



**QEII National Trust**  
Open Space New Zealand  
Ngā Kairauhī Papa

# Open Space

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**THIS YEAR WE CELEBRATE  
OUR 40TH ANNIVERSARY!  
1977-2017**

In this issue:  
Queen's Commonwealth Canopy launch  
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Managing fish passage  
Extreme events and covenants  
Weed info and quiz, and more...



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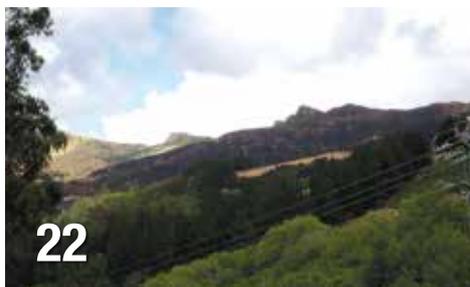
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**QEII National Trust**  
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COVER PHOTOS

Celebrating 40 years of open space covenanting in New Zealand. Photos on cover from past editions of *Open Space* magazine.

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Guest Editorial – Ian Spellerberg

## A hug for tree huggers

We are all familiar with the terms 'tree hugging' and 'tree huggers'. Unfortunately, 'tree hugging' is used in a derogatory sense and 'tree huggers' a derisive sense. That's unfortunate because tree hugging has health benefits and 'tree huggers' contribute significantly to environmental sustainability. That in turn has social and economic benefits.

In a broader sense, communing with nature has long been known to have health benefits and to contribute to our wellbeing. Twelve years ago Richard Louv (co-founder of the Children and Nature Network) published his book aptly called *Last Child in the Woods: saving our children from nature deficit disorder*. He found that children who spend more time outdoors communing with nature are better adjusted to do better schoolwork, and live happier lives.

Adults, too, gain multiple benefits from the diversity of pleasures offered by nature, including health benefits and psychological benefits. That is no surprise given that humans have a natural affinity for nature. The eminent biologist Edward O. Wilson called that affinity 'biophilia'.

What about tree hugging? The author Matthew Silverstone in his 2011 book *Blinded by Science* puts forward evidence to suggest that tree hugging can help with various issues such as depression and concentration levels. Until you try tree hugging, you will have difficulty understanding the strong feelings of interconnectedness between you and the tree. Some tree huggers sense a spiritual connection. Don't dismiss that because (with apologies to the great Bard) 'there are more things in heaven and earth than are dreamed of in your philosophy'.

Tree hugging is educational. It reminds us how much we depend on trees. They take away carbon dioxide, they give us oxygen, absorb pollutants, and dampen noise. Trees provide us with shelter, food, fibre, help prevent erosion. If you try to put all those benefits into monetary terms you would come up with millions of dollars. Hugging a tree is just one way of thanking and acknowledging what trees do for us. No harm in that.

But what about the derisive use of the term 'tree huggers'. Why does that term

carry with it a sense of hostility? Look up the meaning of tree hugger and you will find several definitions ranging from 'an environmentalist concerned with preserving forests' to 'someone who loves the environment and believes it needs to be protected for our benefit and that of future generations'. Both definitions imply a need for sustainable use of nature and the environment. What's wrong with that?

Seven years ago the then UN Under-Secretary General and executive director of the UN Environment Programme made a very succinct statement. He said 'We are destroying life on Earth'. That was not a new admission. Seven years on nothing has changed. Matters get worse. While much discussion takes place about how to address human-induced climate change, there is a much bigger and all-pervading issue. It's the continuing unsustainable and inequitable exploitation of nature, ecosystems, and the physical environment. Human-induced climate change is just one small part of that all-encompassing issue. If 'tree huggers' are indeed 'environmentalists who love the environment and believe that it needs to be protected for our benefit and that of future generations', then we should be applauding them.

For many decades, tree huggers, conservationists, greenies, environmentalists, and environmental practitioners have courageously reminded us that nature and the environment has its limits. Waterways and the oceans have their limits in terms of how much human pollution can be absorbed before ecosystems are destroyed. Fish populations have limits to how much can be harvested. Soils have limits to their viability. *Ad infinitum!* The bad economic consequences of unsustainable and inequitable exploitation have been seen far too many times—at a huge social cost for all!

Environmental issues can't escape the mix of perceptions, opinions, and science. Consequently, environmentalists may be ridiculed as tree huggers but they must have the courage of their convictions. The science may be questioned and that is to be expected. However, environmental practitioners who deal with the science must be competent and work to the highest standards of practice. How can that be achieved?



Tree huggers Sean and Frida Stephens  
PHOTOGRAPHY Anne McLean

In New Zealand there are several 'environment institutes'. One example is the Environment Institute of Australia and New Zealand (EIANZ). Institutes have codes of practice and ethics. They also provide professional development to ensure that practitioners are competent. Suffice to say that all environmental practitioners, particularly those in local government, should be a member of an environment institute and all should aspire to certification. That would be good for the person, their employer, the environment profession and, most importantly, the environment.

Using the term 'tree huggers' in a derisive sense is unhelpful. When did name calling get anyone anywhere? Far better, is it not to learn and understand why some people feel so passionate about NOT destroying life on Earth.

Based at Lincoln University in Canterbury, Emeritus Professor Ian Spellerberg is an environmental scientist and a thought leader on matters of national and international significance relating to ecology, nature conservation, environmental education, and environmental best practice. Now semi-retired, he continues to undertake research in nature conservation and environmental sustainability. He is an Honorary Fellow of the Environment Institute of Australia and New Zealand Inc. (EIANZ) and a committed tree hugger.

## A word from the Chair



### Celebrating 40 years!

I would like to acknowledge the National Trust's founders, covenantors and members, employees, and board members, past and present, as we celebrate our 40th anniversary this year. In the space of 40 years the National Trust's covenant network has

grown from a handful set up by the pioneering covenantors in Waikato in the late 1970s to more than 4300 today. Almost two a week since we were founded in 1977—a success story that so many people have played a role in, including the many organisations, groups, and individuals that have supported us in the past and that support us today. Together we are contributing to the protection of our vulnerable landscapes and biodiversity. In the words of our key founder, Gordon

Stephenson, 'We can be justifiably proud of what open space covenants add to the national scene, all, individually and collectively, adding something of special value to the character of New Zealand.'

### Extreme events

Many people have been affected by November's 7.8 magnitude earthquake. The damage to land in Canterbury and Marlborough following this jolt was enormous and will last for years. More recently, fire has also caused severe damage in the Christchurch, Coromandel, and Marlborough regions. A number of covenantors have been caught up in these events and our thoughts go out to them and their communities. We know they will be feeling shock and grief as they grapple with the aftermath of these traumatic events.

### James Guild

CHAIR QEII NATIONAL TRUST

## Wellington Board meeting



The Board's November 2016 meeting was held in Wellington, followed by a gathering of local covenantors and associates at Porirua's Judgeford Golf Course club rooms and a visit to Mike and Christine Jacobson's nearby covenant. Guest speakers at the event included Colin Shore, a registered reptile keeper, who talked about Wellington's geckos and skinks, and Peter Cooper, project coordinator of the Rimutaka restoration project. Peter talked about the project's work and goals to reintroduce kiwi and threatened mistletoes. Christine and Mike Jacobson's covenant is one of Wellington region's most diverse forest remnants, with big podocarps, kohekohe, well-advanced secondary forest, and a lush nikau grove.



## Letters

### The merits of *Muehlenbeckia australis*

Grateful thanks to Brian Patrick for highlighting 'The merits of *Muehlenbeckia australis*/pohuehue' (Issue 91, October 2016). Yes, some people do consider it a weed. It is described in *An Illustrated Guide to Common Weeds of New Zealand*. 2010. Popay, I, Champion, P, James, T. The authors say it is 'One of the few native species considered a weed in some circumstances.' The underlining is mine. Patrick states that pohuehue '... is the New Zealand plant most eaten by generalist- and specialist-feeding butterflies and moths'. This feature is also surely of immense benefit to the plant species they pollinate, and to the invertebrates, lizards, and birds which prey on them. Add these ecological benefits to the plant's ability to protect the margins of regenerating forest areas from the 'edge effect'. These margins might otherwise be affected by the ingress of wind, and intense sunlight, both of which may reduce soil-moisture levels, seed germination, and seedling survival. Patrick rightly describes pohuehue as 'Widespread and rambunctious', then cites its crucial role in our forest ecosystems. Compelling reasons to protect this vigorous vine!

Chris Horne

### QEII's core business

I wish to record a slightly different viewpoint in regard to the expense of fighting the Coromandel open space legal action. Twice in issue 91 the Trust promotes the view that court action to defend the indefeasibility of open space covenants distracts the Trust from its core business. I suggest that obtaining a Supreme Court ruling *is* core business. The Trust, its covenantors and all supporting Kiwis need to know absolutely that covenanting decisions will not subsequently be overturned to further the grasping aims of future property owners. So, I welcome this property speculator's attempts and eagerly anticipate the Supreme Court driving the final nail in his development coffin.

Brian Collins

## Students help with weedbusting

Just before the Christmas break, year 6 and 7 students from Mt Somer's Springburn School spent two days weedbusting in the 10ha forest covenant that surrounds Staveley Campground, 40km northwest of Ashburton. Most of Canterbury's forests were cleared around the beginning of the 19th century, making this remnant block quite special. It is the eastern-most patch of mountain beech left in the entire Ashburton district and a rare reminder of what forests in the area once looked like.

Unfortunately, invasive weeds have infiltrated the bush and are threatening its health. It was clear to Staveley Camp committee members that action was needed to help them keep on top of the problem. They came up a plan to expand the camp's activities programme to include environmental education opportunities in the covenant.

