



NEW ZEALAND'S THREATENED SPECIES STRATEGY

DRAFT FOR CONSULTATION



Department of
Conservation
Te Papa Atawhai

Toitū te marae a Tāne-Mahuta,
Toitū te marae a Tangaroa,
Toitū te tangata.

If the land is well
and the sea is well,
the people will thrive.



From the Minister



New Zealand's unique plants, birds, reptiles and other animal species help us to define who we are as a nation. Familiar emblems include our flightless nocturnal kiwi and kākāpō, and the silver fern proudly worn by our sportspeople and etched on our war graves and memorials.

They are our national taonga, living treasures

found nowhere else on Earth – the unique creations of millions of years of geographical isolation.

The wildlife on our islands of Aotearoa evolved in a world without teeth, a paradise which for all its stunning beauty and diversity was not equipped to cope with the arrival of humans.

The hitchhikers we brought with us – including rats, stoats, possums and introduced plants – have been very destructive for our native species. In the last 750 years, the roll call of the lost is grim. Gone forever are giant moa and Haast's eagle as well as the tiny flightless wren, the striking huia, at least 70 other birds and unknown numbers of plants, insects and reptiles.

Today, we are aware that much of our wildlife remains under grave threat. More than 800 native species are officially classified as 'threatened'. The dedicated staff of the Department of Conservation, with support from iwi, partners and hundreds of hard-working community groups, are all doing their best to hold the line.

There have been many notable success stories, such as the return of the kākāpō, black robin and takahē from the brink of extinction. But we must be vigilant and more proactive if we are to meet the ongoing challenges and threats to our vulnerable native species.

In 2016, the Government announced our intention to make New Zealand predator free by 2050. We committed to eradicating possums, rats and stoats, and enabling native species to breed, thrive and survive in the wild. We know it's not an easy task, but I believe this ambitious vision can be achieved by working together.

The latest to join forces with DOC, bringing a wealth of expertise in propagating and protecting our vulnerable plants, is the Botanic Gardens of Australia and New Zealand organisation, which has just signed an MOU with DOC to develop living collections of plants, collaborate on research and help develop a seed bank safeguarding all our native plant species.

While Predator Free 2050 is the single most significant and ambitious conservation programme in our history, it has to be part of a broader range of work if we are to succeed.

This draft Threatened Species Strategy is the Government's plan to halt decline and restore healthy, sustainable populations of native species. The Strategy looks at what steps are needed to restore those species at risk of extinction, and what we should do to prevent others from becoming threatened.

We are deliberately using the language of war because we are up against invasive enemies that are hard to defeat. If we are to save the creatures we love, we have to eradicate the predators intent on eating them to extinction.

In response to beech tree seeding 'mast' years we have launched the successful Battle for our Birds – pest control on a landscape scale. We have declared a War on Weeds with an annual list of the 'Dirty Dozen' to tackle invasive plants that are suffocating vast areas of our bush.

This Strategy builds on Predator Free 2050's targets, on New Zealand's international commitments to biodiversity and on all of DOC's threatened species work. We will commit to increasing the populations of 150 priority species by 2025 and to be actively managing 600 by 2030.

This Strategy is underpinned by the unrivalled scientific expertise and understanding of New Zealand scientists, backed up by the can-do attitude and innovation we know we can expect from New Zealanders. On my bedroom wall hangs a picture of a huia feather to remind me every day of how much is at risk.

As the great conservationist Don Merton once said of our native plants, birds and animals, "They are our national monuments. They are our Tower of London, our Arc de Triomphe, our pyramids. We don't have this ancient architecture that we can be proud of and swoon over in wonder, but what we do have is something that is far, far older than that. No one else has kiwi, no one else has kākāpō. They have been around for millions of years, if not thousands of millions of years. And once they are gone, they are gone forever. And it's up to us to make sure they never die out."

The Honourable Maggie Barry ONZM
Minister of Conservation



From the Director-General



I am pleased to present the Department of Conservation's draft Threatened Species Strategy – a milestone in New Zealand's journey towards a future where our threatened native species are restored to healthy populations.

Our nature defines us as New Zealanders. Much of our flora and fauna is found only in New

Zealand – it's our identity, our point of difference, and millions of visitors come to see it each year.

However, although we were the last large land mass to be colonised by humans, we have one of the worst rates of extinction in the world due to introduced predators and habitat loss. And right now, hundreds of our native species face the risk of extinction.

New Zealand is the greatest living space on Earth.

Kāore he wāhi i tua atu i a Aotearoa, hei wāhi noho i te ao.

Like Conservation Minister Maggie Barry, I make no apology for using fighting words. We need to strike now if we are to win the war against invaders and restore our precious native species to health.

Partnerships are the key – this is a fight that DOC and other government agencies can't win alone. The draft Strategy pulls together the actions and activities of iwi, communities, businesses, philanthropists and government agencies, providing a platform to secure the future of our threatened species.

A chord was struck throughout the country last year when the Government announced its goal to rid New Zealand of possums, rats and stoats by 2050. This was a springboard for action, and we're now seeing more communities take up the predator-free challenge.

But as we strive towards a predator-free Utopia – a goal that will have huge economic and environmental benefits – we must keep sight of the species that make us unique. After all, our precious native species are the reason the first rumblings of a predator-free movement began.

When 2050 comes, we want to be there with all our native species, not just a fortunate, charismatic few. Our nature is a package. We cannot leave the future of our native species to chance.

