. Nowadays, it is frequented by walkers, cyclists and kayakers. A public walkway passes through an easement on the property, with the adjacent West Coast Wilderness Cycle Trail offering spectacular views of the covenant. The Mahināpua tourist paddleboat cruises by the covenant block, providing an alternative view of the wetland forest remnant and its wild inhabitants from the water. Mike and Pip are passionate and want to make sure that this special place will remain forever for people to enjoy.

Only 3% of lowland kahikatea forest remains in the local ecological district and this remnant is a quintessential example, containing high biodiversity values. Although the covenanted block is small, it contributes to the protected adjacent areas of the Mahināpua Creek Conservation Area and the Fish and Game

riparian reserve. The covenant meets National Priority 2 as it protects wetland vegetation and National Priority 4 as it has multiple 'Threatened' and 'At Risk' species present. Habitat for indigenous birds include Australasian bittern, white heron, grey duck, black shag and fernbird, while indigenous freshwater fish species present include shortjaw kokopu, giant kokopu, and longfin eel.

QEII regional representative for the West Coast, Martin Abel, has influenced Mike and Pip with his informative enthusiasm for the importance of conservation of lowland wetlands and rainforest, as they support ecological corridors from the hills to the coast. The relationship between the Meuli's and Martin has been a driving force to ensuring protection of not only the covenant block but also fencing and weed management in other patches of bush.



QEI National Trust covenants and Manaaki Whenua Threatened Environments Classification (2012)

95% of registered covenants are
≤100 ha

QEI National Trust-owned properties:

- **26 properties (1,433 ha)**
(14 formalised & 12 registered as covenants).
- **1 license to occupy (85 ha)**

Organisations with the most covenants:

- Pāmu (Landcorp Farming Ltd)
- **217 registered covenants (9,526 ha)**

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Department of Conservation Te Papa Atawhai [2019]
Threatened Environments Classification 2012 created by
Manaaki Whenua (Landcare Research) and licensed for
re-use under Creative Commons Attribution 3.0 NZ

Highest
altitude covenant
extends to
2,400m
asl

Otago:
region with largest
registered covenant
21,910 ha

Otago:
region with
the greatest area of
registered covenants
64,618 ha

Northland:
region with
the largest number of
registered covenants

745

Gisborne:
region with largest
covenant registered
in 2019/20

578 ha

Waikato:
region with
the largest number of
covenants registered
in 2019/20

20

Waikato:
region with the
greatest area of
acutely or chronically
threatened environments
covenanted in 2019/20

110 ha

Canterbury:
region with the
greatest area of
registered covenants
classed as acutely or
chronically threatened

4,262 ha

Legend

- Registered and approved QEI National Trust covenants
(dots represent locations only and not actual area of covenanted land)

— Regional Council boundary

■ DOC Public Conservation Land

Threatened Environments Classification (2012)

- Acutely threatened (<10% indigenous cover left)
- Chronically threatened (10-20% indigenous cover left)
- At risk (20-30% indigenous cover left)
- Critically underprotected (>30% left and <10% protected)
- Underprotected (>30% left and 10-20% protected)
- Less reduced and better protected (>30% left and >20% protected)

0 50 100 200 Kilometers

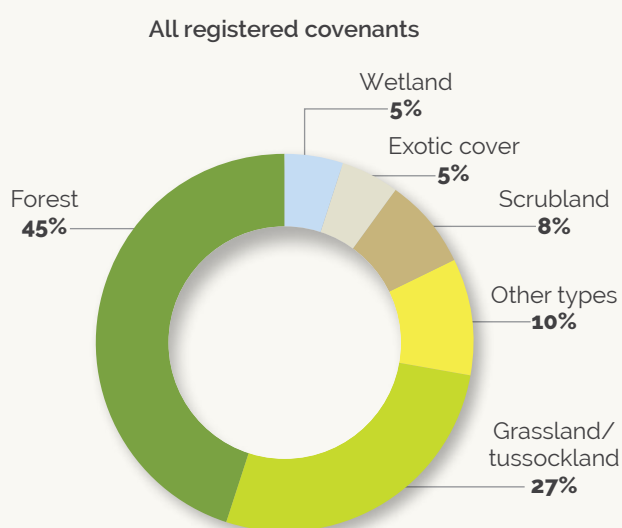
Statement of Service Performance

	2018/19 Actual		2019/20 Actual	
	Number	Area (ha)	Number	Area (ha)
Approved covenants	105	4,275.0	120	3,276.7
Registered covenants	111	3,577.4	110	2,257.9

Other activities

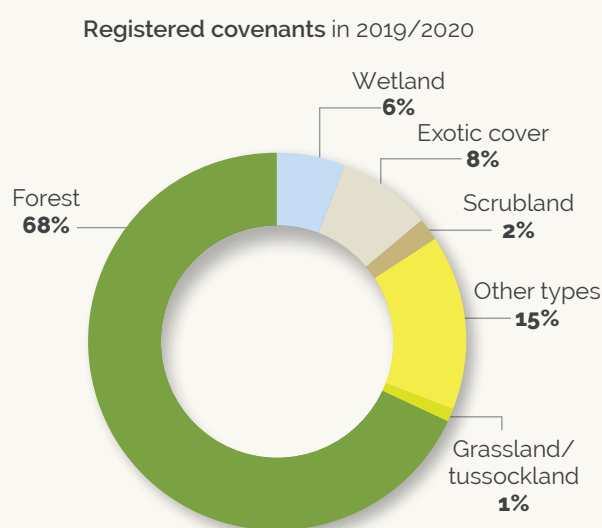
	2018/19 Actual	2019/20 Actual
Percentage of all new covenants approved that secure protection of one or more of the four national priorities for biodiversity protection on private land and/or add to a protected corridor or protected landscape	99%	100%
Provision of advice to new owners following change of covenant ownership in regards covenant values and stewardship and legal responsibilities for covenant management.	372	388

Landcover type



Grouping the vegetation types recorded for all registered covenants into 6 broad landcover categories, shows that 45% of covenanted land is forest and 27% grassland/tussockland.

93% of covenanted grassland/tussockland (approximately 43,500 ha) is located in the 17 largest covenants, each over 1,000 ha in size.



81% of covenanted forest (approximately 66,000 ha) is located in covenants < 1,000 ha in size.

All of the **110** covenants registered in 2019/20 were <1,000 ha, with the greatest vegetation type being **68%** forest by area (approximately 1,550 ha)

160km of fencing, **41km** of natural features and **22km** of unfenced boundaries protect these newly registered covenants

COASTAL RESTORATION: CAREFUL PLANTING AND TARGETED FOLLOW UP

Written by William Bowden





Sandra Bowden and
son Darcy Taurawhata
planting in June 2017

Revegetating 8.5 hectares of QEII protected land with over 70,000 native plants is a huge task. The Bowden family of Tutukaka embarked on it during what turned out to be the toughest planting season in decades. But despite the severe lack of rain, the project has been a huge success.

Tawapou, the Bowden's 124 ha family farm on the Tutukaka Coast, has three kilometres of rocky, exposed coastline and is the closest mainland point to the nearby Poor Knights Islands.

Bernard and Katharine Bowden purchased the property in the 1960s, looking to create a viable working farm. Both keen conservationists they were soon engrossed with protecting the property's remnant native flora and fauna by fencing off groves of large pōhutukawa and significant areas of mixed broadleaf-podocarp bush.

Fifty years on with the entire property under a QEII open space covenant, the work is being carried on by Bernard and Katharine's six children, their spouses, eleven grandchildren and the recently formed Tawapou Conservation Trust.

Before last season's major planting, several smaller plots of natives (totaling 8 hectares) were established with annual community planting days. Each July more than 100 people planted in the morning before sharing a lunch provided by the family at the old woolshed.

Alongside the plantings is a pest control programme developed over 25 years which has enabled the return of ōi (Grey Faced Petrel), pāteke (Brown Teal) and recently, a single tākapu (Gannet). Attracted by a dozen specially imported decoys and a solar-powered sound system broadcasting a cacophony of gannet calls, the family are hoping a mate arrives before he tires of his fake friends. Established with a grant from QEII's Stephenson Fund, the project is designed to help re-establish gannets on this part of the mainland.

Over 15 kiwi have also been translocated since 2014, with the public events attracting up to 300 people to witness the birds being released.

Last year's major revegetation was different because it was to replace an 8.5 ha pine block established on some of Tawapou's most exposed and infertile land in the 1990s. In 2018 the pines were harvested and the funds from it spent on the replanting. The Ministry of Primary Industries' 1 Billion Trees Programme also contributed about 25% of the final cost.

After the logging, the block was left covered in thick pine slash. Although slash can be useful as a mulch, if it is too thick to plant through it becomes a hindrance and provides a haven for weeds. Much of the slash was raked into piles for a slow burn to clear the land and create a better planting platform.

Guy and Sandra Bowden's nursery, Tawapou Coastal Natives, supplied the majority of the 70,000 plants required. Planting began in June 2019 and continued through to September, with a local team employed full time on the project.

Plant genetics play an important role in the project's success. Because most of the seeds were collected from coastal areas on Tawapou, the plants are well adapted to the tough environment. Coastal mānuka was planted in the most exposed sections of the block where establishing a resilient species is vital.