'So many kids from Canterbury haven't even seen bush before. We wanted to devise a programme of activities that would get students out and enjoying the forest while including ways they could get involved and actually do something about looking after it as well,' camp committee member Barry Marett said.



Barry Marett and Sarah White with students from Springburn School

Springburn School is the first to take part in the new programme. It is hoped more schools will get involved over time. The project at Staveley Camp is one of a number supported by the QEII Community Weedbusters project

(QECW). Set up with funds from DOC's Community Partnership Fund, QECW supports community weedbusting initiatives that are tackling invasive weeds, including those on the Minister of Conservation's 'dirty dozen' list.

## Crowd-funding to protect more waterways



Filming for the campaign

QEII National Trust and Horizon Farming Ltd recently launched a crowd-funding campaign with Million Metres to restore 1900m alongside the Mangapapa Stream

near Woodville. This is the National Trust's fifth crowd-funding campaign with Million Metres. It aims to raise \$27,550 to plant 4500 native plants alongside the

Manawatu tributary that runs through a QEII National Trust covenant on Ratahiwi Farm. The streamside plantings will improve water health and enhance the habitat of native fish and invertebrates. The stream feeds the Woodville community's water supply, another important reason to protect it.

It costs \$14.50 per metre to plant this length of stream. If you would like to support the project, go to [millionmetres.org.nz](http://millionmetres.org.nz), click on the link to the Mangapapa Stream Ratahiwi Farm project and contribute to a few metres of planting. The campaign will run over the summer and autumn months and planting will take place over the winter.

The Million Metres Project was set up by the Sustainable Business Network and aims to help communities and individuals access the funds they need to protect and enhance the health of a million metres of rivers and streams in New Zealand.

The National Trust has raised approximately \$70,000 with its four previous campaigns to help plant around 3820 metres alongside waterways on covenanted properties.

## Queen's Commonwealth Canopy launches



Laura Crone and Anna Turnbull (in blue) speaking with Her Majesty at the QCC launch ceremony at Buckingham Palace



Left: Dame Patsy Reddy, Governor-General, unveiling Mt Terako Covenant, New Zealand's first QCC covenant, with QEII Board Chair James Guild to the right



Right: Hon Maggie Barry ONZM, Minister of Conservation and QEII CEO Mike Jebson (in the background)



Barney Thomas (Department of Conservation) with Jill and John Latham (President of the Royal Commonwealth Society, Canterbury Branch)



New Zealand's contribution to The Queen's Commonwealth Canopy (QCC) initiative, a pan-Commonwealth forest conservation programme, was launched on 4 November 2016 by Her Excellency, Dame Patsy Reddy, Governor-General of New Zealand. The event celebrated the registration of Mount Terako Covenant, New Zealand's first QCC covenant, established by Sue and Peter Turnbull in partnership with the QEII National Trust.

All Commonwealth countries were invited to contribute to the QCC initiative, which was announced by the Queen at the opening of CHOGM (Commonwealth Heads of Government Meeting) in Malta in November 2015. New Zealand was among the first to support it with a special Government allocation of \$1 million over 3 years to the QEII National Trust to help it extend the network of covenants protecting native forests on private land.

On 15 November 2016, the High Commissioner of New Zealand to the United Kingdom, Rt Hon Sir Lockwood Smith KNZM PhD,



accompanied by Laura Crone, Second Secretary - New Zealand High Commission, attended the grand launch of the QCC at Buckingham Palace. The New Zealand delegation was completed by Anna Turnbull, Peter and Sue Turnbull's daughter, who lives in London.

Certificates of QCC Partnership were presented to High Commissioners during a formal ceremony in which Sir David Attenborough and Rt Hon Sir Christopher Geidt, Private Secretary to Her Majesty, spoke. During his speech, Sir Christopher specifically mentioned Anna Turnbull's attendance and passed on Her Majesty's best wishes to the Turnbells and their community (the 7.8 magnitude earthquake had struck the region the day before).

A QCC highlights film showcasing progress of the initiative throughout the Commonwealth was screened during the ceremony. It included footage sent over by the QEII National Trust that had been shot at our QCC launch event and in Mt Terako Covenant.

Photos clockwise from bottom left: Peter Turnbull with Mt Terako Covenant in the background, delicious cupcakes baked by Mt Lyford Lodge caterers, Mt Terako Covenant, Sir David Gascoigne and Dame Patsy Reddy with Sue and Peter Turnbull, preparing for filming, Government House officials, the Minister of Conservation, local politicians and covenantors, and friends and associates of the National Trust and the Turnbells were among the 100-plus guests who attended the event at Mt Lyford Lodge in Waiau, North Canterbury, and later visited Mt Terako Covenant



# The diversity of open space protection



All around New Zealand, covenantors are helping to protect special natural and cultural sites on their land. Around 90 percent of the 4300-plus covenants established with the QEII National Trust protect the special features of forests, wetlands, and grasslands ecosystems. The remaining 10 percent protect other open space features such as important landscapes, cultural and historic values, shrublands, mossfields, geological sites, and opportunities for public access and enjoyment of open space. The stories featured in the following pages showcase a selection of covenants that fall within this latter category.

## Te Mata Park

Te Mata Park is a significant area of open space in Hawke's Bay and is loved by locals and visitors alike. Its famous peak stands at 399 metres above sea level at the eastern boundary of the Heretaunga Plains. The panoramic views at the peak take in all directions—as far as Mt Ruapehu on a clear day.

The Park lies on the edge of dramatic uplifted limestone hill country, cut through by the Tukituki River. From the summit, a series of scarps, spurs, and valleys drop away. There are massive rock cliffs and outcrops studded with marine shell fossils. Native vegetation clings to the cliffs. Several of the plants on these cliffs are unique to Te Mata Park and, as a result, are some of the rarest in New Zealand. Bush remnants and wetlands remain nestled in the valleys.

The upper parts of the Park are of particular cultural importance to Māori. The hilly ridgeline is recognised as the prostrate body of the chief Rongokako, the grandfather of Kahungunu and ancestor of Ngāti Kahungunu.

Well-developed karaka forests suggest intensive settlement by Māori in the past. Moa bones found on the slopes may also be associated with this settlement and there are archaeological remains as well, including pā sites and other earthworks.

The land that makes up Te Mata Park was included in a block purchased in 1862 by John Chambers. Chambers farmed in the area, including what now encompasses the Te Mata Estate Winery and land along the Waimarama Road and Tukituki River. In 1927, as a memorial to their father, his sons Bernard, John, and Mason gifted in perpetuity a 242 acre (99ha) reserve on the upper Havelock North hills, including Te Mata Peak, to the people of Hawke's Bay. A charitable trust was set up to manage the area as a recreational reserve for the benefit of all citizens of the provincial district of Hawke's Bay. In 1997, the Park was placed under the protection of a QEII National Trust open space covenant.

Te Mata Park is recognised as an 'Outstanding Natural Landscape' by the Hastings District Council and is the most visited tourist destination in Hawke's Bay. Over 200,000 visitors a year come to the park to enjoy the views, or take part in activities such as walking and mountain biking along the Park's network of tracks, orienteering, or catching sea breezes and summer thermals at the peak for hang gliding and paragliding.

Read more about the Park at [tematapark.co.nz](http://tematapark.co.nz).

## Dryland kānuka covenant



The eastern lowlands of the South Island have been particularly vulnerable to the loss of native ecosystems through fires and agricultural development, so even small or modified remnants can be surprisingly valuable.

WORDS Miles Giller

PHOTOGRAPHY Miles Giller and Robyn Smith

When a local conservationist told the New Zealand Superannuation Fund that a small area of dryland kānuka shrubland growing on one of its properties near Culverden in North Canterbury might be worth protecting, its property managers contacted the local QEII representative. At first glance the area appeared quite austere. On close inspection, however, a varied and valuable collection of dryland flora was revealed.

The dominant plant is a local form of kānuka (*Kunzea serotina*), though in this covenant these plants tend to survive and spread to some degree by layering their lower side-branches, a novel growth habit for the genus in New Zealand. Several kānuka trees provide support for the dainty native climber *Clematis marata*, which mimics the kānuka foliage and is almost invisible to the naked eye until spring when its showy green or hazel flowers hang in trusses and give off a sweet fruity scent.

Two small clusters of the suckering shrub *Coprosma intertexta* (at risk-declining) have been located, another species that tends to mimic the appearance of kānuka. Gaps between the scattered kānuka trees are dominated by fields of dryland mosses and lichens, with occasional patches of the almost leafless groundcover *Muehlenbeckia ephedroides* (at risk-declining), known to be an especially important host for native moths and butterflies. Abundant orchids emerge and flower each spring, only to die down over the dry summer and cold winter periods.

The 8.3ha covenant has been rabbit-fenced and a few wilding pines have been controlled, complementing the protection of similar dryland vegetation in the nearby Culverden and Medbury Scientific Reserves. The three areas each protect a vignette of almost vanished vegetation types that would once have dominated large parts of the Culverden basin.

Given the scarcity of protected dryland habitats, North Canterbury National Trust regional representative Miles Giller was particularly delighted that the New Zealand Superannuation Fund and its farm managers recognised the significance of the site and chose to have it formally protected. Environment Canterbury has also recognised the importance of the area, and has provided funding for fencing and weed control.