With the draft Threatened Species Strategy, we have tried to reflect what New Zealanders value in our nature. Now we want to know what you think. What is it about New Zealand's natural environment that you hold dear? What are your hopes for the future of our native species? Have we got it right?

The Strategy is the first step, giving us a direction. We must unite to remove the threats to our native species and deliver a safe and secure future for generations yet to come.

A handwritten signature in black ink, reading "Lou Sanson". The signature is stylized and cursive.

Lou Sanson
Director-General, Department of Conservation

Contents

Predator Free 2050 – the springboard for protecting threatened species	2
The Strategy	4
A LAND APART	7
<hr/>	
Our unique New Zealand	8
Trouble in paradise	10
The state of our species	12
We're all part of the solution	14
A CALL TO ACTION	17
<hr/>	
Foundations for recovery	18
The right tools for the job	20
THE PLAN OF ATTACK	27
<hr/>	
Setting goals	28
150 priority species	31
Strategic themes	32
Top 10 actions	40
WE CAN WIN THIS	41
<hr/>	
150 priority threatened and at risk species	42

Predator Free 2050 – the springboard for protecting threatened species

July 26, 2016 was a historic day for conservation and for New Zealand. It was on this day that the Prime Minister, Minister of Conservation, Minister for the Environment, Minister for Primary Industries and the Minister of Business, Innovation and Employment announced the goal of New Zealand being predator free by 2050. The announcement, which included funding and the new organisation Predator Free 2050 Ltd, resonated deeply with the public, as few things have done. It is no exaggeration that Predator Free 2050 gained world-wide attention as a bold and visionary move by New Zealand.

The deep chord that Predator Free 2050 has struck reflects New Zealanders' deep attachment to our species and landscapes. If there is a single

thing we can do for our threatened species, it is to eliminate the main mammalian predators – rats, stoats and possums. This makes Predator Free 2050 a galvanising game changer for conservation. However, while Predator Free 2050 is the fundamental platform for the work to protect our threatened species, it needs to be part of a broader suite of actions.

This draft Threatened Species Strategy sets out the key elements we need to fulfil to protect our precious unique species. Predator Free 2050 is a springboard that has created a wave of enthusiasm. This Strategy is about how we ride that wave as a country to achieve our ambitious goals for the species and ecosystems entrusted to our care.



Investing to protect our species

Predator Free 2050 is a major investor in conservation. The aim of Predator Free 2050 Ltd is to sponsor long-term science and landscape-scale initiatives to achieve goals set for 2025 and 2050. The 2025 goals are to:

1. Increase by 1 million hectares the area of mainland New Zealand land where predators are suppressed, through Predator Free New Zealand projects
2. Demonstrate that predator eradication can be achieved in areas of mainland New Zealand of at least 20,000 hectares without the use of fences
3. Achieve eradication of all mammalian predators from New Zealand's island nature reserves
4. Develop a breakthrough science solution capable of eradicating at least one small mammal predator from the New Zealand mainland.

The company has been established with clear criteria, including maximising the benefits to threatened species and wider conservation from the predator control work it funds.

To achieve its goals, Predator Free 2050 Ltd needs to assess the relative value of proposed predator control opportunities for conservation. This draft Threatened Species Strategy is an important way of helping Predator Free 2050 Ltd to make those assessments.

This Strategy identifies 150 priority species and sets long-term targets for the number of species being protected. This can be used to help rank predator-

control projects according to the contribution they make in achieving the species goals. Not all conservation projects are of equal value. Some ecosystems contain numerous threatened species and a single project could achieve benefits for a greater number of species than other investments. Conservation, like any other investment, needs to be about smart targeting and maximising the benefit from scarce resources.

The Department of Conservation (DOC) has detailed knowledge of where many species live, the threats that exist in different areas and the positive impacts that will result from different actions such as predator control. The impact of various actions on many species can be modelled and costed. By using these tools, Predator Free 2050 Ltd will be able to assess how its funding is achieving the best results for threatened species and helping to meet the goals set out in this Strategy.

In addition to Predator Free NZ Ltd, the clear species goals set out in this Strategy will also guide decisions by:

- ▶ DOC
- ▶ Local councils in their biodiversity work
- ▶ Community groups undertaking conservation work
- ▶ Philanthropists and non-governmental organisations (NGOs) looking for high-impact conservation projects

This Threatened Species Strategy is therefore an important part of implementing Predator Free 2050. The final Strategy goals and prioritised species will guide a variety of organisations in their investment decisions.

The Strategy

Purpose

This Threatened Species Strategy sets out the New Zealand Government's plan to halt the decline in our threatened species and restore them to healthy populations. Building on existing commitments and programmes, the Strategy identifies further steps we need to take not only to restore those species that are already at risk of extinction, but also to prevent others from becoming threatened. We invite all New Zealanders to be a part of that effort.

Vision

This Threatened Species Strategy aims to safeguard our vulnerable threatened species. It establishes some clear goals for increasing the number of threatened species we are working on, and prioritises some threatened and at risk species¹ for intensive management to set them on a path to recovery by 2025.

The growth of existing national initiatives including Predator Free 2050, Battle for our Birds and War on Weeds are at the heart of achieving this vision. Support and contributions through partnerships with local and regional councils, philanthropists, communities, landowners, researchers and others will be essential. Everyone has a responsibility and a role to play in protecting our species.

This Strategy is underpinned by an ethic of partnership between government agencies and Māori. Iwi are the indigenous kaitiaki or guardians of the natural world (Te Ao Tūroa), including the plants, animals and fungi of New Zealand. The recovery of our treasured species provides our Treaty partners with an opportunity to fulfil that role.