Other pioneering species such as kānuka, māhoe, karamū, karo and matipo were able to flourish despite the lack of consistent winter rain. Additional hardwood species such as the drought resilient puriri were planted in the protected areas to attract birds and promote the early development of a true forest environment.

The dry winter of 2019 was followed by a hot and windy summer and in the new year the region entered a severe drought. Maintenance became a priority with the full-time team spot watering for specific plant species, hand weeding and spraying – a critical job as fast-growing weeds compete for soil moisture and nutrients. If left unmanaged, weeds will quickly overtake the slower growing trees, making it extremely difficult to find and release natives tucked below this weed canopy.

Close spacing (less than 1m) and planting at the right depth to minimize wind damage, helped ensure a good survival rate. It is more cost effective to use smaller plants closer together as this achieves canopy closure quickly, shading out and slowing reinvasion by weeds.

Weeding continued through 2020, some of it undertaken by family members during lockdown, but despite the best efforts of the crew, large tobacco weed, and inkweed continued to cause problems.



FROM TOP
Tawapou trap workshop
at old woolshed
Community planting in
August 2019
Spot the real Gannet

However, by late 2020 with consistent winter rainfall and a warm spring, the project came away vigorously with an estimated 90% plant survival rate. Managing persistent weeds will continue for at least the next three years but with each season, this becomes easier as the natives thrive, shading competitors and reducing moisture evaporation.

A good price for the pines, being willing to reinvest the income, assistance from 1 Billion Trees, locally sourced plant stock, time during lockdown and eventually rain, meant that despite severe drought, the Bowden family have now doubled the area of revegetation on Tawapou. This brings their dream of a wildlife corridor across the property and connecting to the Poor Knights Islands, much closer.

RAT CONTROL IN THE 21ST CENTURY



Of all the imported pests in Aotearoa, none have had more devastating effects on our fauna than rodents – specifically, rats. In this issue, QEII regional representatives Jake Goonan, Wayne O'Keefe, Greg Blunden and Trevor Thompson share their experiences with rat control in their regions.

Setting the scene: an introduced pest

Before Polynesian explorers arrived, our fauna became specialised in ways that were highly successful for many millions of years. However, these became their downfall when mammalian predators were introduced.

Much of the land mass with elevated contours had seabird colonies. Upper slopes and high points were used as nesting sites for sea birds, fairy prions, petrels, sooty shearwaters and other species in their millions, all harvesting an abundant ocean and bringing that fertility to the land. Not only was the seabird guano top-dressed over the land, but often birds would break a wing crashing through the canopy to die on the forest floor, adding more nutrients to the land for the burrowing seabirds. Tuatara would share their burrows and take a bird for food as needed. This fertile nutrient enriched forested ecosystem was incredibly productive with a jam-packed biota of living things, both plant and animal, fuelled by the sea.

The first settlers brought the first of the rat species to land on these shores. Māori oral history talks of Kiore (*Rattus exulans*) from Hawaiki as a delicacy to eat. Whether they came purposely or stowed away on the waka, the effect was the same. They matched an abundant food supply with plague-like breeding, all but eliminating mainland seabird colonies that were the key energy inputs needed to sustain ecosystems. With seabird colonies decimated, Kiore preyed on many of our ground nesting birds, flightless birds and reptiles. This saw the extinction of many species, particularly birds.

Kiore were just the start and in their turn, were driven away by the next two rat invaders. Norway rats (*Rattus norvegicus*) and the much smaller but very agile ship rat (*Rattus rattus*). These rats were stowaways on the European sailing ships that began to frequent New Zealand and inevitably, these rats made it ashore.

This started another killing phase in our native wildlife story with ship rats able to climb to reach almost any nest. Many birds were particularly vulnerable and became extinct. Any bird nesting in a hole in a tree without an easy escape was hammered, kākā, huia, kākāriki and native bats to name a few.

An introduction to toxins

**Wayne O'Keefe, QEII regional
representative for Eastern Bay of Plenty**

Aside from the few that know them as pets, rats are animals that folk love to hate. For many around the world they are the harbinger of disease, often associated with the plague, but they have a very different impact for us here in Aotearoa. In terms of control methods, there are a couple of options open to those wanting to control them. By far the most effective method is using a toxin delivered in approved bait stations.

Before embarking on a baiting regime, I recommend talking to your local Council, Department of Conservation (DOC) office or local QEII regional rep. This will help you have a full understanding of which toxin you should use, how to use it – including whether you need a license – how it works, impacts

LEFT:

Rats predating a blackbird nest. Photo credit: Ngā Manu images, ngamanu.co.nz

on non-target species, risk to pets, and social or legal obligations. There are many kinds of baits available, with most of them containing an anti-coagulant as the key ingredient such as diphacinone based products like Ditrac™. You may see anti-coagulants that contain brodifacoum used as the active ingredient. Although it is very effective, I personally stay away from brodifacoum as it can persist in the environment, bio-accumulate and have increased chances of causing secondary poisoning to non-target species such as native carrion feeders and dogs. Anti-coagulants are toxic to dogs; however, antidotes are available through vet centres if accidental poisoning is suspected.

Some toxins contain cholecalciferol, which gives an overdose of vitamin D3, affecting the renal system. Cholecalciferol is expensive as it is used widely in human medicine, so supply can be limited. It is also a 'temperamental' toxin to

use as it requires pre-feeding, careful dosing and can degrade quickly in bad weather. It is toxic to dogs and to my knowledge, there is no antidote. I would suggest leaving the use of cholecalciferol to professionals. There are also new toxins emerging that contain both cholecalciferol and dipahacinone, which will have the ability to control both rodents and possums with a single bait.

In a baiting operation, it is important that bait stations don't run dry. A successful operation will always have some bait left as this demonstrates that no more is being taken. If bait stations run empty, then you risk providing a sub-lethal dose. Aside from the issues around animal welfare, there is a small risk that you are creating a learned behaviour that can get passed on, meaning the rats will learn to stay away from bait stations as it gives them a very sore tummy.





A community approach: Taranaki Mounga and Predator-Free Taranaki

*Jake Goonan, QEII regional
representative for South Taranaki and
Northern Whanganui*

The Taranaki ring plain is dominated by the mountain, Taranaki Mounga. It has many streams and rivers flowing from its slopes and the National Park into the surrounding landscape, predominantly intensive farmland. Most have riparian plant corridors, which are excellent for native birds but also create a perfect habitat for their predators: rats and mice.

For many years, DOC has run extensive rodent and mustelid trapping networks on the Mounga, interspersed with aerial 1080 operations over the 31,000 hectares in the Egmont National Park, to keep pest numbers low. Rat numbers were monitored before and after the last 1080 operation using tracking tunnels and chew cards, and rat numbers dropped significantly.

Since 2018 the focus has shifted from pest control in the National Park, to a large-scale effort to reduce rodent and mustelid numbers on private properties in the surrounding landscape. This has only been possible due to a massive injection from Predator Free 2050, and the establishment of the 'Towards Predator-Free Taranaki' project, New Zealand's largest multi-species predator control operation on private land.

Towards Predator-Free Taranaki is a 10-year phased roll-out programme, led by the Taranaki Regional Council (TRC), working alongside the Taranaki Mounga project, residents, and various groups to remove possums, rats and mustelids from urban, rural and public land around Taranaki Mounga. Community trapping in backyards, public parks and reserves is expanding, and there are now over 8,500 traps set around the New Plymouth district.

The Predator-Free Taranaki programme will eventually cover the entire region and will utilise many trapping techniques and other pest control technologies to achieve its goals. Regular aerial 1080 on the Mounga will ensure

ABOVE
*Example of wooden
tunnel traps.*

that rugged terrain is completely covered and pest numbers are kept at low levels. This will be combined with extensive ground-trapping networks, backyard trapping in urban areas using snap traps, and bait station and snap trap networks on rural land. Self-setting traps such as Goodnature A24s are also being extensively used. TRC have based the Predator-Free Taranaki programme on their successful biodiversity and biosecurity work, including the Self-Help Possum Programme, Riparian Management Programme and Key Native Ecosystems programme.

Rural landowners have been involved in the control of possums as part of the self-help possum control programme for many years, so it has made good sense for them to expand this initiative into controlling rats and mustelids. After several months of contractors and landowners working together, landowners are asked to purchase and maintain the traps on their property and traps are subsidised.

In Taranaki, one of the Regional Council's priorities is to work with farmers and landowners to protect and enhance those areas that have significant biodiversity values, known as Key Native Ecosystems (KNE). Many of these KNEs are also QEII covenants. QEII and the TRC work together regularly to help landowners protect the native biodiversity values at these sites, using a range of pest management and trapping techniques. Co-funding for trapping and pest control at these sites is often available from Predator-Free Taranaki, TRC, QEII and some of the local district councils to help landowners kick-start their trapping programmes.

Monitoring is one of the key parts to a good trapping or pest management programme. If you don't know what pest you're targeting, or what numbers are there in the first place, you can't know if you're being successful in bringing pest numbers down, or if you're using the right trapping technique. Tracking tunnels are widely accepted as the best way to monitor rodent and mustelid numbers. You can also use the website Trap.NZ as an easy way to generate pest number indices, maps and summary tables, which you can then track over time, export and share.