*Clematis marata*



*Leucopogon fraseri*



*Kānuka in flower*



*Racomitrium sp.*

## Scenery and heritage values protected in the Bay of Plenty



Onekawa Te Mawhai Regional Park is a working farm. It is located in the Eastern Bay of Plenty on the north-western portion of the marine sandstone landform that rises between the Ohiwa Harbour and the Waioatahe River. The park is open to the public and features dramatic scenery and rich heritage values.

In 1996 the Tuck family, who owned the land at the time, protected the whole farm with a QEII open space covenant. They later sold the land to the Bay of Plenty Regional Council, which now manages the area in partnership with Upokorehe hapū.

In the past Onekawa Te Mawhai and the surrounding area was the site of many battles and events significant to the history of

local tangata whenua. Pā sites, terraces, pits, and middens are physical markers left from these earlier times.

The western portion of the park is dominated by the archaeological remains of Onekawa Pā and other archaeological sites. At the northern end of the park several further archaeological sites, collectively known as Te Mawhai, have a close association with Onekawa Pā.

Natural heritage values are also protected in the park, including coastal pōhutukawa forests that have been identified as the best in the Opotiki Ecological District.

PHOTO Courtesy of Bay of Plenty Regional Council

## Te Hoe Whaling Station

In 2002, Len Symes and Jan Lincoln-Symes established a covenant to protect the culturally and historically rich site of Te Hoe Whaling Station that is located on their Mahia Peninsula farm on the east coast of the North Island.

Little is known about the history of the station except that it was established around 1840 by a certain Mr Ellis. The names of several of the whalers are known, including a Mr Daniel O'Keefe who is buried at the site.

In 2005, a joint dig was carried out by the Auckland Museum and the Anthropology Department of the University of Otago to record and map the site's archaeological features as part of a larger project investigating New Zealand's early European communities. Whaling was a prominent industry in the 1830s and whalers were among the first European settlers to arrive in

the country. Whalers were also one of the first European groups that Māori interacted with on a regular basis, with this interaction affecting the experiences of both cultures.

Te Hoe was chosen for the dig because of its outstanding archaeological remains, including trywork foundations, where whale blubber was rendered down into oil in large trypots. The foundations of fireplaces built to support the trypots were uncovered during the dig, and remains of iron tanks that were sunk into the ground and where the whale oil was poured to cool. An old grindstone and the remains of barrels used to ship the oil were also found. Other remains from the whaling station include stone fireplaces and the footprints of a number of huts, while shell middens, kumara pits, and house sites uncovered evidence of earlier Māori occupation at the site.

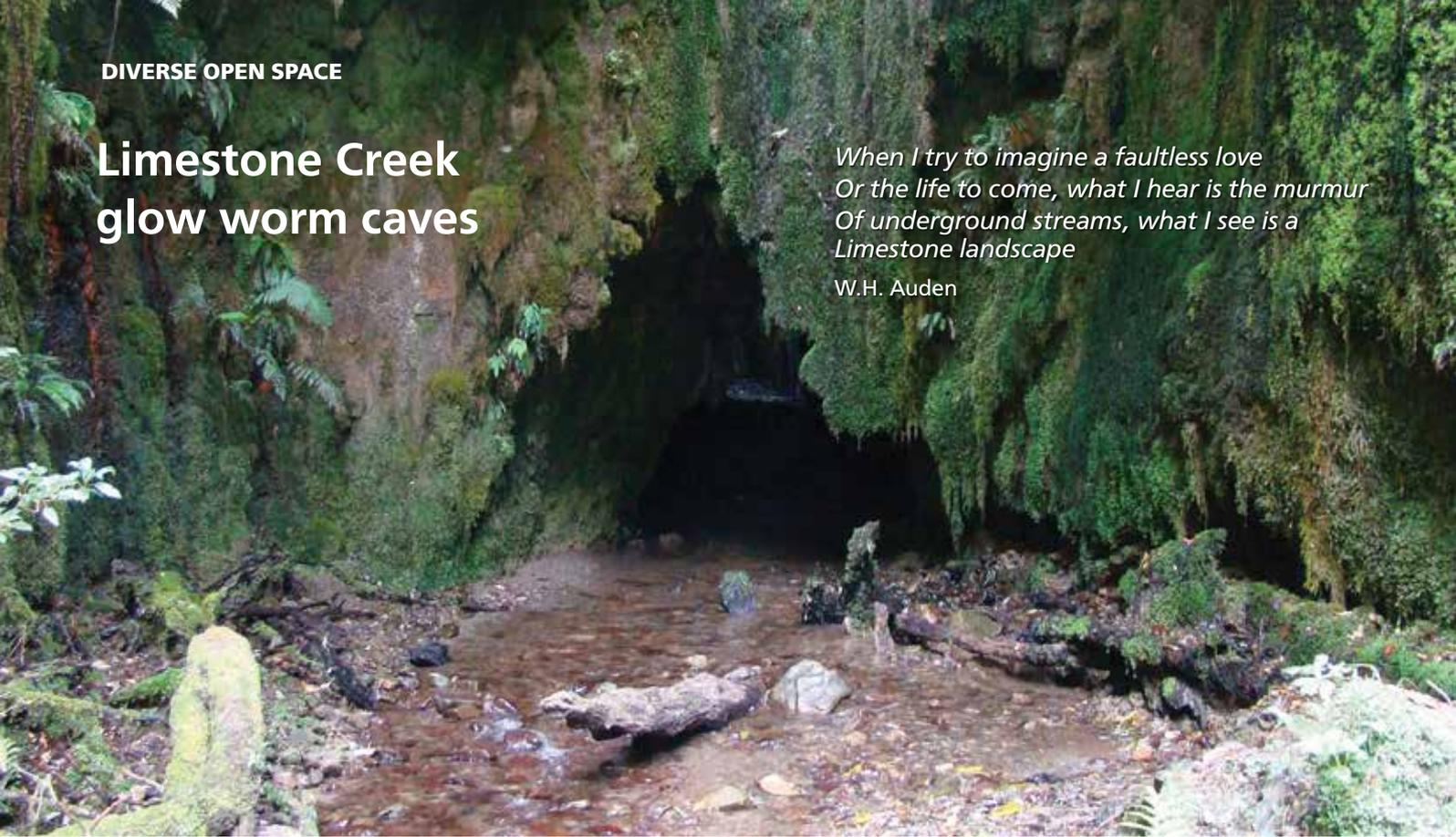
PHOTOGRAPHY Malcolm Rutherford

Daniel O'Keefe's grave

# Limestone Creek glow worm caves

*When I try to imagine a faultless love  
Or the life to come, what I hear is the murmur  
Of underground streams, what I see is a  
Limestone landscape*

W.H. Auden



A PLACE TO VISIT

The Warrens' covenant near Apiti village, 40km north of Feilding, contains a limestone gorge with a glow worm cave. Several varieties of fern and orchid grow on the sheer walls of the damp gorge environment.

As well as protecting the gorge and cave ecosystem, the Warrens established their covenant to protect the surrounding bush, the scenic values of the site, and to encourage school visits so children can learn about and experience the special features in the covenant.

The caves are also open to the public. A 600m loop track leads visitors through the gorge and returns through a beech forest.

The glow worms can be seen during the day, but the best display is at night. More information about visiting this site can be found at [www.openspace.org.nz](http://www.openspace.org.nz) (Places to Visit).



Jim Warren

## Facts about glow worms

Glow worms are the larval stage in the lifecycle of the fungus gnat fly. They are nocturnal and like to live in dark, damp conditions such as caves, stream banks, and ditches, where there is a food source for them and where their lights can be seen. Glow worms produce light from small tubes at their rear to attract insects flying around in the dark. The hungrier the glow worm the brighter the light. The insects fly towards the light only to get tangled in sticky, silky threads that the worms have built around them, and are held there

until the worm is ready to feed. Adult females can produce a light to help attract a mate. The glow also helps the worms burn off waste and puts off other animals that might want to eat them. The process of naturally producing light is called bioluminescence and is a reaction between oxygen in the air and chemicals given off by the glow worm. The scientific name of the New Zealand species is *Arachnocampa luminosa*. *Arachno* means spider-like, *ampa* means larva, and *luminosa* means light-producing.

## Our shifting landscape disclosed at Sponge Bay

Sponge Bay covenant is one of three protecting the landscape and biodiversity values on the cliffs of Tuahine Point. Coastal cliffs in the (Tūranga ecological) district have a herbfield type of vegetation that contains interesting and uncommon plants such as *Veronica stricta* var. *macroura*, *Brachyglottis perdicoides*, *Plantago picta*, and *Senecio banksii*. The pest control and revegetation efforts of a keen group of locals have seen excellent improvements on this headland over the years.

Protection of these coastal plant communities is not the only feature of this unique covenant. With the ebb and flow of the tides, Sponge Bay covenant also discloses intriguing traces of a long-lost landscape.

Located around eight metres above sea level today, the bay's carpark area was an estuary about 3,500 years ago. As you walk down the steps to this popular surf break you are walking back through time and once on the beach you stand where a podocarp forest grew some 10,000 years ago. Remnants of

that forest are not petrified as rock as you might expect, but remain as wood in the form of ancient tree trunks sticking out of the sand. The smaller trunks are only visible after a storm has washed sand off the beach, but a few are visible at low tide throughout the year.

The changes over time in this area are a little like a puzzle, which has been put together piece by piece by Bruce Hayward and Len Brown. Their research outlines how over the past 9,000 years or so the sea level has risen nine to 14 metres, and due to tectonic activity the land has been pushed up 8.5 to 13.5 metres. Interestingly, evidence has been found that mangroves, now limited to the Bay of Plenty and further north, grew in Sponge Bay between 12,000 and 8,000 years ago. (Read about of the sequence of events and how the ages of the different layers are determined in this landscape in Hayward and Brown's paper *Holocene Fossil Forest and Uplift at Sponge Bay, Gisborne*.)