Focus

This Strategy is based on five themes necessary to significantly progress threatened species conservation:

- ▶ Uniting against invaders on a landscape scale
- ▶ Managing ecosystems at scale to protect species
- ▶ Building our science and knowledge base
- ▶ Focusing beyond public conservation land
- ▶ Working together in partnerships.

¹ Species categorised as 'Threatened' (Nationally Critical, Nationally Endangered or Nationally Vulnerable) or 'At Risk' (Declining, Recovering, Relict or Naturally Uncommon) under the New Zealand Threat Classification System 2008.

Goals

To achieve the vision and assess our progress we will:

- 1 Manage 500 species for protection by 2025 – a 40% increase on today – and 600 species for protection by 2030.



- 2 Enhance the populations of 150 prioritised threatened and at risk species by 2025.



- 3 Integrate Te Ao Māori (the Māori world view) and mātauranga Māori (Māori knowledge) into species recovery programmes by 2025.



- 4 Support research, particularly through the National Science Challenges, that helps us to better understand data deficient species.







A LAND APART

Much of New Zealand's flora and fauna is found nowhere else on Earth. Our flora and fauna is ancient and unique – we have flightless birds, frogs without tadpoles, bats that crawl on the ground, penguins that live in forests and trees from the age of dinosaurs. We also have giant invertebrates and fish that can live out of water.

Our unique New Zealand

About 80% of our invertebrates, 70% of our birds, 84% of our freshwater fish, and 80% of our trees, ferns and flowering plants are ours alone.

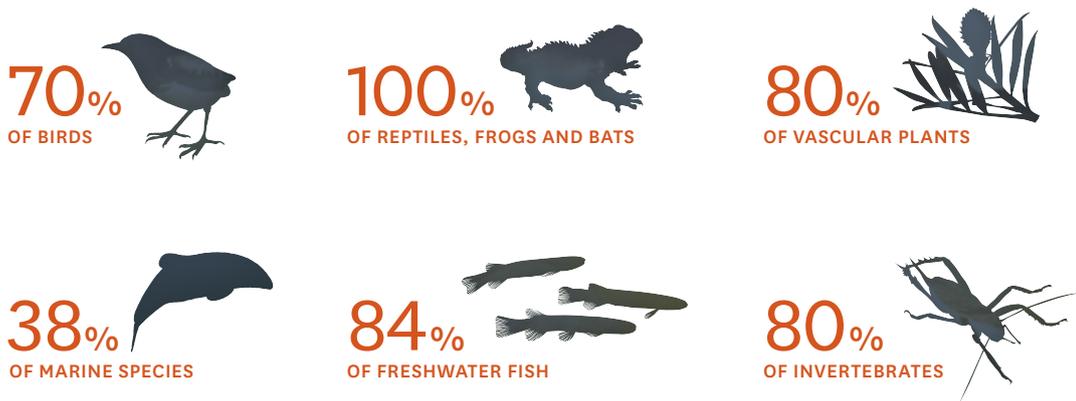
This biodiversity – the living things that make up our natural ecosystems – defines New Zealand, and adds immeasurable value to our culture, our identity and our wild places. It is part of who we are and nourishes our collective well-being. In addition to having intrinsic value, our natural ecosystems provide us with services that support not only our lives, but also our society and economy.

We hold in trust the unique and wonderful flora and fauna of Aotearoa for future generations of New Zealanders and, indeed, the rest of the world. The survival of our wildlife is a responsibility we all share.

The heartbeat of Te Ao Māori

New Zealand's indigenous plants and animals are an integral part of Māori culture; they are taonga, that is entities that are treasured or special. When plentiful, the plants and animals were vital sources of food that sustained not only the people, but their culture and world (Te Ao Māori²). Taonga, such as woven ceremonial korowai, carvings in whare and tools, were all crafted from the resources available in the natural environment. From an iwi perspective, these taonga all have stories to tell about the histories and whakapapa or genealogy of the people. All taonga have a mauri (life force), a wairua (spirit or soul), a tapu (sacredness) and mana (prestige). It follows, then, that the endurance, the sustenance and the heartbeat of Māoritanga is bound to the survival of those taonga – the plants and animals.

PROPORTION OF NEW ZEALAND SPECIES FOUND NOWHERE ELSE ON THE EARTH



2 Te Ao Māori means the Māori world.



SPOTLIGHT

Coming together for kiwi

KIWI HAVE VANISHED from much of New Zealand and we continue to lose around 2% of our national population each year. To stem that loss and turn this trend around, we need to keep kiwi safe from dogs, stoats and ferrets. DOC's Kiwi Recovery Plan aims to boost numbers nationally across all five species to 100,000 by 2030 – a big challenge that will only be met through the power of partnerships.

New Zealanders have already rallied to the cause. For more than two decades, research agencies, communities, iwi, businesses and the Government have worked together to improve the odds of our national icon. The partnership between DOC and Kiwis for kiwi (which represents the non-government kiwi sector) is an example of one of New Zealand's longest-standing and most successful conservation partnerships.

The positive results of this work include the North Island brown kiwi being removed from the threatened species list. This species was formerly listed as Nationally Vulnerable, but this year was downgraded to Declining/At Risk because of significant efforts that have increased populations in Coromandel and stopped the declines in Northland. This is an important milestone and with continued effort, it is hoped that the other kiwi species will also reach the point where they can be removed from the threatened species list.