Understanding the species

Greg Blunden, QEII regional representative for Far North and Kaipara

Most parts of Aotearoa have ground-dwelling birds but in the Far North we are lucky to have two threatened species in quite good numbers – North Island weka and North Island brown kiwi. However, we also have rats who compete for much of the same food as native birds, predate nests and live in our buildings, especially when winter approaches. Here, I focus on two types of introduced rat – ship and Norway – and highlight how we need to understand the interaction of each species within the control system.

Ship rats have different territories and habitats from Norway rats. They interact in border zones and balance out their territories. The interaction zone is well-known, with ship rats being able to climb trees. Norway rats are unable to climb well, so they dominate the ground in riparian, swampy places and creek gullies.

Pest control has effects on a locality and all species inhabiting it, so it's important to remember that the effects are not limited to the target species. Looking at monitoring data on the Russell Peninsula from 2006 to 2008, we can see how these interactions work.

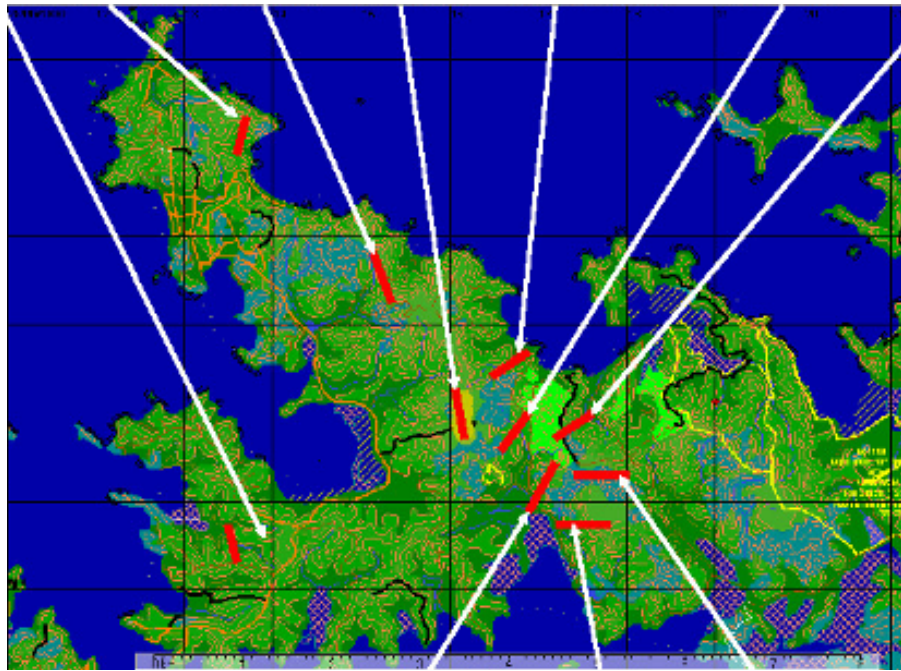
The Russell Peninsula pokes 2,000 hectares into the Bay of Islands from the east. It is now home to many bird species, with kiwi call numbers averaging over 10 per hour since 2005. North Island weka were introduced in 2002 and North Island robin were released at Paroa Bay in 2005.

In 2000, Laurence Gordon and a team of volunteers set up 1,200 bait stations, well off the ground, to eradicate possums and rats from the peninsula using the bait Pestoff. Possums were rarely seen from late 2001 and there was a notable decline in rats. Nearby in the town of Russell, rats and possums were not widely controlled except by individual landowners.

The NZ Kiwi Foundation, supported financially by Kauri Cliffs, ran a three-year pest monitoring programme. This ran from 2006 to 2008 throughout the Bay of Islands and many parts of Far North to check and report on the efficacy of animal pest management programs.

Ten monitoring lines were located on Russell Peninsula. The monitoring protocols were:

- Two rat monitoring methods used, ink cards in Trakka tunnels and wax tabs
- Each is recorded and a conclusion is reached on the results of both types
- Both methods are standard operating practices and scientifically accepted
- The wax tab method is used primarily for possum indexing
- 10 Black Trakka tunnels are spread evenly over 500 metres
- Wax tabs are located over the first 200 metres of the monitoring lines at 10 metre intervals



Part of the project was to identify differences in frequency and trends between ship and Norway rats. Each species is readily identifiable from bite marks and footprints. The primary findings from the first two rounds showed that while ship rats had been successfully controlled to an average of less than 10%, Norways had increased their numbers and territory on to higher ground. In 2007, the installation of small, ground rat-bait tunnels halted this trend and the numbers of both species declined to below 10% tracking, on average.

Although this work took place years ago, the lessons it provided are still applicable – everything we do has related interactions among target pest species and the avifauna we are all keen to protect.



ABOVE: Location of monitoring lines on Russell Peninsula map.

BELOW: Trevor Thomson (far left) and fellow pest control friends in their early days.



Success with a Victor rat trap.

Strategic control

Trevor Thompson, QEII regional representative for Wellington and Wairarapa

I have had a lot of first-hand experience with rat control over many years. My first large-scale rat control task was to set up and run the pest control at Pūkaha, a 942 ha forest in the Wairarapa. At that time, the accepted strategy, regardless of terrain or forest type, was to set up a grid of traps and bait stations 100m x 100m and stretching out to 150m x 100m grid on lower contours.

After two years we changed strategy. Just before introducing kōkako, with a full-time team of four, we filled our bait stations with a non-toxic prefeed and a week later refilled it with 1080. Two weeks later we removed all the uneaten 1080 from the bait stations and safely disposed of it. We found the residual possum and rat numbers were low enough that we could continue to control on a seasonal basis as needed for successful kōkako breeding. We carried out the same strategy the following year using brodifacoum and once again reached our targets of low rats and possums. We quickly and cost effectively and had all toxin removed at the end.

This is often called the kōkako model, because kōkako need low rat and possum numbers at the beginning of November to have a successful breeding season. This model of seasonal control is less labour intensive and uses less toxins than year-round control while still giving much of our fauna a chance to breed, undisturbed by rats.

Nowadays, rather than saturate a forested covenant with traps and bait stations, I prefer to work smarter. Rats need to drink so targeting water sources such as waterways, seeps, large old native trees with hollows, epiphytes up the tree itself and any high rainfall areas can be effective. To cost effectively reduce rat numbers to low levels, I use bait stations at 100m spacings along waterways, up a tree at eye height, preferably on the same side of the waterway and with some pink flagging tape to help catch my eye when looking for them.

I also like to use sentry bait stations, which come in at approximately \$7.00 each, and to use a first-generation toxin such as pindone. If rat numbers plague, then consider a more powerful second-generation toxin such as Pestoff (brodifacoum) and go back to a first-generation toxin when numbers drop.

The other T: traps

Toxin is one tool, but trapping is another common control method. There are many projects around the country that rely solely on trapping to achieve results. Not everyone is comfortable using toxins and this is understandable.

Trapping is effective; however, it is time consuming and can be expensive if relying on contractor labour. To have an effective network of traps, you likely need them placed out on a 25m x 25m grid throughout your project area and check them as often as possible. Scale this up to tens or even hundreds of hectares and it can quickly become a full-time job.

Types of traps

The Victor professional rat trap is a powerful and affordable trap, usually around \$5.00. It can be used on the ground or nailed to a tree. If kiwi or other non-target species are around then they must be suitably covered or put out of reach, consider setting three or more in problem areas.

The Envirotools D-Rat trap is a step up. Designed to be mounted up a tree, with the added advantage of easy fine setting, and clearing and setting the trap without getting hands near the dead rat or killing arm. It comes with everything you need to mount the trap and is bit more expensive at \$22.00 each.

My personal experience using the Goodnature A24 self-resetting traps is not good, as it is expensive, and costs are ongoing. The NZ Auto Traps AT220 is another self-resetting trap activated by the animal breaking a light beam and so there are no issues with fine setting the trap. They are expensive at over \$300 but results are good, and they can also be used for possum control.



You should consider a bait station or trap as having a roughly 50 metres influence, any rat within that radius will probably visit the trap or bait station. Outside of that, the likelihood is low, so a single trap, even an expensive self-setting one, won't be able to solve a rat problem. Don't necessarily be tempted by the newer, shinier and more technologically advanced traps – a simple snap trap, baited with some oily, crunchy peanut butter is hard to beat.

As our climate warms, so do the opportunities for rats to breed year-round, not just in the warmer months. As highly intelligent survivors, rodents will adapt to whatever we try to kill them with. Survivors of a close call with a trap or toxin will pass on their characteristics that saved them to succeeding generations, we are their best friends, we feed them, house them, transport them wherever we go. We are only winning some battles, certainly not the war.

For more tips and tricks on controlling rats, check out the Predator Free 2050 website or get in touch with your local QEII regional representative. We will be back with a focus on another pest species in 2021, so for now – we wish you all happy rat killing.

ABOVE: Rat raiding a Thrush nest.
Photo credit: Ngā Manu images,
ngamanu.co.nz

Note: While our reps have shared their experience with various pest control methods, we support landowners to make pest control decisions based on what is right for them individually.