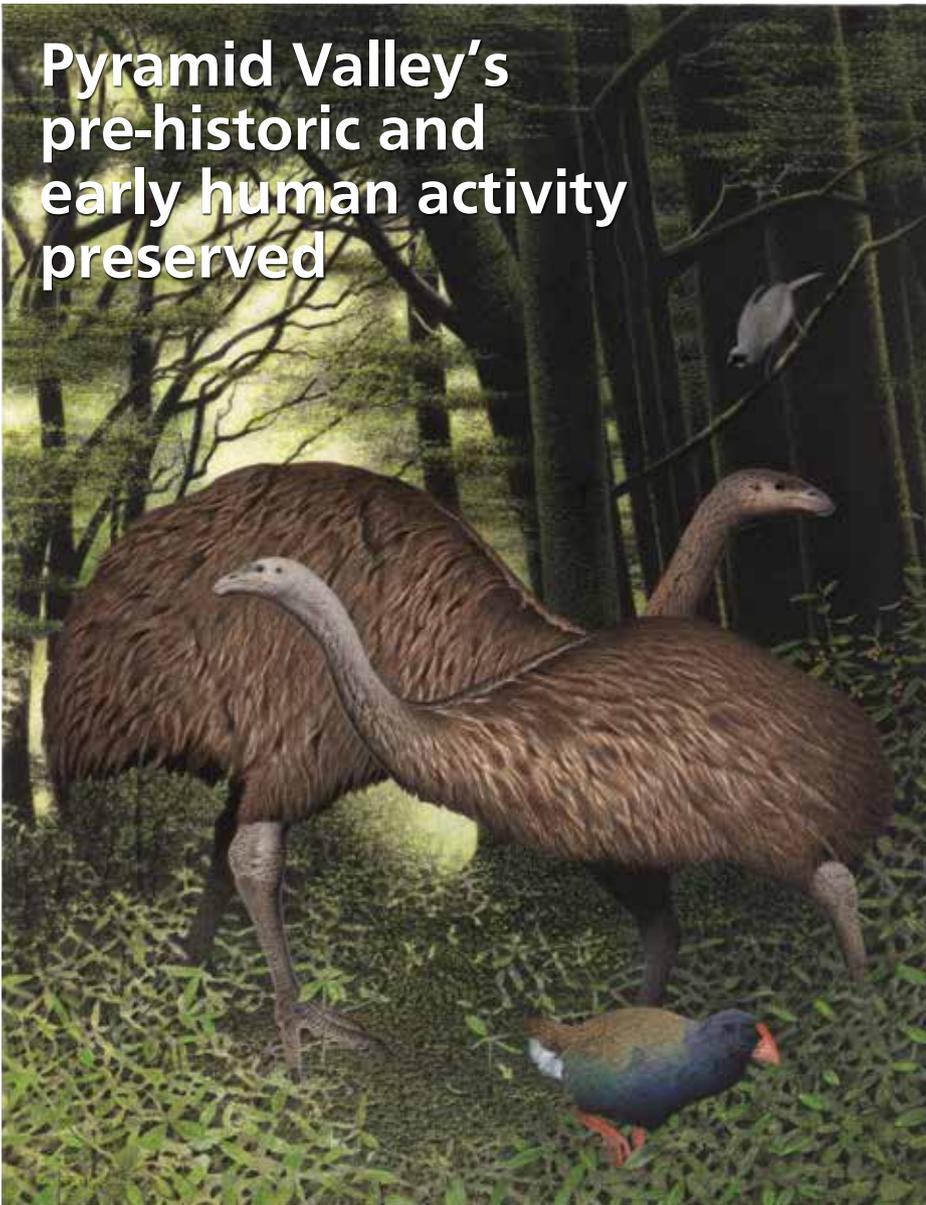


In November 2016, we saw and felt clear examples of how seismic activity can shape the geography of our country. Another major force that has always been at work is the rise and fall of the sea level. The effect of these two forces can be seen in a covenant at Sponge Bay near Gisborne city.

WORDS AND PHOTOGRAPHY Malcolm Rutherford

REFERENCE Hayward, B.W. and Brown L., *Holocene Fossil Forest and Uplift at Sponge Bay*, Gisborne, [www.researchgate.net](http://www.researchgate.net).

## Pyramid Valley's pre-historic and early human activity preserved



South Island Giant Moa. *Dinornis robustus*. From the series: Extinct birds of New Zealand, 2005, Masterton, by Paul Martinson. Purchased 2006.  
© Te Papa. CC BY-NC-ND licence. Te Papa (2006-0010-1/18)

Around 4,500 years ago, when Egyptian slaves were building the great pyramids at Giza, and Europe was shifting from the Copper Age to the Bronze Age, the first moa is believed to have wandered unknowingly into a boggy lake in an area now known as Pyramid Valley. Its legs would have quickly broken through the peat surface and the bird would have sunk deep into the calcareous jelly-like deposits beneath. The jelly substance, while causing the bird's death, also preserved its bones, being completely devoid of oxygen and the organisms that cause decay. Acidic deterioration was also prevented due to the presence of alkaline limestone.

Pyramid Valley is a limestone rock formation lying around 80 km northwest of Christchurch. In 1938, Joseph Hodgen

and his son, Rob, happened upon three large bones of the South Island giant moa while digging a hole to bury a dead horse. The find came to be recognised as one of the most important scientific discoveries in New Zealand's history, and the site is recognised as our country's largest paleontological site for moa fossils.

The Hodgen family allowed the area to be excavated and in the early 1940s fossil hunters Robert Falla, Roger Duff, Robert Cushman Murphy, Jim Eyles, Ron Scarlett and many others began research work at the site. The remains of long extinct birds were discovered, including over 180 complete moa skeletons from five different species and tens of thousands of fossil bone fragments from some 40 other bird species. Some have been identified as

prey left there by the extinct laughing owl and the extinct giant harrier hawk. These fossils have given a wonderful insight to the diversity of birdlife in North Canterbury and the changes in the environment after the arrival of humans in the 14th century.

In 1983, Mike and Jan Hodgen covenanted the area with the QEII National Trust with an objective of managing the store of fossils for scientific investigation and documentation.

Mike remembers his father telling him how a lot of surrounding wetlands got drained and cleaned out of fossils at the time.

'We are really proud that my grandfather prevented this from happening and that our family has been guardians of this site for so many generations,' he says.

Mike and Jan want the site's values and features to endure and one way they do this is by allowing only one 2sqm scientific excavation every 25 years or so. This way explorations can continue for many years to come and a fresh generation of scientists gets the chance to do new research each time, Mike says.

A recent research project at the site (details of which can be found in Richard Holdaway's book, *Pyramid Valley and Beyond*, 2015) has involved further excavations and studies of Pyramid Valley's lake bed material and the organisms contained in it. Analysis of fossil remains from the excavations has provided a record of the lake's history over the 5,000 years since it formed, and of changes in the local climate over that time. Plant fossils have also given an insight into how the forest ecosystem once worked and promise important new information on the composition of the lost forests of North Canterbury.

Fossil remains are not the only evidence of the area's past. Age-old Māori rock drawings were discovered in the 1970s and are also protected within the covenanted area. Experts believe they were drawn some 600 to 700 years ago by early Waitaha settlers.

### REFERENCES

Holdaway, Richard N: *Pyramid Valley and Beyond – Discovering the prehistoric birdlife of North Canterbury*, New Zealand, Turnagra Press, 2015.

Duff, Roger: *Pyramid Valley, Waikari, North Canterbury: The Story of New Zealand's Greatest Moa Swamp*, Christchurch, Canterbury Museum, 1949.

## A rare landform



Before selling their Northland farm, Tom and Noeline McBride started the process to covenant a stand of basalt karst boulders gracing one of their paddocks. They were worried that if the boulders were not protected they would be scavenged and sold, degrading and destroying the special landscape feature they form.

The new buyers completed the covenanting process in 2014. The property has since been resold and is now farmed by the Vegar family.

How basalt karst was formed is a matter of scientific debate and great interest both here and overseas. The protected area on the Vegars' farm is small (0.06ha) but is considered by experts to be of international significance and certainly one Northland's best concentrated examples of this very rare and intriguing landform.

Sought as garden ornaments in New Zealand and elsewhere, limestone and marble karst areas have been set aside for protection in many places and often the removal of karst rocks is prohibited.

Since taking ownership of the property, one of the farming partners, Terri Vegar, has become affectionately known as the 'Rock Lady'.

'I am not a farmer so have volunteered to care for the covenant and the rocks. Mainly I will be keeping the growth down around them so they continue to have a striking presence in the landscape.

'This stand is believed to be sitting exactly where the basalt lava flow cooled five million years ago and the covenant means they should stay put for millions to come!' Terri says.

# Managing fish passage



Banded kokopu

Many of our native fish such as whitebait, bullies, and eels, need to move between the sea and rivers to reproduce, feed, and complete their life cycles. Migratory fish make up a crucial link in the food chain and play an important role in healthy, productive river systems.

New Zealand has around 40 native freshwater fish species. Around 70% of them are threatened or at risk. One of the main threats are obstacles like dams, weirs, and sluices, which disrupt the natural flow of rivers and prevent fish migration.

## What you can do to help native fish

- If structures within your streams and rivers are not required consider removing them
- If a key migratory fish habitat is present upstream, fix structures downstream that are barriers to fish passage
- Often small low cost changes can be made to barriers to allow for fish passage, like adding spat ropes to perched culverts
- Replace barriers with well-designed culverts or bridges that will allow for passage
- Design new structures to provide fish passage and natural stream channel features where possible.