Save Our Iconic Kiwi, a new government funding package established in 2015, aims to ensure that the collaborative work that is needed to save our national bird continues, to ensure that we achieve a 2% increase in both the national population and within each of the five individual kiwi species (North Island brown, little spotted, great spotted, rowi, and tokoeka). It will support both Treaty partners and communities through Kiwis for kiwi, and will extend DOC's current kiwi management programmes in the wild. The majority of kiwi are currently unmanaged and it is only through increased protection of these wild populations that we will be able to turn the current decline into an increase.

This new government funding coupled with the growth of iwi- and community-led projects (for example Kiwi Coast, Project Kiwi, Omataroa Kiwi Project) and other major initiatives, such as Predator Free 2050, the Taranaki Mouna Project and Battle for our Birds, all play a major role in bringing kiwi from endangered to everywhere.

Trouble in paradise

Everything is connected. Every organism, be it an animal, plant or fungus, a great whale or a tiny fly, can be thought of as a single thread in nature's rich fabric. Woven together, the multitude and variety of threads creates dazzling and complex patterns that bring resilience and beauty to our natural world. The more threads there are, the more securely they are bound to one another, the stronger the fabric, and the better it can withstand the pressures and extremes of modern times.

So, when a beetle, an orchid or a bird disappears forever, it matters. Like so many island nations, our country has an unenviable record of extinction. In the 750 years since human arrival, at least 76 bird species have become extinct. In addition, three frogs, at least three lizards, one freshwater fish, four plants and an unknown number of invertebrate species have vanished. The mauri of our natural world has been diminished.

Some species were impacted by people and a great many more by the animals they brought here – rats, stoats, possums, pigs, cats and dogs – all of which found our taonga easy prey. Our creatures had not evolved in the presence of such predators and so had no defence – and they still don't, so that even today, populations of native animals continue to fall prey to the impacts of these predators.

Meanwhile, other introduced herbivores such as rabbits, deer, goats, possums and chamois put heavy pressure on our native plants. Their selective browsing can alter which species are found in our forests, tussocklands, wetlands and dunes, and the functioning of our ecosystems.

Garden escapees and other introduced weeds have also impacted on our native species. They smother tree canopies and can form dense ground-covering

mats that stifle native seedlings. Many weeds have adapted to invade special open habitats, such as braided rivers, drylands and dunes, where they quickly overwhelm native vegetation. Some weed species are ecosystem transformers and, over time, will change the composition of plants and animals.

Many of our plants and animals need broad tracts of continuous and connected habitat, but as we have developed our land, habitats have become too small for many of these species.

Pollution harms marine and freshwater species. For example, seabirds and marine mammals can become entangled in drifting nets and other marine rubbish, and the ingestion of plastic rubbish is causing increased numbers of deaths among marine vertebrates.

Freshwater fish, birds and invertebrates are affected by changes in water flow (for example the removal of water or establishment of dams), and the water quality of rivers, lakes and streams. Introduced aquatic weeds such as oxygen weed have huge impacts on freshwater biodiversity, and introduced browsers and predators completely alter freshwater ecosystems.

People place further pressure on our indigenous plants, animals and fungi through fishing bycatch, the release of illegal game animals, wildlife smuggling and biosecurity breaches, as well as climate change.

Some threats are being addressed on a local scale, but they are expensive and challenging to tackle across whole landscapes. Many native plants and animals are protected under the law, but legislation has a limited ability to manage climate change, pollution and pests.

PRESSURES ON SPECIES COME FROM A BROAD RANGE OF THREATS



**INTRODUCED
PREDATORS**



HERBIVORES



WEEDS



LAND USE



**ILLEGAL
ACTIVITIES**



INDUSTRIALISATION



SPOTLIGHT

War on Weeds – the Dirty Dozen

THE 'DIRTY DOZEN' are some of New Zealand's worst environmental weeds, which either seriously impact the habitats of our native species now, or they will in the future if they are left unchecked.

They threaten our native species directly and by changing their habitats. The direct threats are usually competition (such as for space, water, nutrients and light), and sometimes through the hybridisation of weeds with native threatened plants. Weeds can change the habitat of threatened species through a range of processes, such as soil chemistry (for example nitrogen fixers), habitat stabilisation (such as dunelands) and through fire risk. It has been estimated that weeds pose a threat to a third of our threatened plant species.

A key aim of the campaign is to raise awareness about the impacts of weeds and encourage people to learn to recognise the Dirty Dozen, limit the spread of weeds when travelling, control weeds on their own property and assist local conservation groups that tackle weed issues.

Spartina is a cordgrass that clogs up estuaries and harbours throughout the country. It grows densely and accumulates sediment over extensive areas, taking over habitats like saltmarsh and eelgrass, and reducing the habitat for species such as wading birds and flatfish. Spartina is under active control in most parts of the country, and has been eradicated from many sites.



SPOTLIGHT

Beating wilding conifers

WILDING CONFERS are the windblown strays of larch, Douglas fir, and lodgepole and other pine species that have jumped their original plantations. Observers noted as far back as the late 1800s that wildings were already on the march across New Zealand.

Defying efforts to contain them, wilding conifers have since spread across conservation land and farmland at a rate of 5–6% a year, so that they now smother some 1.8 million hectares. Within another two decades, they're tipped to cover some 20% of the country.

In 2016, the Government allocated an additional \$16 m to wilding conifer control; in the first year, \$5 m will go to containing light infestations over a million hectares – a pre-emptive strike to spare much greater expense later.

Some wilding species, such as lodgepole pine or *Pinus contorta*, can grow at high altitudes, well beyond the native treeline, where, left unchecked, they will eventually replace much of our subalpine and alpine vegetation, home to many threatened species.