CHANGES ON OUR BOARD OF DIRECTORS

QEII National Trust is overseen by a board of six directors. The Minister of Conservation appoints four who have the right mix of environmental and conservation values. They must also reflect the interests of rural landowners and the Māori community. The remaining two directors are elected by our members.

We've had some changes on our board in the last few months with James Guild completing the maximum of three terms as chair in July. The previous Minister appointed a familiar face to many, Bruce Wills, as the new chair. Bruce has served on the board as a director for the last five and a half years.

We also said farewell to Sue Yerex and Gina Solomon as directors. Both brought valued skills to our board and on behalf of the trust and all of its members, we thank both Sue and Gina for their dedication and commitment to protecting biodiversity on private land in New Zealand over eight and seven years, respectively.

The Minister appointed three new directors to the board for terms of three years starting from July 2020 – Alan Livingston, Karen Schumacher and Neil Cullen. We asked them a few questions to get to know them. Read on to see who's a keen Dragon boater, who dabbles in acting and who has written a book.



Alan Livingston

Alan has extensive governance experience and is a former Chair of the Waikato Regional Council. He has served on the Waikato River Authority, the Maungatautari Ecological Island Trust, the Waipa River Catchment Committee, and numerous Joint Management Committees with Waikato-Tainui, Raukawa, Maniapoto, Tūwharetoa, and Te Arawa. Alan is also skilled in financial acumen with over 20 years of experience preparing, consulting, approving, and monitoring large budgets.

What attracted you to QEII?

I purchased a sheep and cattle farm in 1982 that had some nice patches of native bush, but they were deteriorating due to stock grazing. I was keen to protect these areas and QEII was an ideal partner so as to protect the bush in perpetuity, plus provide some then much-needed financial assistance. Since covenanting on my farm, I've taken a keen interest in the Trust through its Open Space magazine, plus, with my 24 years in local and regional government, I've been lucky to work with the Trust on a number of projects.

How has your time on the QEII board been so far?

In my short time on the board I've gone through a very informative induction and attended the annual conference. What stood out for me at conference was that we are extremely fortunate to have regional reps who are both experienced and passionate and, amongst them, they possess some specialist skills and knowledge that they are happy to share with their fellow reps.

What's your favourite thing about summer in NZ?

There's little time for holidays in the summer when you're farming full time, so now that I've eased out of active farming, my wife Janet and I like to spend a few weeks of summer at Lake Wanaka, my favourite spot in New Zealand.

What's your favourite native species?

I have a soft spot for the kōkako, an at-risk bird which is staging a gradual recovery, thanks to great work by DOC, QEII and various community groups. Locally for me, the translocation of kōkako from Pureora to my adjacent Pirongia Forest Park has seen a steady increase in numbers and the occasional sighting of this special bird.

Something about me

I've written a book. I just finished writing about the history of my Te Pahū district, which involves four communities that have morphed into one. It's been a labour of love over about a 20-year period whenever I have had the time. It's now in the stages of being proof-read before printing.



Karen Schumacher

Karen is a dairy, beef, and forestry farmer and has four QEII covenants. She and her husband Bob have a passion for making a difference to Aotearoa's native flora and fauna. They have spent the last 16 years working to provide a place for kiwi to thrive. Karen is a chartered accountant and has extensive experience at Board level in evaluating, supporting and funding conservation efforts by the community. She is also the current General Manager and Chair of the East Taranaki Environment Trust.

What attracted you to QEII?

Having spent the last 16 years protecting native flora and fauna with four of my own covenants, I have seen a difference in my own patch. The opportunity to widen this to a national level by working with QEII was a huge attraction for me.

How has your time on the QEII board been so far?

Impressive. To see how the regional reps, head office staff and everyone associated with the organisation has a passion and believes in what QEII stands for is inspiring. I feel humbled to be part of this amazing "family".

What's your favourite thing about summer in NZ?

Being able to Dragonboat on the Waitara River without loads of thermals on!

What's your favourite native species?

A no-brainer for me as it has consumed my life for the last 16 years - kiwi. It has been a privilege to have been part of the story of turning around the declining population of the western brown kiwi, and knowing our property is at the heart of the project where 4,500 kiwis reside.

Something about me

I am a keen follower of netball! I have been to the last 2 netball world cup events, the last one in 2019 in Liverpool was an absolute highlight! I even offered to share my New Zealand flag with some Australians for their group photo – they declined, can't think why.



Neil Cullen

Neil is a farm owner with five covenants and a 50-year career in forestry and farming. He has extensive experience in the farm and forestry sector and has previously won the Otago Ballance Farm Environment award. Neil is the current president of the NZ Farm Forestry Association. His whānau whakapapa to Ngāi Tahu, and Neil has an understanding and appreciation for the Māori concept of Taiao.

What attracted you to QEII?

QEII combines two of my passions, farming and conservation. The trust allows landowners all over Aotearoa to preserve beyond their tenure the natural gems that exist on their properties.

How has your time on the QEII board been so far?

Hectic! Meeting the rest of the Board and the Senior Leadership Team, getting to know the issues the Board is facing, taking in the planning work like the 2020-25 Strategy, meeting the staff in Wellington and many of the regional representatives and attending the annual conference. The standout for me is how trusted QEII is as an organisation and the unique position it has in rural NZ.

What's your favourite thing about summer in NZ?

Visiting the many great beaches in the Catlins.

What's your favourite native species?

*As a committed dendrophile my favourite native species would be *Metrosideros umbellata* or southern rata. It lives for centuries, has very dense wood and does not flower every year, but when it does, it transforms the native forest with its crimson outburst.*

Something about me

I sing in a local choir and sometimes try to act on stage.

LESSONS FROM A LIFETIME OF ENVIRONMENTAL RESTORATION

Advice from covenantors, Mike and Tony



ABOVE: Bank area a few years after removal and at the start of planting in 2005



ABOVE RIGHT: The same area in 2020

Passion for the environment and conservation is often passed down through generations. Mike's family had a history steeped in a love of plants. Mike's grandfather was a nurseryman, mother a florist and grandmother and aunt were award-winning gardeners. Growing up Mike was adamant that plants and gardens were not for them and it wasn't until Mike matured that a passion grew for environmental restoration. "As my partner and I matured and had children, we realised how finite planet earth is. Alongside raising our children as 'barefoot kiwi kids', we tackled an environmental restoration project in our garden," Mike says.

Their "garden" is 18.6 hectares (46 acres) of coastal bush block on an inner Hauraki Gulf island. With over twenty years of experimentation and research, both on their children and their land, Mike and Tony have learnt a few lessons along the way.

1 Choose your project wisely and understand the scale

Our land was cleared by European settlers for farming, except for mature podocarp bush in the south facing valley heads. Later, the steepest areas were planted in pines for erosion control. After farming ceased, natural regeneration commenced. So, we started with mature podocarp bush, 40-year-old regenerating bush, and weeds – including stands of pines, macrocarpa and wattle. We purchased ignorant of the scale of the work ahead of us. We won't make that mistake again!

2 Understand your timeframes and drivers

Be clear about your timeframe at the outset because timeframe informs strategy. Environmental restoration of steep fragile land is ideally undertaken slowly to mitigate risks. Fortunately, we were able to commit to our restoration project for the long-term. The quid pro quo for dedicating our energy and resources was to protect our efforts in perpetuity. Enter QEII.

3 Identify the priorities for the land

Our priorities were dictated first by landform and secondly by land cover. Enhancing the stability of steep land and fragile coastal cliffs was a priority, as was attacking large areas of blanket asparagus, smilax, pampas, tobacco and agapanthus.

We would suggest starting out with three priorities. First, weed control. Natives cannot thrive or germinate naturally if they are blanketed with weeds. Removing juvenile exotic seedlings and saplings can stop them becoming a greater problem later. You can get early wins by stopping good areas from deteriorating. Secondly, pest control. This will help increase seeds available to germinate naturally. Third, planting and seed sowing to enhance biodiversity.

As a concurrent priority, we undertook selective exotic tree removal and intensive replanting to minimise risks of erosion, as resources permitted.

4 Make tracks and segments

Our land has two valleys and three ridgelines, so the surface area is greater than 46 acres. Given its condition at the outset, the future workload was overwhelming. Our timeframe and the priorities we set led us to make tracks and segment the land, which made the amount of work more manageable. This means we mix our work up by working at different levels in different segments. We work to minimise weed incursions into the mature podocarp bush at the same time as we tackle areas of blanket asparagus. Once we get a segment to "maintenance level" we can replace it with work in a new segment. Twenty plus years on – and 40,000 plus natives planted – we have just started work in our final segment. Yay!

5 Take time to reflect

When the workload is overwhelming and you are losing the will to continue, we suggest taking time to reflect on what you have achieved. Think about taking before and after photos. We didn't, but luckily QEII have a record from their monitoring visits. While we can remember what we started with and we know what we have achieved, your own before and after photos may be just what you need to reflect on and thereby reenergise your efforts.

6 Employ systems that work for you

We are visual people and old school. We love highlighters! Spreadsheets of annual and monthly objectives sit alongside topographical plans which identify segments. All are highlighted to record work undertaken – and yes, they are colour coded. We bait monthly and use a traffic light system to record bait take – red, orange, and green, which mean bait all, half and none gone, respectively. This allows us to easily see patterns of bait take. Recent technological advances such as thermal cameras and track log and trapping apps will revolutionise environmental conservation, so it pays to keep abreast of developments and use the systems that work for you and your project.