(Source: <http://www.doc.govt.nz/nature/habitats/freshwater/fish-passage-management/how-you-can-help/>)

## More information

Check out [www.doc.govt.nz/fishpassage](http://www.doc.govt.nz/fishpassage) for a series of webpages with some key advice and links to resources about fish passage. You will find some really helpful 'Lessons Learnt' factsheets on these pages with examples of what you can do if you find fish passage barriers in your streams. The New Zealand Fish Passage Advisory Group was set up in 2013 to assist in improved and more consistent technical guidance and policy to support fish passage management. New national fish passage management guidelines, a national barrier database, and assessment protocol are currently under development. Join the wider interest group (email [advisorygroup@fishpassagenz.org](mailto:advisorygroup@fishpassagenz.org)) if you want to keep in touch about progress.

## Helpful websites

Department of Conservation [www.doc.govt.nz](http://www.doc.govt.nz)  
NIWA [www.niwa.co.nz](http://www.niwa.co.nz)

Case Study

**Designing stream culverts**

Structures in streams can impede fish passage if not built correctly. Wildlands’ consultants have been working with clients to reduce the effects of culverts on instream habitats. The image below shows perched culverts without baffles that prevent fish migration in two ways:

1. There is a drop-off that fish are unable to swim up
2. High velocity flows and no resting places within the culvert means fish are unable to negotiate it.

Increasing the size of a culvert means it can be laid below the natural bed of the stream and many natural stream characteristics can be retained (as has been done with the yellow culvert example on the right).



The stream in the yellow culvert was not an overnight success. For the first few weeks, the stream flowed under the gravel in an unsatisfactory manner and impeded fish passage. It took a few rainfall events before enough fine sediment washed down to fill in some of the gaps between the stones, lifting the water level back to where the consultants (and the fish) wanted it to be.

Understanding fluvial, biotic, and abiotic processes is important when dealing with fish passage through culverts. This is also true when reassuring engineers that the whole streambed won't wash clean out of the pipe during high flows!

PHOTOS AND TEXT WILDLANDS.CO.NZ



Inanga/common galaxis  
FISH PHOTOS DOC



Tuna/eel

# In the wake of extreme events

A number of covenantors have been seriously affected by the November 2016 earthquake and bush fires this summer. Two covenantors spoke to us about how they are getting on in the wake of these catastrophic events.

'At least I won't be made redundant anytime soon...'. That was Anne Kennedy's response when asked how she was coping in the aftermath of the Christchurch fire that raged on the Port Hills this February. Summit Road Society member, Anne, has spent the past 20 years restoring Ohinetahi Reserve on the Port Hills together with many dedicated volunteers. In a matter of hours around half of the 150ha QEII covenanted reserve and 40 years of regeneration was decimated, along with other covenanted areas and council reserves spread across the hills. It isn't hard to imagine the shock, grief, and helplessness onlookers felt as they watched the fire relentlessly devour the bush they had devoted so much of their time and energy in enhancing and protecting. It is a cruel blow, coming at a time when the mahoe and five-finger were overtopping gorse and broom vegetation and even starting to emerge in the more challenging grassy and rocky areas on the Hills. The biodiversity, scenery values, and recreation opportunities in the reserve have taken a major hit.

'We will just have to start again—it's our only option,' Anne says.

Anne and fellow Society member, Tony Edney, have offered to lead the recovery programme. It's going to be a complex process. Meetings with the Christchurch City Council, ECAN (the Regional Council, Environment Canterbury), ecologist Colin Meurk, their local QEII representative, and other interested parties have already been held to discuss the best way forward. Tony says the Society's immediate priorities are getting fences back up and making sure the reserve's boundaries remain clear of highly combustible gorse to protect neighbouring properties in the event of another fire. They need to make decisions about restoration approaches—if, where, and when to plant, distribute seeds, or let the vegetation regenerate naturally.

ECAN's Water Zone manager, James Tricker, has acted swiftly, offering funding support through the Council's Immediate

Steps grants. Its environmental scientist, Nathan Dougherty, is addressing with urgency the problem of sediment run-off into the Opawaho Heathcote river; a serious matter now that the hills have been stripped of vegetation. Measures have to be put in place soon to protect the river as run-off will raise the risk of flooding and impact negatively on the habitat of plant and aquatic life along the river, in the estuary, and out to sea.

Further north, the havoc wreaked on farmland by the Waiiau earthquake is clearly visible on Rebekah and Dave Kelly's Woodchester property. Massive landslides have completely altered the landscape and deep chasms and cracks zig-zag their way across the land and through their covenant, vivid evidence of the massive force released by the quake. Sections of covenant fencing lie in tatters, requiring complete rebuilding.

The farm has been in Rebekah's family for 100 years. The hills and valleys, the bush, the covenant, the river—those constant features made them feel secure and gave them their sense of place. Now the land is changed forever, places explored as children gone. Rebekah and Dave feel disturbed that the landscape they knew so intimately could change so dramatically from one day to the next. They feel displaced somehow, even though they are still on the same land. The earthquake is a major setback for their 30-year farm plan. Like many around them, they face a huge financial hit; years of farm investment, an extensive fencing project, structures, water storage systems—all lie twisted and discarded in ruins. A lot was uninsurable.

Rebekah says they had no idea what Christchurch really went through until now. 'Now we can fully understand the trauma and the emotional and psychological impact an event like this has on you,' she says.

They are taking each day at a time, 'just getting on with it'. Some financial support has been offered by the Ministry for Primary Industries and ECAN. A new farm plan will be developed in time. Rebekah thinks the lake formed by a landslide might be an asset for a glamping business they have thought about setting up sometime in the future. In time nature will heal the covenant. They are shaken, but they are thankful. '7.8 was pretty scary but we are still here,' she says with a smile.

Hard work and a significant investment in time and money lie ahead for the Kellys and the Summit Road Society. Both agree, however, that the two resources that will make the most difference in the end are free—hope and patience.

## How you can help

Recovery from any extreme event takes a long time. Help might be needed further down the track. Keep asking how you can help.

'Give a little' to help with the recovery on Ohinetahi Reserve <https://givealittle.co.nz/cause/ohinetahireserve>.

Donate to the Summit Road Society at this web address [www.summitroadsociety.org.nz](http://www.summitroadsociety.org.nz).



Volunteers preparing seeds for sowing in Ohinetahi Reserve



A massive tear in the land left by November's 7.8 magnitude earthquake



Fire damage at Ohinetahi Reserve



A section of destroyed fenceline on the Kellys' farm



Collecting seed for the Summit Road Society



Rebekah Kelly and daughter Victoria

# From catastrophe to recovery – tips for covenant restoration after disaster strikes

WORDS Miles Giller and Nick Ledgard

When we protect ecological features on our properties with covenants, we probably assume that these features will persist in much the same form for centuries to come, or perhaps slowly change through natural successional process to become something even more grand and valuable. We generally accept that nature's processes are gradual, and that our children's and grandchildren's generations will enjoy the legacy of today's actions. In many cases this will happen, but just occasionally things can unexpectedly take a very different path. A recent fire near Whitianga and another on the Port Hills above Christchurch in February 2017, plus the monster earthquake that hit North Canterbury and Marlborough in November 2016 have posed real management dilemmas for a number of affected covenants.

When disaster strikes we first take care of family, friends, homes, and livelihoods. Then there are our covenants. Most have been registered to protect ecological values, as small vignettes of local biodiversity. This might be forest, treeland, scrub or shrubland, or perhaps tussock-grassland or wetland communities. Some ecosystems are resilient to disturbances and can quickly recover and reclaim much of their original character. Others can be quite vulnerable and can take many decades, even centuries to grow back to anything like their former glory.

The sudden loss of large areas of existing vegetation is very disturbing to us, mainly because it is so abrupt, so obvious and because it goes against our expectations. Usually the first reaction is to want to restore the lost values as soon as we possibly can. However, before too many spades slice the soil or seed is sown, there needs to be some forethought and planning, so that objectives are clearly defined and the right species get established on the right sites by the best available means. This is important if we want to get the best long-term outcome possible.

The vast majority of covenants protect native vegetation that has volunteered there through nature's natural regeneration processes—seed produced by nearby plants has been dispersed by birds, wind or water into new sites, germinated, and a percentage has become established. The process is ongoing and can involve a succession from open areas towards forest composition. This natural regeneration process reflects natural patterns, and provided appropriate species are present, can eventually lead to a mosaic of native vegetation which is representative of former composition. A few original elements may be under-represented or absent, in the short term at least.

The speed of the recovery process and the representativeness of the outcome can be most effectively enhanced by managing the constraints—especially controlling competitive weeds and minimizing browsing. The speed and surety of this process also varies according to site characteristics, and tends to be faster and more assured on sheltered moist sites than on exposed dry sites. Adequate seed sources are also required. Ideally, we need local residual vegetation to provide seed, and functional seed dispersal to bring that seed into disturbed areas.

Both science and local experience have shown that the greatest impediment to the recruitment of most native seedlings is the establishment of rank exotic grasses. If we want to maximize recruitment from native seeds, it is best they arrive at our site before exotic grasses attain dominance, if possible within the first (at most second) year after the disturbance event.

## Where to start?

Those involved in managing damaged covenants face the dilemma of what to do next. How might we best give nature a helping hand within our limited means and without unintentionally interrupting nature's processes? Incorrect intervention can easily compromise the integrity of the vegetation that we are trying to protect.