Wilding conifers have already spread across a range of habitats, such as inland dunes, glacial outwashes, ultramafic seams, geothermal areas, cliffs, ephemeral wetlands, braided riverbeds and frost flats.

Because of their immense thirst, they deprive sensitive catchments of badly-needed water. When wildings displace tussocks, they can reduce water availability by more than 40%.

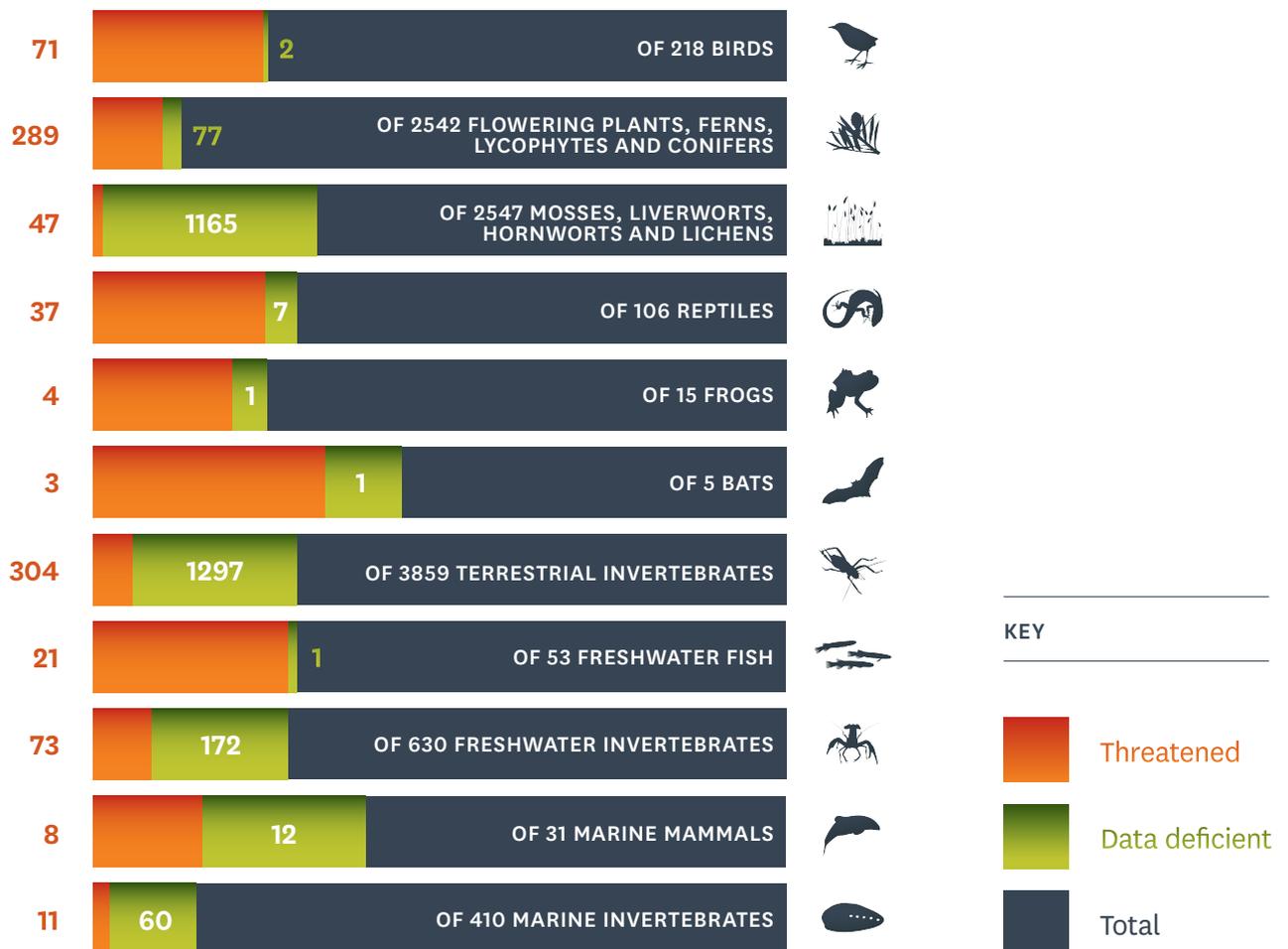
Stemming their spread is essential if we're to halt biodiversity decline and maintain populations of threatened species.

The state of our species

Presently, more than 3000 of our native species are classified as ‘threatened’ or ‘at risk’. Around 800 of these are classified as threatened and face the risk of extinction, while the remaining at risk species could see their populations decline through some slight change in conditions. The number of at risk species is expected to rise as more information comes to hand and the status of some groups is reassessed.

Knowledge gaps are a significant challenge – we simply do not know enough about some threatened species to assess their risk of extinction. Of the species assessed (about 13,000), approximately 3000 cannot be given a conservation status due to a lack of information about their population size or trend. As our knowledge improves, some of those species will be reclassified as at risk or threatened. There are also at least 300 threatened species that we cannot currently manage simply because we do not know enough about them to decide the appropriate course of action.

NUMBER OF THREATENED SPECIES BY BROAD TAXONOMIC GROUP



Defining the risk

Threatened species face imminent extinction (or a reduction to just a few small, safe refuges) because of their small total population size and/or rapid rate of population decline. There are three threatened categories:

Nationally Critical	Most severely threatened; facing an immediate risk of extinction because of their small population and high susceptibility to chance events.
Nationally Endangered	Facing a high risk of extinction in the short term.
Nationally Vulnerable	Facing a risk of extinction in the medium term.