7 Find like-minded people

It also pays to befriend other "do-ers", as even just a few like-minded people can make all the difference when treading what can be a lonely and undervalued path. Our QEII regional representatives have been wonderful and are a source of knowledge and support. We have been lucky enough to be supported by two QEII regional representatives: Lynda Fleming and more recently, the current QEII rep Chris Floyd. We're very grateful that we have had such continuity and a great rapport with them. Preparation for our bi-yearly monitoring visits, and the visits themselves, force us to reflect on how far we have come. Chris is a font of knowledge, not to mention a lot of fun and he invariably leaves us with a few good ideas to mull over. Also, if you can, try and surround yourself with like-minded neighbours. You are only as strong as your weakest boundary when it comes to pest plant and animal control.

8 Be grateful

As we write there are banded rail in sight. Recently a morepork and a kākā alighted on branches no more than two metres from us. We are regularly accompanied on bait and spray rounds by weka. Despite the drought, the clematis is amazing and the new growth on the pōhutukawa is extraordinary. We have our heath, and we feel blessed to be able to assist our environment to regrow resilience to outlive us.

PROPERTIES FOR SALE



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A rare opportunity to purchase a fully self-sufficient property in Purua, just 30km west of Whangārei.

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WHANGĀREI



> Te Pahii – Elliot Bay, Northland

A unique opportunity to purchase a third share of a whole of title Open Space covenant in Northland and to be part of an amazing piece of coastal restoration. The 40-hectare block of coastal regenerating native forest known as Te Pahii has had two existing shareholders for nearly forty years - the Sharpe family and the Chapple family.

A true coastal sanctuary, it's worth noting that along the 29 kilometres of coast from Cape Brett to Home Point there are only three houses. Te Pahii is a private site with no road frontage and has great walking access and which can be used for camping, perfect for spending quality time with family.

Restoration is key. Regular tree planting takes place with more than a thousand trees planted each winter. The covenant is also home to several native species. Approximately thirty New Zealand Dotterels fledge each year, Spotless Crane is found in the freshwater swamps and brown kiwi are known to the area. Both families involved lead their priorities with passion, with regeneration of flora and fauna high on the list. As the parents of both families are now pensioners, they are now looking for a like-minded family to help by buying into this important project. Please note that as brown kiwi is present, dogs are not permitted at Te Pahii.

The rateable value of the land is approximately \$1.6 million and while there are no rates as it is a whole of site covenant, pest control and plantings require further financial and time commitment heading into the future.

NORTHLAND



If you are interested, please get in touch with:
Peter Sharpe
P: 0272515291
E: sharpeter@gmail.com

John Chapple
P: 09 478 6506
E: jpchapple@xtra.co.nz

Visit our website at tepahii.nz

In the Line of Fire

Fire is a risk to forests and other native plant communities, and it can be devastating if uncontrolled. Last summer we saw our neighbours in Australia battle with some of the worst wild bush fires seen in this lifetime, with a devastating effect on communities, conservation and wildlife. Fire also hit close to home with a grass fire on Te Mata Peak, Lake Ōhau and a fire in Middlemarch just some of many across the country in recent times.

Fire poses a major risk to biodiversity values. Jesse Bythell, QEII regional representative for Southland explains, "Fire can sweep through an area, rapidly reducing habitat and killing native species including flightless birds, reptiles, insects and vulnerable plants. The aftermath of a fire gives weeds an opportunity to flourish, which can reduce the rate of natural recovery and make overall management much harder. Fire can damage fences, creating costs to repair and risking further damage to a covenant if domestic livestock or feral pest animals get in."

Unlike some countries, New Zealand ecosystems have not evolved to cope with fire. In pre-human times fires were very rare in New Zealand, caused by lightning strikes or volcanic eruptions. Some ecosystems are more vulnerable to fire than others and people need to be aware that every type of ecosystem can be affected by fire. "Most people would not think that wetlands are at risk from fire, but at least one type, wirerush peat bogs, are. Many wetland species are comprised of natural waxes and turpenoids and can burn very easily," says Jesse. "Somewhat counterintuitively, our specialized dryland plants, many of which are threatened, are very vulnerable to fires, in contrast to dryland plant communities in other parts of the world where these ecosystems are more able to cope with fire."

Often the plants that act as ecological 'first responders' after land is cleared can be quite flammable, for example bracken, mānuka or kānuka. "Allowing these systems to progress to a more diverse mix of hardwood species, such as beech, broadleaf, kōhūhū, lancewood, or fuchsia, will make them much more resistant to fire. Jesse adds, "sometimes that regeneration is held back by successive burning or pressure from browsing animals, which means the mānuka or kānuka shrubland can be slow to naturally transition."

Tussock grasslands are also vulnerable to fire and often suffer afterwards from the invasion of weeds such as exotic pasture grasses or hawkweeds that compete with the smaller native species such as herbs and other grasses growing between and beneath the tussock 'canopy'. Tussock grasslands across much of New Zealand have been induced by the clearance of woody native plants and over time they can revert back to a more diverse shrubland and even forest.

Warren Heslip is a QEII covenantor and volunteer firefighter. His role helps protect people, property and biodiversity. Warren, his wife Wendy and their two daughters Brooke and Annalyse live on an 8-ha lifestyle block in Tutarau just south of Mātaura. They run cattle and sheep, keep chooks and have a springer spaniel, a border collie and a very spoilt cat.

Their farm stands at 175 meters, with outstanding views south to Stewart Island, west to the Takatimu mountains, north to Gore, Mātaura and the Hokonui Hills and north east to the Lammorlaws. Part of the property includes 3 ha of QEII-protected native bush located on a steep south facing slope with a healthy stream in the valley floor. The Heslip's have had much enjoyment eradicating weeds and trying to keep on top of pests like possums, rats and stoats.

During the day, Warren and his wife run a 15-person silvicultural forestry crew. The work they do includes pruning, thinning, spraying, regeneration and wilding culling. They also do some remote track cutting for DOC and are a contract rural fire crew for Fire and Emergency New Zealand.

Warren's team has helped fight wildfires in New Zealand and abroad, including several in Australia, Canada and America. "Forestry crews tick all the boxes for international deployments," Warren says, "this is because our crews are fit, understand tall timber issues, great chainsaw operators, proven communicators, they can adapt to change quickly and most importantly have good situational awareness."

One of many tragic things about wildfire is the loss of habitat and loss of insect, birds and lizard species. Warren helped battle the fires in Middelmarsh in Otago earlier this year. "It was about 5,000 odd hectares and the scenes were a stark reminder of the tragic loss that fire can bring. We noticed pigs out rooting around in the middle and fringes of the burn, only to see on closer inspection that they were grazing on burnt lizards," he said.

The rate of spread of a tussock fire like the one in Middelmarsh was such that almost nothing could escape. Warren recalls, "we weren't going to stop the fire with weather conditions at the time, paired with the extreme fuels loads in the area. What eventually stopped it was the fact that the fire ran out of heavy fuel, and the weather changed, it rained. The topography changed to a gentler slightly southerly aspect where there is more moisture and different vegetation".

Protecting covenants from fire

When it comes to protecting covenants, Warren has a few tips for fellow covenantors. Where possible, in addition to prevention, he recommends thinking ahead to a solution. "Having a good water source that a helicopter can fill its bucket from nearby, within a few minutes flight time. The closer the water source, the quicker the turnaround time to get more water and the quicker the fire suppression will be."

Warren also recommends staying up to date on the fire dangers for your region. "Avoid carrying out certain activities when the fire danger is 'high' to 'extreme', for example chainsaw operations or topping."

When asked what covenantors can do to front-foot and lower their fire risk, Jesse says fire risk should be considered when managing covenants and selecting species for restoration projects. "Using a diverse range of species can give restoration projects some resilience if they have the misfortune to suffer from a wildfire. However, sometimes the most practical species to use, because they are hardy and browse resistant, are also flammable e.g. mānuka, or even gorse. It's important to be aware of this risk and be very careful with any fires until other less flammable species can establish under the nursery crop. So, part of your management to reduce the impact of fire could be to make sure you stay on top of feral deer or goats, which may be holding your forest back.

"Regarding gorse around a forest edge, I have seen very good work where the covenantor sprays gorse just enough to keep the fence free of interference, while letting the native trees regenerate through the gorse – in no time at all the natives take over and smother the gorse, thus reducing the overall fire risk and giving the landowner a break from spraying because livestock will browse along the fence and keep it tidy."

Fire should only ever be used with caution and knowledge. "I wanted this article to remind landowners to be very careful when lighting fires anywhere, but especially near a covenant or area with native habitat. If in doubt, people should be checking with their local fire authority or they can talk to their local QEII regional representative," says Jesse.

For further information on how covenants recover after fire see: **'From catastrophe to recovery – tips for covenant restoration after disaster strikes'**, Open Space issue 92 (April 2017).

For further information on planting, see **'Planting for Life'** in Open Space issue 90 (March 2016).

For further information on seeding, see **'Revegetation by seeding – an alternative approach to restoring native plant communities'** in Open Space issue 67 (July 2006).