Nursery-grown plants can be very gratifying for participants and the results are fairly instant. The problems with this technique are that it is very expensive and time consuming, and there is a real risk that the outcome can differ markedly from that which would result from natural regeneration. Occasionally there are ecologically sound cases for strategic planting of particular species which are unlikely to recruit on their own. Planting should only be carried out if there is a clear ecological rationale or benefit.

A simpler technique is the distribution of ecologically appropriate seeds collected from local remnants, ideally done as soon as possible after a disturbance event. This can 'kick-start' the natural seed dispersal process, promoting early recruitment and speeding the development of a native-dominated canopy.



Natural regeneration

Recovery through natural regeneration remains the most reliable and risk-free means. Given the opportunity, nature will deliver the most ecologically representative and sustainable outcome. Natural regeneration is relatively hands-off, but we can provide meaningful assistance by controlling any constraints. It is worth remembering that many of our covenants protect vegetation that has volunteered after previous mass disturbances, often despite the attempts of our forebears to keep that land clear. Nature can be very resilient.

Regardless of the means of recovery adopted, securing covenant boundaries against livestock and controlling other herbivores, weeds, and pests are likely to be the most beneficial up-front actions we can provide. Affected landowners are encouraged to contact their local regional representatives, who can offer advice and may be able to arrange support. There will always be differences due to site characteristics, seasons, climate, and other variables which will affect the speed and degree of recovery—this has to be accepted.

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).

*Nick Ledgard is a retired Scion researcher. Miles Giller is the National Trust's North Canterbury Regional Representative.*



**LEGAL  
NEWS**

## Natural disasters and covenant status

It will take time—in some cases many years—for covenants to recover from extreme events like our recent fires and earthquake.

The National Trust would like to reassure covenantors past and present that the legal status of their covenants will not be lost as a result of damage caused by such events.

Open space covenants constitute legally binding protection in perpetuity over defined areas. This means that no matter what happens to the land, the covenant remains in force. So even if native vegetation has been removed from a covenant, the covenanted area nevertheless remains legally protected.

In instances where a covenant has been severely damaged or vegetation has been lost, the land may not be put to alternative use. The same restrictions set out in the covenant agreement continue to apply to the covenanted area.

The National Trust is developing a special fund to support covenantors whose covenants have been damaged by the recent extreme events. Affected covenantors are invited to contact their Regional Representative to discuss what support might be available to help them with the management of their covenant into the future.

PHOTO: PHIL ROBINSON



# Apprehensive about Agapanthus

## Botanical Name

*Agapanthus praecox* or *Agapanthus orientalis*

## Family

*Liliaceae* (lily) family

Originally from South Africa, Agapanthus is loving it over here and doing very well indeed. It is a popular garden plant and you can see it used for borders and flanking driveways and fences everywhere around New Zealand. Its popularity is understandable given it is hardy, pretty, and very easy to grow. Unfortunately, it is also a successful escape artist and is spreading and taking hold in areas where it is not wanted. This has prompted some councils to consider placing it on their banned plants list. If you are thinking about planting Agapanthus or are considering replacing stands on your property, the following weedbusters information might help you with your decision.



Agapanthus spreading on a bank



Agapanthus can take hold easily in coastal sites

## Why angst about Agapanthus?

Agapanthus is long-lived and tolerates hot and cold temperatures, wet and dry conditions, wind, salt, poor soils, moderate-shade, heavy damage, and sea immersion of its rhizomes and seeds! It is a prolific seeder and is able to disperse its seeds effectively. It grows easily to form pure stands, excluding all other species and becoming the terminal species almost everywhere it grows. This means it can cause serious biodiversity losses, especially of rare coastal herb, grass, and shrub species.

## How does it spread?

Seeds can be blown short distances by the wind or they can tumble down banks. Seeds can also be carried in flowing water. Seed and root fragments can be spread via contaminated soil or dumped vegetation.

## What habitats is it likely to invade?

Agapanthus can take hold easily in most coastal sites, on banks and cliffs, gumland, consolidated sand, fernland, shrubland, and bush margins.

## What can I do to get rid of it?

### Manual treatment

Dig out scattered plants. Dispose of corms and root fragments at a refuse transfer station or dry them out and burn them. Repeat!

### Herbicide spray treatment

Spray with a mixture of 4g metsulfuron-methyl 600g/kg + 200ml glyphosate + 10ml penetrant per 10L water.

### Cut and paint

Slash leaves close to ground, leave on site to rot down. Treat fresh bases with 1g metsulfuron-methyl 600g/kg + 50ml glyphosate + 1ml penetrant per 1L water or a 3-5mm layer of picloram gel.

## What can I do to stop it coming back?

Plants often resprout and seed banks can reinfest bare sites, so follow up frequently with your preferred control method.

At least 3-4 follow up spray treatments will be needed. Begin eradication at the top of banks and work your way down. Don't replant until after 2-3 treatments.

## What similar looking natives could I plant instead?

- Rengarenga lilies
- Flaxes and grasses
- Native irises

## More information about weeds

[www.weedbusters.org.nz](http://www.weedbusters.org.nz)

# Weed quiz—What weed is that?



www.weedbusters.org.nz

Test your weed knowledge with our weedbusters quiz and be in to win a copy of *The Weed Control Handbook: How to Identify and Manage Invasive Plants in New Zealand* (Weedbusters NZ, published by New Holland).

This helpful handbook has information on over 80 weed species—mostly ornamentals that have ‘jumped the garden fence’ and are causing problems as they invade natural areas. Colour photographs identify the juvenile, flowering, and mature plant. The handbook includes:

- Common and botanical weed names
- Control information
- Safe weed waste disposal methods
- Replacement plant choices.



- A. Silver wattle (*Acacia dealbata*)
- B. Spindle tree (*Euonymus europaeus*)
- C. Nassella tussock (*Nassella trichotoma* and *Nassella tenuissima*)
- D. Boxt Thorn (*Lycium ferocissimum*)



- A. Stinking iris (*Iris foetidissima*)
- B. Shrub balsam (*Impatiens sodenii*)
- C. False acacia (*Robinia pseudoacacia*)
- D. Darwin's barberry (*Berberis darwinii*)



- A. Velvet groundsel (*Roldana petasitis*)
- B. Mexican devil (*Ageratina adenophora*)
- C. Pampas (*Cortaderia selloana*)
- D. Plectranthus (*Plectranthus ciliatus*)



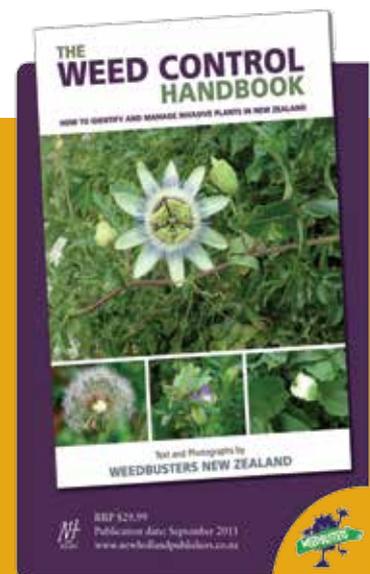
- A. Loquat (*Eriobotrya japonica*)
- B. Bolivian fuchsia (*Fuchsia boliviana*)
- C. Douglas fir (*Pseudotsuga menziesii*)
- D. Phoenix palm (*Phoenix canariensis*)



- A. Pampas (*Cortaderia selloana*)
- B. Boneseed (*Chrysanthemoides monilifera* subspecies *monilifera*)
- C. Sweet pea shrub (*Polygala myrtifolia*)
- D. Tree of heaven (*Ailanthus altissima*)

## Be in to win!

We've got five copies of *The Weed Control Handbook* to give away. Send in your answers to our weed quiz to [info@openspace.org.nz](mailto:info@openspace.org.nz) and go in the draw to win a copy. Put 'Weed quiz' in the subject line of your email and include your name and postal address with your answer. Competition closes on 20 May 2017.



## QEII National Trust – covenant bird data

While out monitoring covenants, our regional representatives make ad hoc observations of species encountered during their visits. The bird list below is compiled using this data. It is considered a conservative overview.

Some statistics:

- We hold over 56,000 bird observation records collected between December 1983 and December 2016
- 93% (3968) of registered covenants have at least one species of indigenous, vagrant, or migrant bird species recorded
- 163 bird species have been recorded in QEII covenants including six nationally critical species, seven nationally endangered species, 21 nationally vulnerable species, and 13 declining species (as per Department of Conservation 2012 threat status).