What do we mean by ‘species’?

In order to make sense of the bewildering variety of nature, science has sorted all living things into groups, from the broadest – plants, animals, fungi – down to the fundamental unit of species. In theory, a species is any organism that can breed with others of its kind and produce fertile offspring. In the more fluid reality of the natural world, exceptions can and do happen, but the species serves as a convenient base level of taxonomic organisation. However, finer distinctions below species also exist – subspecies, varieties and forms – which vary subtly, often according to geographical separation and their genetic makeup (genotype). In this Strategy, we use the word ‘species’ to describe this collective grouping of species, subspecies, varieties and forms.

To protect our biodiversity, it is important to know whether a plant or animal is a distinct species, a subspecies or some more subtle, perhaps regional, genetic variant. Only then can we protect all the genetic wealth of a species. For instance, Māui dolphin is a subspecies of Hector’s dolphin – the North Island population (Māui) has a different genotype from the South Island population (Hector’s), making it important to preserve both populations.



SPOTLIGHT

Māui dolphin – in urgent need

THE NEW ZEALAND endemic Māui dolphin is one of the rarest marine dolphins in the world and is listed as Nationally Critical. Results for the latest abundance estimate (2015–16) indicate that there are approximately 63 individual Māui dolphins aged 1 year and over, with 95% confidence that the estimate is between 57 and 75.

This abundance estimate is higher than the previous estimate (2010–11) of 55 individual Māui dolphins aged 1 year and over, but the margins of error of both estimates overlap. Therefore, we are not able to state with certainty that there has been an increase in the dolphin population, although there is some evidence of stabilisation from 2010–11 to 2015–16. Almost two-thirds of the animals sampled over the 2 years of the survey were female.

Today, Māui dolphins are only found in waters between Maunganui Bluff in Northland and Whanganui, although you are most likely to spot one between Manukau Harbour and Port Waikato.

The greatest cause of Māui deaths is drowning in fishing nets, but they are also impacted by boat strikes, pollution and disease.

In 2008, DOC and the Ministry for Primary Industries (MPI) produced a threat management plan to identify human threats to Māui dolphin and its close South Island relative Hector’s dolphin. The plan resulted in measures to counter those threats, and to guide research and monitoring. New fishing restrictions were put in place to protect Māui dolphins, including the West Coast North Island Marine Mammal Sanctuary. In 2012 and 2013, further measures to protect Maui dolphins were added that increased the controls on fishing.

The threat management plan will be reviewed in 2018 to include new information on the distribution, threats and options for future recovery for Māui dolphin.

We're all part of the solution

Protecting our native flora and fauna benefits our health and well-being, our environment, and our connection with nature, and also replenishes the mauri of our land. Many of us cherish an affinity with our unique indigenous plants and animals.

New Zealand's biodiversity and wild places are a major element of our country's envied international brand. Tourism is New Zealand's highest export earner, with around 1.4 million international tourists visiting our country each year to experience our natural places and see our unique flora and fauna. That number is predicted to double by 2025, highlighting the economic importance of conserving New Zealand's biodiversity.

Conservation isn't only about protecting threatened species though – it is just as important to stop other, healthier populations from becoming threatened. It costs far less to safeguard what we have than to rescue what we are close to losing.

New Zealand is a signatory to many international agreements. We have a duty of care, and our national and international commitments hold us to the promises we have made. The New Zealand Biodiversity Strategy Action Plan 2016 – 2020 outlines our contribution to achieving the international goals of the Convention on Biological Diversity's Strategic Plan for Biodiversity 2011 – 2020, and the associated Aichi Biodiversity Targets. The Action Plan sets ambitious national targets for greater protection and sustainable use of biodiversity. These targets will enable New Zealand to demonstrate progress toward the five strategic goals of the Convention on Biological Diversity's Strategic Plan for Biodiversity 2011 – 2020.

We also have obligations to the International Union for Conservation of Nature to maintain our World Heritage Areas (such as Te Wāhipounamu – South West New Zealand). The Ramsar Convention (1971) requires us to conserve the biodiversity and sustainable use of our wetlands, while commitments to the East Asian-Australasian Flyway Partnership oblige us to protect migratory waterbirds that overwinter in our country.

The survival of our species is the responsibility of everyone.

**Kei a tātou katoa te oranga
o ngā tāonga koiora.**



SPOTLIGHT

Working together – partnering with business

LIVING WATER is a 10-year partnership between DOC and Fonterra set up in 2013 to ensure that the dairy industry is part of our healthy natural world.

Farm development and pollution can have a major impact on native fish, like the longfin eel and giant kōkupu, through damage to their habitats and water quality.

The Living Water partnership intends to solve this problem by helping farmers to achieve the best possible environmental results both on their farms and across entire streams and rivers, or ‘water catchments’.

There are five projects underway, including one at the Waituna Creek in Southland, where Fonterra and DOC are working to create new habitat for eels and other native fish. Large-scale restoration is being carried out over approximately 5 km of stream, using a variety of methods for improving the freshwater habitat. For example, large woody debris will be placed along the stream edge to provide cover for eels and create deep pools. Other enhancements will include the construction of ‘edge of stream’ wetlands to reduce the amount of sediment and contaminants reaching the stream.

Projects like Waituna will test out new ideas and share lessons, helping not only the eels, but all of New Zealand’s freshwater plants and animals.