For further information on **natural regeneration**, see Open Space issue 51 (April 2001) and issue 39 (June 1997).



RESTORING FORESTS ON OUR DOORSTEPS

*Written by
Dr. K. J. Wallace*

We all know nature is “out there” and love visiting far-flung wild places to escape pressures of daily life and let our souls revive. I’m the first to advocate for a good bush tramp! But today, 87% of New Zealanders live in busy urban spaces away from large wild expanses, many without access to their own covenanted patch of nature.

This begs the question, why should most people have to go to great lengths to experience NZ nature? What if they had regular access to small patches of high-quality nature right on their doorsteps? Enter the People, Cities & Nature research programme.

I’m privileged to be a postdoctoral researcher in this leading multi-disciplinary programme of urban ecological restoration research in Aotearoa New Zealand. Established in 2016, our team is a diverse group of talented people who are making valuable contributions through a series of interrelated projects: Restoration plantings, Urban Lizards, Mammalian predators, Māori restoration values, Green space benefits, Cross-sector alliances and Soil ecology research.

Our team works in the ten largest NZ cities and is led by Professor Bruce Clarkson. We collaborate across many institutions including the University of Waikato, Victoria University of Wellington, Manaaki Whenua Landcare Research and the University of Otago and are funded by the Ministry of Business, Innovation and Employment.

Our research is predicated on the idea that urban nature is worth restoring and with that, worth protecting too. Recently published research praises the numerous benefits of human contact with nature, and if you’re like me during the level 4 lockdown, you find every bit of urban nature available near home precious!

Urban areas are largely located in lowland Aotearoa with the least extent of indigenous ecosystems remaining. This especially includes wetlands, which exist in almost every New Zealand city, however they comprise only 5% of all registered QEII covenants.

I believe it’s important to restore urban nature to maintain people’s connection with it and avoid the ‘extinction of experience’, a syndrome where future generations become unaware of what our unique nature should look like because they never experience it. Many urban residents never leave cities, and so only know nature as what they engage with there. They may not value nature elsewhere, in those far-flung wild places, or advocate on its behalf when a crucial policy submission process is underway.

I have had the pleasure of being involved with the restoration plantings aspect of the People, Cities & Nature research programme. Planting native species to restore forest in urban centres is an important conservation activity that has been gaining momentum in New Zealand for over 40 years. There were few early projects, largely isolated from each other, and weren't based on scientific knowledge. In contrast, today's urban forest restoration projects are numerous, increasingly linked by conservation networks and knowledgeable communities, and are often on the cutting-edge of our ecological understanding.

Our plantings research is addressing the demand for new information on best practice in urban ecological restoration to support these projects. We are studying plantings throughout New Zealand cities to better understand the requirements for success of restoration efforts of city councils and community groups.

We want to discover the most efficient way to restore urban forest from scratch, from the first plant in the ground, to a mature ecosystem that self-regenerates. There are two main ways we are doing this. First, we are using a nation-wide plot network to measure restoration plantings, aged 6 - 60 years since planting, to determine how regeneration dynamics of restoration plantings vary with microclimate and vegetation composition. Second, we are planting and monitoring late successional enrichment species such as the Rimu tree (*Dacrydium cupressinum*) and epiphyte Akapuka (*Griselinia lucida*) to test how to facilitate urban forest succession. Findings from this will help to improve wildlife habitat and ecosystem service provision through successful restoration of long-lived, self-regenerating urban forests.

Many of our study areas are on public council land, which guarantees continual access. We've also had the addition of several QEII covenants on private land which are special as covenantors are often happy for long term research to take place on their land.

The people factor is key for successful urban restoration ecology and working with QEII covenantors is a relief after the rapid turnover of management in city councils. Covenantors tend to know the history of their

land and can take on ecological management recommendations faster than councils. Even receptive councils have a many-tiered process for change, including liaising with park maintenance contractors who may not have ecological leanings.

This people factor has made working on QEII covenanted land to conduct research in two forests in Southland, Kew Bush and Brian and Chris Rance's covenant, a delight. Our plots in both covenants are in areas of forest planted from scratch, a rare and valuable type of forest in urban areas. I would love to see more planted restored forests in urban areas like these protected under QEII covenant to ensure we can collectively increase and then protect the amount of indigenous ecosystem cover right on our urban doorsteps.

We're thankful to have the support of QEII regional representative for Southland, Jesse Bythell. Jesse has been a great help with our research efforts in Invercargill and we have been delighted to see her and six other QEII regional representatives attend our workshops in Invercargill, Napier and Christchurch. Workshops are a key part of our project, as it allows us to share our research findings to people who can use them.

If you would like to find out more about our workshops or the *People, Cities & Nature* research programme head to our website peoplecitiesnature.co.nz

OPPOSITE PAGE:

*An urban forest restored from scratch 39 years ago named Friend's Bush in Napier.
Photo credit: C Kirby*

ANTI-CLOCKWISE FROM RIGHT:

People, Cities & Nature masters degree recipient Kat de Silva at a Nelson planted forest research plot. Photo credit: K J Wallace

Dr Kiri Joy Wallace (left) with master's student Sarah Busbridge (middle) being interviewed by Lynne Trafford in 2018. Photo credit: Ken Morrison

Tour on the Rance covenant in Invercargill. Photo credit: C Kirby





OTAGO FARMERS SEE COVENANT AS PART OF LEGACY





David and Sarah Smith's Otago sheep and beef farm has a strong family identity with both sets of their parents having owned the 1430 ha Mt Watkins property. They are hoping the next generation will maintain the family connection to the land and are proud their 7 ha QEII covenant will be part of their legacy.



Sarah spent part of her childhood on the farm, inland from Waikouaiti, from the age of eight. Her parents sold the 900 ha Mt Watkins block to a new owner who in turn sold it to David and his parents in 2005.

Sarah and David later met and in a twist of fate she found herself back at her childhood home after marrying. "I grew up on the farm and now we are raising our own children here, it is funny how it worked out, it's cool," Sarah says.

The couple later added an adjacent 500 ha block owned by her parents on the opposite side of the north branch of the Waikouaiti River and last year leased another neighbouring 200 ha block. It isn't the easiest farming country. Rainfall can be scarce with some pastures more than 400 metres above sea level, exposed to southerly winds and bordered by steep rocky gullies down to the river valley.

The Smiths have steadily been making improvements to lift productivity, reduce costs and ensure sustainability. "We always want to push productivity and profitability, while at the same time being sustainable and looking after the land and the environment around us," Sarah says.

Robin Thomas, who retired as QEII's Coastal Otago rep in September, praises the Smiths' approach. "They've got an eye for the farming operation obviously, but they've got a strong eye on the environmental side of it as well. They always seem to me to be looking to the future, and the whole family is actively involved in what they're doing."

They started working on their 7 ha wetland covenant from 2010, damming a wet gully to create a 1 ha lake, including islands where waterfowl can rest and

"You only get a certain amount of time on earth, and on this little patch of land, so you want to make it the best you can and leave it in a better condition than you found it."

breed. The surrounding area was fenced to exclude stock, allowing the wetland vegetation to recover and new plantings to take hold. Some of the plantings of native trees have been destroyed by deer and hares but the wetland vegetation has regenerated strongly.

The wetland has become a focal point for the farm and has attracted a wide range of birds, including paradise shelducks, shovelers, scaup, mallards and grey teal. The Smiths also transferred kōura, native freshwater crayfish, into the lake. "We're really happy with the wetland. You can see it from the road, it's a really nice place and we often go there to sit overlooking the water, watching the ducks and everything going on."

The Smiths have also fenced off the river frontage on their property to keep stock out. Flax, toetoe, cabbage trees and other natives have been planted in recent years along the riverbanks.

Robin says they have acted ahead of changes in regulations for water quality. "I think these guys are at the forefront of what's happening in an environmental sense. They're not threatened by it, they're not scared by it, they're embracing it," he says.

The couple's work was recognised in the 2014 Otago Ballance Farm Environment Awards. The awards in three categories cited their focus on sustainable development and their strong desire to succeed in their business.

The Smiths also have plans to add another covenant to the property to protect an area of 4-5 ha of mature lancewood and kowhai, Sarah says. The gully also includes some *Coprosma virescens*, a rare bushy shrub with an "at risk-declining" threat classification. "There are some special trees in there so it would be good to preserve that. We will probably do that in the future."

Advice the couple has received from QEII and other external advisors on both the environmental and production side of the farm has been important. "It's really good to get outside eyes looking over your farm and challenging you to look at new ways of doing things. I think having outside involvement is really good. Otherwise, you can get a bit stuck in your ways, doing the same old things all the time."

The Smiths' three young sons already love spending as much time as possible getting out and about on the farm. Sarah and David want to provide opportunities for them on the property in the future if they want them.

"You only get a certain amount of time on earth, and on this little patch of land, so you want to make it the best you can and leave it in a better condition than you found it," Sarah says. "We definitely want to give our sons something pretty special that they can hopefully thank their parents for."



“We always want to push productivity and profitability, while at the same time being sustainable and looking after the land and the environment around us.”