| Conservation Status*   | Species name   | Number of covenants   | Conservation Status*  | Species name  | Number of covenants                                  |   |
|--|--|---|---|---|--|---|
| Nationally Critical  | Black stilt, Kaki / <i>Himantopus novaeseelandiae</i>                      | 3   | Naturally Uncommon  | Great cormorant / <i>Phalacrocorax carbo novaehollandiae</i>  | 69   |   |
|  | Black-billed gull / <i>Larus bulleri</i>                                   | 5   |   | Little black shag / <i>Phalacrocorax sulcirostris</i>         | 21   |   |
|  | Fairy tern / <i>Sternula nereis davisae</i>                                | 1   |   | Long-tailed cuckoo / <i>Eudynamis taitensis</i>               | 63   |   |
|  | Grey duck / <i>Anas superciliosa superciliosa</i>                          | 23  |   | Royal spoonbill / <i>Platalea regia</i>                       | 21   |   |
|  | South Island takahe / <i>Porphyrio hochstetteri</i>                        | 5   |   | Westland petrel / <i>Procellaria westlandica</i>              | 2  |   |
| Nationally Endangered  | White heron - Kotuku / <i>Ardea modesta</i>                                | 25  | Not Threatened  | Australasian gannet / <i>Morus serrator</i>                   | 2  |   |
|  | Australasian bittern / <i>Botaurus poiciloptilus</i>                       | 103   |   | Australasian harrier / <i>Circus approximans</i>              | 904  |   |
|  | Black-fronted tern / <i>Chlidonias albostratus</i>                         | 5   |   | Black swan / <i>Cygnus atratus</i>                            | 100  |   |
|  | Kea / <i>Nestor notabilis</i>  | 33  |   | Brown creeper / <i>Mohoua novaeseelandiae</i>                 | 207  |   |
|  | King shag / <i>Leucocarbo carunculatus</i>                                 | 3   |   | Grey teal / <i>Anas gracilis</i>                              | 77   |   |
|  | Reef heron / <i>Egretta sacra sacra</i>                                    | 13  |   | Grey warbler / <i>Gerygone igata</i>                          | 2235   |   |
| Nationally Vulnerable  | Stewart Island tokoeka / <i>Apteryx australis lawryi</i>                   | 2   |   | Grey-faced petrel / <i>Pterodroma macroptera gouldi</i>       | 5  |   |
|  | Stewart Island weka / <i>Gallirallus australis scotti</i>                  | 2   |   | Little shag / <i>Phalacrocorax melanoleucos brevirostris</i>  | 7  |   |
|  | Banded dotterel / <i>Charadrius bicinctus bicinctus</i>                    | 11  |   | Morepork / <i>Ninox novaeseelandiae novaeseelandiae</i>       | 346  |   |
|  | Blue duck / <i>Hymenolaimus malacorhynchus</i>                             | 10  |   | New Zealand bellbird / <i>Anthornis melanura melanura</i>     | 1501   |   |
|  | Caspian tern / <i>Hydroprogne caspia</i>                                   | 5   |   | New Zealand pigeon / <i>Hemiphaga novaeseelandiae</i>         | 2705   |   |
|  | Great spotted kiwi / <i>Apteryx haastii</i>                                | 3   |   | New Zealand scaup / <i>Aythya novaeseelandiae</i>             | 70   |   |
|  | Lesser knot / <i>Calidris canutus rogersi</i>                              | 3   |   | New Zealand shoveler / <i>Anas rhynchotis variegata</i>       | 65   |   |
|  | New Zealand bush falcon / <i>Falco novaeseelandiae "bush"</i>              | 139   |   | North Island fantail / <i>Rhipidura fuliginosa placabilis</i> | 2043   |   |
|  | New Zealand dabchick / <i>Poliiocephalus rufopectus</i>                    | 51  |   | North Island robin / <i>Petroica longipes</i>                 | 91   |   |
|  | New Zealand dotterel / <i>Charadrius obscurus aquilonius</i>               | 13  |   | Paradise shelduck / <i>Tadorna variegata</i>                  | 495  |   |
|  | New Zealand southern falcon / <i>Falco novaeseelandiae "southern"</i>      | 42  |   | Pied tomtit / <i>Petroica macrocephala toitoi</i>             | 293  |   |
|  | North Island brown kiwi / <i>Apteryx mantelli</i>                          | 343   | Pukeko / <i>Porphyrio melanotus melanotus</i>                       | 547   |  |   |
|  | North Island kaka / <i>Nestor meridionalis septentrionalis</i>             | 124   | Sacred kingfisher / <i>Todiramphus sanctus vagans</i>               | 1153  |  |   |
|  | North Island weka / <i>Gallirallus australis greyi</i>                     | 32  | Shining cuckoo / <i>Chrysococcyx lucidus lucidus</i>                | 424   |  |   |
|  | Pied cormorant / <i>Phalacrocorax varius varius</i>                        | 40  | Silveryeye / <i>Zosterops lateralis lateralis</i>                   | 1027  |  |   |
|  | Red-billed gull / <i>Larus novaehollandiae scopulinus</i>                  | 10  | South Island fantail / <i>Rhipidura fuliginosa fuliginosa</i>       | 799   |  |   |
|  | South Island kaka / <i>Nestor meridionalis meridionalis</i>                | 17  | South Island rifleman / <i>Acanthisitta chloris chloris</i>         | 64  |  |   |
|  | Southern crested grebe / <i>Podiceps cristatus australis</i>               | 2   | South Island robin / <i>Petroica australis australis</i>            | 67  |  |   |
|  | Stitchbird / <i>Notiomystis cincta</i>                                     | 1   | Southern black-backed gull / <i>Larus dominicanus dominicanus</i>   | 44  |  |   |
| White-flippered penguin / <i>Eudyptula minor albosignata</i> | 9  | Spotted shag / <i>Stictocorbo punctatus punctatus</i>               | 6   |   |  |   |
| Wrybill / <i>Anarhynchus frontalis</i>                       | 2  | Spur-winged plover / <i>Vanellus miles novaehollandiae</i>          | 108   |   |  |   |
| Yellow-eyed penguin / <i>Megadyptes antipodes</i>            | 11   | Tui / <i>Prothemadera novaeseelandiae novaeseelandiae</i>           | 2696  |   |  |   |
| Yellowhead / <i>Mohoua ochrocephala</i>                      | 2  | Welcome swallow / <i>Hirundo neoxena neoxena</i>                    | 178   |   |  |   |
| Declining  | Banded rail / <i>Gallirallus philippensis assimilis</i>                    | 57  | Western weka / <i>Gallirallus australis australis</i>               | 133   |  |   |
|  | Bar-tailed godwit / <i>Limosa lapponica baueri</i>                         | 5   | White-faced heron / <i>Egretta novaehollandiae</i>                  | 150   |  |   |
|  | Hutton's shearwater / <i>Puffinus huttoni</i>                              | 1   | Whitehead / <i>Mohoua albigilla</i>                                 | 76  |  |   |
|  | New Zealand pied oyster catcher / <i>Haematopus finschi</i>                | 47  | Yellow-breasted tomtit / <i>Petroica macrocephala macrocephala</i>  | 151   |  |   |
|  | New Zealand pipit / <i>Anthus novaeseelandiae novaeseelandiae</i>          | 91  | Yellow-crowned parakeet / <i>Cyanoramphus auriceps</i>              | 57  |  |   |
|  | North Island fernbird / <i>Bowdleria punctata vealeae</i>                  | 149   | Migrant   | Arctic skua / <i>Stercorarius parasiticus</i>                 | 1  |   |
|  | North Island rifleman / <i>Acanthisitta chloris granti</i>                 | 20  |   | Arctic tern / <i>Sterna paradisaea</i>                        | 1  |   |
|  | Northern little penguin / <i>Eudyptula minor iredalei</i>                  | 1   |   | Asiatic whimbrel / <i>Numenius phaeopus variegatus</i>        | 1  |   |
|  | Pied stilt / <i>Himantopus himantopus leucocephalus</i>                    | 72  |   | Cape petrel / <i>Daption capense capense</i>                  | 1  |   |
|  | Sooty shearwater / <i>Puffinus griseus</i>                                 | 4   |   | Eastern cattle egret / <i>Ardea ibis coromanda</i>            | 2  |   |
|  | South Island fernbird / <i>Bowdleria punctata punctata</i>                 | 58  |   | Eastern curlew / <i>Numenius madagascariensis</i>             | 1  |   |
|  | Southern little penguin / <i>Eudyptula minor minor</i>                     | 9   |   | Little tern / <i>Sternula albifrons sinensis</i>              | 1  |   |
|  | White-fronted tern / <i>Sterna striata striata</i>                         | 2   |   | Pacific golden plover / <i>Pluvialis fulva</i>                | 1  |   |
|  | Recovering   | Brown teal / <i>Anas chlorotis</i>                                  |   | 25  | Red-necked stint / <i>Calidris ruficollis</i>        | 1 |
|  |  | New Zealand eastern falcon / <i>Falco novaeseelandiae "eastern"</i> |   | 103   | Sharp-tailed sandpiper / <i>Calidris acuminata</i>   | 1 |
|  |  | North Island kokako / <i>Callaeas wilsoni</i>                       | 18  | Turnstone / <i>Arenaria interpres</i>                         | 2  |   |
|  |  | North Island saddleback / <i>Philesturnus rufusater</i>             | 3   | Vagrant   | Australian white-eyed duck / <i>Aythya australis</i> | 2 |
| Stewart Island robin / <i>Petroica australis rakiura</i>     |  | 2   | Black-tailed godwit / <i>Limosa limosa melanuroides</i>             |   | 1  |   |
| Variable oystercatcher / <i>Haematopus unicolor</i>          | 24   | Chestnut-breasted shelduck / <i>Tadorna tadornoides</i>             | 1   |   |  |   |
| Relict   | Cook's petrel / <i>Pterodroma cookii</i>                                   | 1   | Curlew sandpiper / <i>Calidris ferruginea</i>                       |   | 1  |   |
|  | Marsh crake / <i>Porzana pusilla affinis</i>                               | 22  | Glossy ibis / <i>Plegadis falcinellus</i>                           |   | 2  |   |
|  | Red-crowned parakeet / <i>Cyanoramphus novaeseelandiae novaeseelandiae</i> | 53  | Great knot / <i>Calidris tenuirostris</i>                           |   | 1  |   |
|  | Spotless crake / <i>Porzana tabuensis tabuensis</i>                        | 68  | Greenshank / <i>Tringa nebularia</i>                                |   | 1  |   |
|  |  |   | Grey plover / <i>Pluvialis squatarola</i>                           |   | 1  |   |
|  |  |   | Large sand dotterel / <i>Charadrius leschenaultii leschenaultii</i> |   | 1  |   |
|  |  | Little cormorant / <i>Phalacrocorax melanoleucos melanoleucos</i>   | 5   |   |  |   |
|  |  | Little egret / <i>Egretta garzetta immaculata</i>                   | 2   |   |  |   |
|  |  | Little whimbrel / <i>Numenius minutus</i>                           | 1   |   |  |   |