A CALL TO ACTION

DOC is the principal government agency responsible for threatened species recovery. We work collaboratively with our partners, who are other central government agencies, iwi, other landowners, local government, philanthropic trusts such as the NEXT Foundation, research institutions and the wider public. Threatened species management is about what we can all do – this Strategy invites all New Zealanders to play their part.

Foundations for recovery

This Threatened Species Strategy builds on a platform of significant national conservation initiatives and supports the collective vision of a predator-free New Zealand by 2050.

Predator Free 2050 aims to rid New Zealand of those invasive pests that do the greatest harm to our native biodiversity, our economy and the primary sector – rats, stoats and possums. By way of support, the Government has granted \$28 million over 4 years and \$7 million per year thereafter, in addition to the \$70 million that it already spends on predator control each year. The Predator Free 2050 initiative expects to achieve a leverage of 3:1 – for every \$1 of taxpayer funding we will receive an additional \$3 of complementary funding. Predator Free 2050 will integrate, coordinate and expand existing control efforts over larger areas. Communities in Wellington, Picton, Dunedin, Nelson and Taranaki have already committed to becoming predator free by signing Memorandums of Understanding with DOC.

National Science Challenges are a set of major, long-term government investments, focused on issues of national importance that science can address. The New Zealand's Biological Heritage Challenge in particular will focus researchers on areas where we need step-change technology and information to be able to halt the decline of our native species. This challenge aims to reverse the decline of this country's biological heritage by protecting and managing native biodiversity, improving biosecurity, and enhancing resilience to harmful organisms.

War on Weeds is a Government initiative that aims to inspire New Zealanders to manage invasive plants. It encourages people to tackle weeds on their own properties and, more broadly, as part of community conservation efforts. The Dirty Dozen – a baker's dozen – are 13 common weeds threatening our native habitats that all New Zealanders can help to bring under control. The list is an annual roll call of garden escapees. DOC also supports community action with the DOC Community Fund supporting programmes such as the Queen Elizabeth II National Trust and Weedbusters NZ, and manages priority weeds

such as wilding pines, which currently cover more than 1.8 million hectares and continue to expand their range by 5 – 6% per year.

Battle for our Birds is a landscape-scale response to the periodic high levels of seed production (mast seeding) in our forests – particularly beech. The increased food resources provided by mast seeding provide rats with unusually favourable breeding conditions, driving increases in their populations. Stoats then respond to these increased rat populations by producing more litters.

The explosion in rat and stoat numbers results in a massive increase in predation on our birds, bats and invertebrates, including giant snails. Battle for our Birds blunts those irruptions by using aerial 1080 and trapping. In 2016, the Government allocated \$20.7 million of new funding to pest control over 800,000 hectares of habitat to protect kiwi, kākā, kea, whio, mohua/yellowhead, kākāriki/orange-fronted parakeet, pīwauwau/rock wren, pekapeka/bats and giant snails.

Save Our Iconic Kiwi is a government funding package that is dedicated to increasing the size of populations of our national symbol by supporting existing community efforts, fostering new efforts and carrying out large-scale pest control operations. Some of our most vulnerable kiwi species, such as the Fiordland tokoeka and great-spotted kiwi, are declining by about 2% each year. In 2015, Save Our Iconic Kiwi released a funding package of \$11.25 million over 4 years followed by \$6.8 million each year thereafter. This programme aims to reverse the fortunes of all kiwi species by boosting them by at least 2% per year. It will also fund more DOC-led protection and monitoring programmes for kiwi.

Freshwater reforms to improve water management will help halt the decline in our native fish species, which is linked to a decline in habitat and water quality. The National Policy Statement for Freshwater Management 2014 directs councils to set objectives to safeguard the life-supporting capacity and indigenous species of fresh water.

1080 – a vital tool

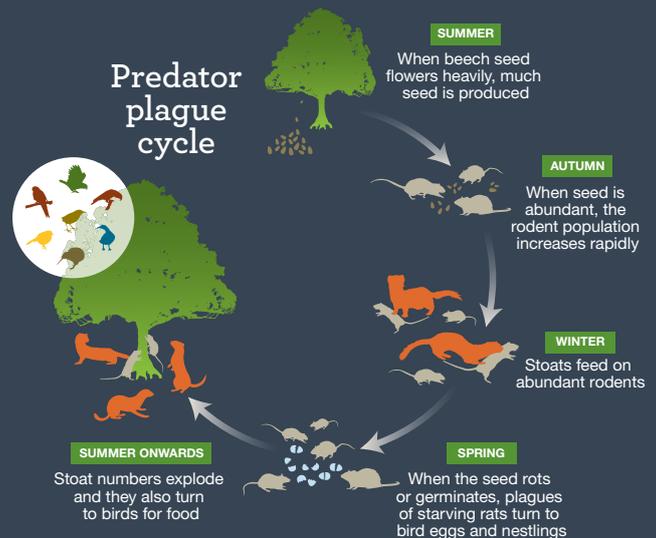
POTASSIUM FLUOROACETATE is a natural defence compound found in plants that provides protection from the impact of mammals. 1080, which is used in New Zealand to control pests, contains a synthesised form of this plant compound that is based on a salt ion, rather than potassium, and so is called sodium fluoroacetate. Sodium is used in 1080 because the salt makes the baits highly soluble, which means they will quickly dilute in rain, streams or groundwater. Dilution is by far the fastest and most common way in which 1080 biodegrades in the environment, but it can also be metabolised – on land and in water – by micro-organisms such as bacteria and by some aquatic plants.