OUR PEOPLE

In every issue of Open Space we feature some of our regional representatives. In this issue, we are delighted to introduce you to Cathy Rufaut, the new regional representative for Coastal Otago and Chris Floyd, our regional representative for North Auckland.



Cathy sees collaboration as key to conservation

QEII's new Coastal Otago regional representative sees New Zealand's privately-owned land as a crucial part of protecting nature and is excited at the prospect of working with covenantors to help them achieve their goals.

"The relationships QEII has and the focus on private land is such an important part of the environmental issues we are dealing with in New Zealand. QEII embraces people as being part of the solution for environmental issues, not just as the cause, and I really believe in that way of thinking," says Cathy.

"We have to bring all people alongside us to move forward with conservation and land protection, we can't just have a situation where there are a few scientists and Government departments doing it. Landowners and QEII reps are a fantastic network of people that can build and share information on solving problems and creating positive change."

Cathy has an academic background in ecology at Otago University and hands-on experience too as a former project manager for Pest-Free Peninsula with the Otago Peninsula Biodiversity Group. "Doing that Pest-Free Peninsula work I met lots of landowners and a number of them had QEII covenants on them. With this job now it's nice to reconnect with those people again, going back to their properties and seeing things through a very similar lens, but with a slightly different focus," she says.

Coastal Otago has 156 covenants from Waitaki in the north to Clutha in the south and includes sharp contrasts between the lush coastal landscapes and the harsher inland climate with its brown vegetation. "It's great, it's really interesting to be able to cover that spectrum of vegetation and climate," she says of the role she took over from Robin Thomas in September.

She believes farmers have an important perspective about caring for the land, particularly regarding their long-term vision for their properties. "I think those of us working in land restoration can learn a lot from the farming community about their long-term view of their farm.

"Many restoration projects set short term goals but farmers have an intergenerational outlook, they plan for their children, they plan for their grandchildren. It means they have that longer-term view of land management."

Cathy's long involvement with conservation started with a love of animals as a child. A couple of inspirational lecturers at university ignited her interest in the environment, "and I have been following that thread ever since."

She completed a PhD in ecology in 2003 and has since been working with geologist Professor Dave Craw in the Geology Department at Otago University on research projects related to land rehabilitation, especially the restoration of former mine sites.

"Our goal is to understand what is driving recovery and revegetation of these pretty catastrophically disturbed sites," she says. "I've always worked in this restoration and conservation world, and this has been the research extension of that. The old mine sites have taught me a lot about natural processes and the time frames involved in ecosystem rebuilding."

Her hands-on experience extends to working for the Haehaeata Natural Heritage Trust, which promotes and educates people about biodiversity in Central Otago through a community-run native plant nursery. "Combining research with community-led conservation and mātauranga Māori has given me a respect for the range of values that people bring to conservation and preservation".

Cathy lives with her family at Portabello on the Otago Peninsula and in her spare time she enjoys gardening, cycling and walking the family dogs. But for now, her focus will be on her new QEII job and getting to know covenant owners. "It's about helping people feel confident about the decisions they make on their covenants and feeling they are making well-informed decisions that they are comfortable with."

"Landowners and QEII reps are a fantastic network of people that can build and share information on solving problems and creating positive change."

"Relationships come first"

When Chris Floyd took on the job as QEII rep for the North Auckland region eight years ago he thought his primary focus would be on the covenants but now he knows it's really about the people.

"It's really satisfying to offer help or support to landowners and learn from their efforts. It's a really significant part of the job. I really enjoy that side of it and appreciate the friendships that I've developed during my time in the job," Chris says.

"You get truly inspired by some of our covenantors and the time and effort and the professionalism they show. They are really knowledgeable and know exactly what they are doing and why they're doing it."

Chris's patch extends from the city suburbs at the northern end of the Auckland Harbour Bridge and the

northern end of the Waitākere Ranges through to the Northland border. His area encompasses the southern half of the Kaipara Harbour in the west to the Hauraki Gulf islands in the east.

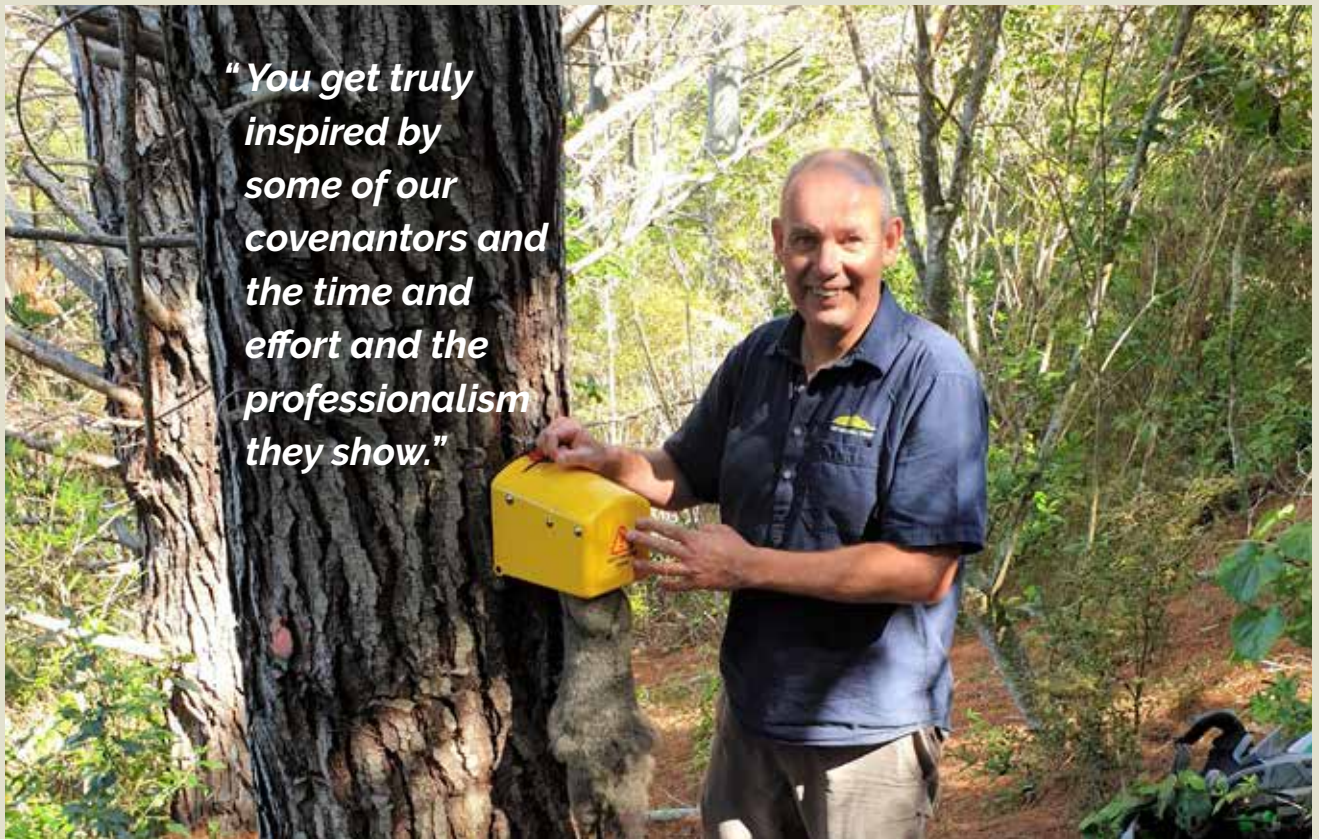
Many stunning landscapes and natural treasures can be found among the 150-plus covenants that Chris is responsible for, but it is the people who ensure their protection and restoration. The covenants include residential bush lots in the northern Waitākere Range, lifestyle blocks, farm bush remnants, four QEII-owned properties and a number of large-scale protected areas.

"It's really satisfying to offer help or support to landowners and in some cases learn from their efforts."

BELOW:

Chris oversees the gumboot throwing competition at the Queen's Commonwealth Canopy dedication event with HRH Prince Harry, Duke of Sussex and children from Pinehill School in 2018.





"You get truly inspired by some of our covenantors and the time and effort and the professionalism they show."

Among the QEII-owned properties Chris looks after is the 100 ha Dunn's Bush near Puhoi, that was donated by Arthur and Val Dunn in 1994.

Two other QEII properties are on Aotea Great Barrier Island. "It's always a great pleasure to go over and spend a bit of time, and I try to combine it with some downtime so I can really get to appreciate the place," he says.

Great work is being done by landowners on some of the larger covenants on Great Barrier, including the team upholding founder Tony Bouzaid's legacy at Glenfern Sanctuary and by Judy Gilbert and others at Windy Hill Sanctuary.

On the mainland, covenantors Kevin and Gill Adshead initiated the Forest Bridge Trust with the aim of creating a wildlife corridor between the east and west coasts of North Auckland. "They're now real movers and shakers as an organisation and are doing amazing work for the community. They're two people I just love to catch up with and am continually inspired by," Chris says.

One of his covenants, the Carol Whaley Native Bush, gained international media attention when it was dedicated by the Duke and Duchess of Sussex in 2018 as part of the Queen's Commonwealth Canopy project. The 17 ha bush block is part of the North Shore Riding Club's property at Albany and the visit by Harry and Meghan has injected new life into protection efforts there.