| Conservation Status*                                    | Species name   | Number of covenants |
|---|--|---------------------|
| Vagrant<br>(contd.)                                     | Marsh sandpiper / <i>Tringa stagnatilis</i>                                  | 1                   |
|   | Masked woodswallow / <i>Artamus personatus</i>                               | 2                   |
|   | Mongolian dotterel / <i>Charadrius mongolus</i>                              | 1                   |
|   | Northern shoveler / <i>Anas clypeata</i>                                     | 1                   |
|   | Pectoral sandpiper / <i>Calidris melanotos</i>                               | 1                   |
|   | Siberian tattler / <i>Tringa brevipes</i>                                    | 1                   |
|   | Terek sandpiper / <i>Tringa cinerea</i>                                      | 1                   |
| White-browed woodswallow / <i>Artamus superciliosus</i> | 1  |                     |
| Coloniser   | Australasian coot / <i>Fulica atra australis</i>                             | 3                   |
|   | Australian little grebe / <i>Tachybaptus novaehollandiae novaehollandiae</i> | 2                   |
|   | Black-fronted dotterel / <i>Elseya melanops</i>                              | 4                   |
| Introduced and naturalised                              | Australian magpie / <i>Gymnorhina tibicen</i>                                | 86                  |
|   | Barbary dove / <i>Streptopelia risoria</i>                                   | 1                   |
|   | Blackbird / <i>Turdus merula</i>   | 312                 |
|   | Brown quail / <i>Coturnix ypsilophora australis</i>                          | 9                   |
|   | California quail / <i>Callipepla californica</i>                             | 56                  |
|   | Canada goose / <i>Branta canadensis</i>                                      | 78                  |
|   | Cape Barren goose / <i>Cereopsis novaehollandiae</i>                         | 1                   |
|   | Chaffinch / <i>Fringilla coelebs</i>   | 240                 |
|   | Cirl bunting / <i>Emberiza cirius</i>  | 2                   |
|   | Common myna / <i>Acridotheres tristis</i>                                    | 19                  |
|   | Crimson rosella / <i>Platycercus elegans</i>                                 | 4                   |
|   | Dunnock / <i>Prunella modularis</i>  | 31                  |
|   | Eastern rosella / <i>Platycercus eximius</i>                                 | 259                 |

| Conservation Status*                                 | Species name                                       | Number of covenants |
|--|--|---------------------|
| Introduced and naturalised<br>(contd.)               | Feral (greylag) goose / <i>Anser anser</i>         | 11                  |
|  | Goldfinch / <i>Carduelis carduelis</i>             | 83                  |
|  | Greenfinch / <i>Carduelis chloris</i>              | 13                  |
|  | House sparrow / <i>Passer domesticus</i>           | 106                 |
|  | Kookaburra / <i>Dacelo novaeguineae</i>            | 1                   |
|  | Mallard duck / <i>Anas platyrhynchos</i>           | 193                 |
|  | Mute (White) swan / <i>Cygnus olor</i>             | 8                   |
|  | Peafowl / <i>Pavo cristatus</i>                    | 32                  |
|  | Redpoll / <i>Carduelis flammea</i>                 | 12                  |
|  | Ring-necked pheasant / <i>Phasianus colchicus</i>  | 105                 |
|  | Rock pigeon / <i>Columba livia</i>                 | 4                   |
|  | Rook / <i>Corvus frugilegus</i>                    | 1                   |
|  | Skylark / <i>Alauda arvensis</i>                   | 78                  |
|  | Song thrush / <i>Turdus philomelos</i>             | 134                 |
| Spotted dove / <i>Streptopelia chinensis tigrina</i> | 1  |                     |
| Starling / <i>Sturnus vulgaris</i>                   | 103  |                     |
| Sulphur-crested cockatoo / <i>Cacatua galerita</i>   | 20   |                     |
| Wild turkey / <i>Meleagris gallopavo</i>             | 19   |                     |
| Yellowhammer / <i>Emberiza citrinella</i>            | 119  |                     |
| Introduced and not established                       | Rainbow lorikeet / <i>Trichoglossus haematodus</i> | 2                   |

Data compiled by Kerri Lukis – QEII National Trust

\* Conservation status of New Zealand birds, 2012. Robertson, H.A et al. *New Zealand Threat Classification Series 4*. Department of Conservation

## Recently registered covenants

Summary of covenant registrations from 19 August 2016 to 25 February 2017

| District Council  | Name   | Covenant name                                     | Area (ha)     | Main open space type  |
|-------------------|--|---|---------------|---|
| Auckland          | Dunn   | Oasis Albany Covenant                             | 1.68          | Semi-coastal forest and scrub   |
| Clutha            | Wylie [QCCC]   | Cullen Covenants                                  | 16.78         | Lowland forest  |
| Dunedin           | Hayden   |   | 2.22          | Semi-coastal kanuka shrubland   |
| Gisborne          | Addens & McDonald  |   | 63.55         | Semi-coastal forest   |
| Gisborne          | Fisher   |   | 49.91         | Lowland forest  |
| Hastings          | Holt – Koraki II   | Koraki II   | 5.07          | Lowland forest  |
| Horowhenua        | Wehipeihana Bush   | Wehipeihana Bush                                  | 1.19          | Semi-coastal forest and treeland  |
| Hurunui           | Prentice and Stone                                       | Okarahia Bush Covenant                            | 2.48          | Semi-coastal forest   |
| Marlborough       | SCFNZ Ltd (Te Rou Covenant)                              | Te Rou Covenant                                   | 199.92        | Montane forest  |
| Masterton         | Mcdonald   | Totara block                                      | 2.58          | Lowland forest  |
| Masterton         | Mcdonald   |   | 10.76         | Lowland forest  |
| Masterton         | Falloon waterfalls rd                                    |   | 5.50          | Lowland forest  |
| Nelson            | Albrecht (Ngahere o Atarau)                              | Ngahere o Atarau                                  | 5.94          | Lowland forest and shrubland  |
| New Plymouth      | Brodie [2]   | Whenuariki Covenant                               | 0.80          | Coastal/riparian forest   |
| New Plymouth      | Wickham  | Totara Mahanga Bush and Ngahere o te Kahika       | 4.39          | Lowland forest  |
| New Plymouth      | Dravitzki  | Dravitzki, Linklater and Karalus                  | 16.98         | Lowland forest  |
| New Plymouth      | Evans  |   | 17.77         | Semi-coastal forest   |
| Palmerston North  | Bebb   | Dr Mike Bebb Bush                                 | 3.73          | Lowland forest  |
| Ruapehu           | Landcorp – Duck Pond                                     | Meringa Duck Pond & Bush Covenant Meringa Station | 9.21          | Lowland forest, rushland, wetland   |
| Ruapehu           | Landcorp – Fairview & Terraces                           | Fairview & Terraces                               | 17.75         | Lowland forest  |
| Selwyn            | Guild & Joseph (High Peak Station) – Bottom River Spring | Bottom River Springs                              | 49.73         | Montane sedgeland, shrubland and scrub                                      |
| Selwyn            | High Peak Station (Guild) – Ponderosa Wetland            | Ponderosa Wetland                                 | 3.43          | Flax wetland  |
| South Wairarapa   | Hodder [QCCC]  | Otawira Covenant                                  | 3.80          | Lowland forest and sedgeland  |
| Southland         | Landcorp – Crombie's, Duncaigen                          | Crombie's – Duncaigen                             | 3.49          | Lowland modified primary shrubland and rushland and exotic grassland        |
| Southland         | Cournane   | Bernice's Bush                                    | 1.60          | Lowland modified primary forest and secondary fernland and exotic grassland |
| Southland         | Marshall's Braeside                                      | Marshall's Braeside II                            | 1.45          | Lowland modified primary and secondary forest                               |
| Southland         | Landcorp – Kepler Farm – Allan's Extension               | Landcorp – Kepler Farm – Allan's Extension        | 8.15          | Lowland wetland and shrubland   |
| Southland         | Solobio Limited  |   | 94.34         | Lowland rushland  |
| Tararua           | De Greeuw [QCCC]   | Linside   | 53.66         | Lowland forest  |
| Tararua           | Nelson   | Ihuraua Flooded Forest                            | 11.36         | Lowland forest and treeland   |
| Tararua           | Johnston   | Johnston's Bush                                   | 2.95          | Lowland forest  |
| Tasman            | Charlton [QCCC]  | Wainui Ngahere                                    | 74.10         | Coastal forest  |
| Waimate           | Nelson and Sandford                                      |   | 34.10         | Lowland forest  |
| Waipa             | Findlay  |   | 4.95          | Lowland forest  |
| Waipa             | McClunie   | McClunie Bush Block                               | 51.46         | Lowland forest  |
| Waitaki           | Cranky Jim's Wetland                                     | Cranky Jim's Wetland                              | 93.46         | Submontane tussock and sedgeland  |
| Whangarei         | Marshall   |   | 4.41          | Lowland forest  |
| Whangarei         | Wright   |   | 0.27          | Lowland forest  |
| Whangarei         | Poulson  |   | 0.70          | Lowland forest and shrubland  |
| <b>Total area</b> |  |   | <b>935.64</b> |   |



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