"Since the royal visit, a group has formed to start trapping and weed control and that bush is getting really well looked after now. There's definitely a legacy to that visit which is a great feeling."

QEII's role protecting natural areas in North Auckland is more important than ever as development pressures grow and the city spreads north. QEII is working to ensure the values of the covenants are protected as new housing and roads are developed.

Outside his QEII role, Chris's focus remains on protecting nature and he chairs the recently formed Pest-Free Leigh group which aims to enhance

the area's native wildlife and make the area safe for birds spreading from nearby predator-free Te Hauturu-o-Toi/Little Barrier Island.

English-born Chris sees the irony in his involvement in efforts to control introduced predators including stoats, weasels, ferrets and hedgehogs to halt the decline of native wildlife. "You grow up in the UK treasuring hedgehogs, even stoats and weasels as part of the ecosystem, and you get here and you have a very different perspective. I even used to have pet ferrets as a kid, I grew up rabbiting with ferrets."

If his work for QEII and Pest-Free Leigh isn't enough, he is also working with his girlfriend Polly to trap predators and control weeds on a bush-clad property she bought next door to the Tawapou QEII covenants at Tutukaka in Northland. "It's a bit of a busman's holiday for me but it's a real chance to have some more practical experience of the stuff I'm often only talking about and I really love that."



John Kneebone

4 September 1935 – 28 June 2020

John Kneebone passed peacefully in Cambridge aged 84, surrounded by his family.

John began his political career in 1959 when he was elected to the Matamata County Council. In 1966 he was the recipient of the Nuffield Scholarship which saw him go to Britain to study mechanisation of agriculture. It was through this that he had the idea for establishing the National Agricultural Field days.

John was also integral to the establishment of QEII National Trust. As one of the founding fathers of QEII, he worked alongside Gordon Stephenson to set up the Trust, assisting with the political and advocacy aspects of the Trust's inception.

He was the Federated Farmers National President from 1974 until 1977 and went on to serve on the Land Settlement Board. John was the first chairman for two organisations: the newly created Crown Research Institute Landcare Research, on which he served two terms, and the Lake Taupo Protection Trust.

His contribution to public service and agriculture was recognised in 1988 when John was appointed a Companion of the Order of St Michael and St George in the New Year's Honours. He went on to work on the Waitangi Tribunal in 1989 where he served for 17 years.

John was a loved Husband, Dad, and Grandpa of Kay, Stuart and Hinemarie, Daniel and Suzette, Jane and Doug, Anna, Sarah, Harry and Kate.

District Council	Location	Covenant Name	Area (ha)	Main open space type
Waikato	Pukekohe		8.562	Lowland secondary hardwood-podocarp forest
Tasman	North of Ruffe Creek	Kern Creek	137.5357	Submontane modified secondary shrubland, primary forest & exotic forest
Southland	Te Anau	Wellsfords Wetland - Eweburn	6.2588	Submontane modified primary shrubland, rushland and exotic grassland
Waimate	Hunter		1.0169	Lowland modified primary sedgeland
Waimate	Hunter		13.7786	Lowland modified primary and secondary forest, secondary shrubland and sedgeland wetland
Waikato	Waikaretu	Tironui	20.558	Lowland modified primary forest
New Plymouth	Omata	Watatao	2.8173	Semicoastal modified primary and secondary forest
Hurunui	Greta Cutting, Greta Valley	Mark Fitzsimmons Bush	10.459	Lowland secondary and modified secondary forest and modified primary rockland and stream.
Hurunui	Waiau, North Canterbury	Linton's Lookout	3.675	Lowland modified secondary forest, scrub and wetland
Southland	Te Anau	Tibbles Extension - Eweburn	144.1967	Submontane modified primary shrubland, mossfield and exotic grassland
Waitomo	Piopio	The Petch Family Preservation	0.5794	Lowland secondary treeland, modified secondary flaxland, revegetated treeland, shrubland and exotic treeland and grassland and open water.
Southland	Lumsden		8.9459	Hill country Tussock/Kowhai and Beech Stands
Far North	Peria		70.982	Lowland secondary shrubland and secondary podocarp/broadleaf forest
Far North	Peria		15.6384	Lowland secondary shrubland and secondary podocarp/broadleaf forest
Auckland	Wharehine, W of Wellsford		0.8602	Coastal modified secondary forest, sedgeland and exotic grassland
Auckland	Wharehine, W of Wellsford	Te Papa Whakamaurutanga o Whanaki	6.4415	Coastal modified secondary forest and sedgeland
Auckland	Wharehine, W of Wellsford	The Kahurangi Covenant	3.0393	Semi-coastal modified primary forest
Christchurch	Southern Bays, Banks Peninsula	Whakakai	8.5947	Semi-coastal modified primary forest, lowland modified primary forest and sedgeland, lowland modified secondary shrubland and exotic grassland and stream

Kaipara	Mangawhai	Griceland Forest	0.3451	Lowland secondary forest
Dunedin	Sutton	Jones' Tors Covenant	15.3035	Submontane modified secondary rockland, grassland, rushland and wetland
Marlborough	Branch River		26.4529	Submontane modified primary and secondary forest and modified secondary scrub and lowland modified primary and modified secondary forest
Kaipara	Arapohue	Peter Pegg Memorial Bush	1.8097	Lowland secondary forest
Auckland	Glorit	Hooper's Bush	35.0494	Semi-coastal modified primary forest and secondary scrub, reedland and gumland
Thames-Coromandel	Whitianga	Kirehe-Ounuora	2.5026	Coastal secondary forest and shrubland (archaeological sites and landmarks)
Thames-Coromandel	Whitianga	Mairauriki	2.5246	Coastal secondary forest and shrubland, cultural/ archaeological sites
Marlborough	Waihopai		246.0791	Sub-alpine modified primary shrubland, montane modified secondary shrubland and sub-montane modified shrubland
Thames-Coromandel	Whitianga	Opiki	0.1022	Coastal secondary forest and shrubland (archaeological sites and landmarks)
Southland	Mossburn	Becks Gully - Waipuna	22.2617	Submontane modified primary treeland and tussockland, secondary scrub, modified secondary sedgeland and exotic grassland
Wairoa	Mahia Peninsula		20.133	Semicoastal secondary forest, scrub and exotic grassland
Southland	Te Anau	Fred Burn Wetland - Dale Farm	42.755	Sub-montane modified primary rushland and shrubland, modified secondary grassland, and open water.
Southland	Te Anau	Gordon's Gully Extension - Dale Farm	4.8407	Sub-montane modified primary forest and shrubland, and artificially created pond
Marlborough	Waihopai		129.3777	Lowland modified primary and secondary forest, modified primary shrubland and modified secondary scrub and sub-montane modified primary shrubland and montane modified secondary shrubland and scrub
New Plymouth	Urenui	Kotare Bush	5.6197	Semi-coastal modified primary forest
Marlborough	Mahakipawa	Emily's Grove	0.3324	Coastal modified secondary forest & grassland

Grey	Kokiri	Fernbird Wetland Covenant - Weka	232.9507	Lowland modified primary and secondary forest, secondary scrub and wetland
New Plymouth	Okato	Maitahi Wetlands	0.8288	Semi-coastal secondary wetland
New Plymouth	Waitara		3.686	Semicoastal modified primary forest and secondary rushland
Whangarei	Tahere	Taheke Stream	0.6995	Lowland modified secondary sedgeland wetland, revegetated shrubland and flaxland
Selwyn	Windwhistle	C D H Guild Covenant	21.9918	Submontane modified secondary scrub, tussockland, sedgeland and grassland and stream
Tasman	Tapawera	Kōtukutuku Ellis Valley Covenant	33.5225	Lowland modified secondary forest, shrubland and exotic grassland
Auckland	Ponga	Alby's Wildside	1.2875	Lowland modified primary forest and secondary scrub
Auckland	Ponga	Alby's Wildside	1.3776	Lowland modified primary forest and secondary scrub
Auckland	Ponga	Alby's Wildside	5.4088	Lowland modified primary forest and secondary scrub
Carterton	Ahiaruhe	The Wilding	9.19	Lowland modified secondary forest and modified primary wetland
Clutha	Tahakopa Valley	M. Blair Family Forest Sanctuary	13.3326	Lowland modified primary podocarp/hardwood forest and secondary shrubland.
Waitomo			6.081	Lowland modified primary forest, secondary scrub and wetland.
Waitomo	Waitomo Caves		7.479	Lowland hardwood/podocarp forest and geological (limestone)
Southland	Upper Whitestone River Valley	Twin Creeks	91.7371	Submontane modified primary forest and rushland; secondary treeland, shrubland and grassland
Southland	Upper Whitestone River Valley	Pip's Covenant	38.665	Sub-montane modified primary forest and mossfield and secondary shrubland.
Southland	Upper Whitestone River Valley	Twin Creeks Extension	10.3503	Submontane modified secondary grassland, tussockland and shrubland
Whangarei	Helena Bay		3.2124	Coastal secondary and revegetated forest & wetland
Whangarei	Helena Bay		4.9133	Coastal secondary and revegetated forest & wetland
Southland	Upper Oreti River valley	Williams Escarpment – Centre Hill	3.5565	Submontane secondary shrubland



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