1080 allows a rapid, landscape-scale response to the spikes in the numbers of predators that occur in response to the mast seeding of forest trees – which are becoming more frequent. Large-scale pest control operations (Battle for our Birds) are conducted to protect our native species during these mast events. Monitoring before, during and after these operations has shown that native birds enjoy improved breeding success and survival in 1080-treated areas.

1080 is also a critical component of Predator Free 2050, delivering an all-important initial knockdown before ground control can take over. In addition, modern aerial application by helicopters, guided by GPS tracking technology, means that pests can be precisely targeted across more difficult, remote terrain that cannot be trapped.

In recent decades, there has been a shift toward much thinner sowing rates. While fixed-wing operations in the 1970s distributed 1080 carrot baits at up to 25 kg/ha, it is now much more common to apply cereal baits at between 1.5 and 3 kg/ha. This has greatly reduced the accidental bykill of non-target species. Trials with different application patterns, such as strip sowing, have also allowed target kill rates to be achieved at reduced costs.

Just 0.15% of a typical bait is actually 1080 – the rest is a matrix of various grains and additives that make it more attractive to pests. New Zealand is the world's largest user of 1080 because of our unique ecology. 1080 is most potent against mammals, which makes it the toxin of choice here because all our terrestrial mammals except two native bat species are introduced pests. 1080 is of limited use in other countries because there are native mammals that they cannot risk harming.



Battle for our Birds – protective cover for mohua/yellowhead



THE NATIONALLY VULNERABLE mohua is endemic to the South Island and now mostly lives in tall native beech forests in the southern half of the South Island. There

are currently fewer than 5000 mohua remaining in about 30 populations across their South Island distribution.

Mohua are highly sensitive to predation while nesting because they nest in holes in trees from which they can't escape from rats and stoats, and because the females undertake all the nesting duties. During mast years when rats and stoats are especially abundant, most mohua nesting attempts fail and many female birds are killed on the nest.

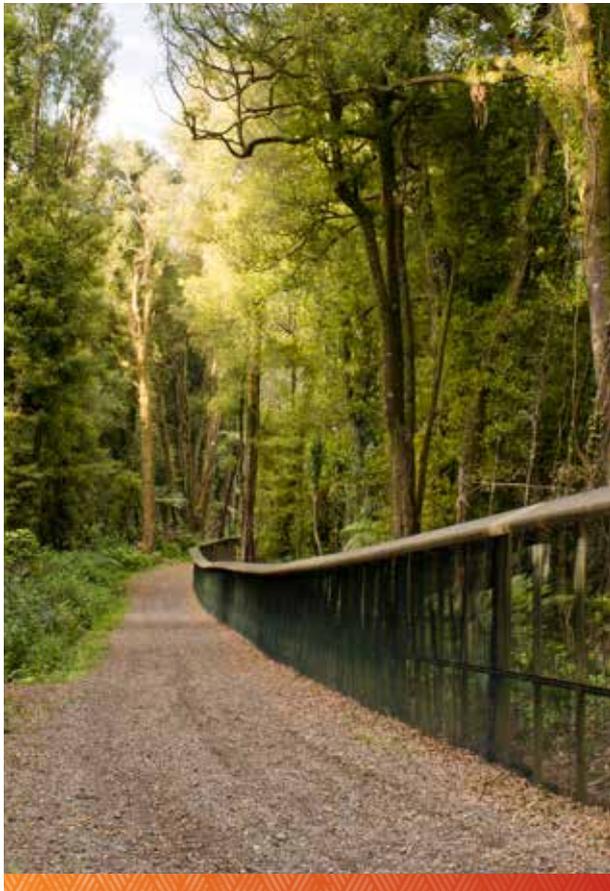
Predator control using trapping for stoats and aerially applied 1080 for rats, stoats and possums can reverse these declines. Nesting success of mohua during a rat and stoat plague in the Dart Valley in 2014, which was treated with aerial 1080, was 89% of 13 monitored nests. As part of the Battle for our Birds programme more than 50,000 ha of key mohua habitat are repeatedly treated with 1080 and trapping. In the Landsborough Valley, which has been trapped and repeatedly treated with aerially applied 1080, mohua have increased from a count of 14 to 300 along monitoring lines, a more than 20-fold increase since predator control began.

The right tools for the job

Recovery planning

DOC and its partners rely heavily on robust technical and strategic advice, clear priorities, and plans for recovery action. Some of that advice comes from a network of species recovery groups that help DOC managers and conservation partners to make informed decisions based on evidence and expert knowledge. Those groups are responsible for developing recovery plans for particular species or, where detailed plans are unnecessary, more generic management plans called prescriptions.

Formerly, these recovery groups supported only a small proportion of threatened species, but DOC is now developing a new network of groups known as 'Natural Heritage Specialist Groups', which have a broader mandate to advise on the recovery of all threatened species and their ecosystems.



Prioritisation of species recovery

DOC's natural heritage prioritisation tools use a science-based approach to optimise the selection of sites for management. These tools maximise the number of species secured from extinction while ensuring that a representative range of New Zealand's ecosystems are healthy and functioning. This approach takes into account the conservation status and uniqueness of species, the ecological condition and potential for improvement of ecosystem management sites, and the cost of management.

Use of these prioritisation tools ensures that resources are efficiently distributed so that as many unique and threatened species as possible benefit from management within their native ecosystems. For example, instead of managing multiple species across several different sites, the system can identify where those species could be more efficiently managed at the same site within a high-value native ecosystem that will also provide habitat for lesser-known species, such as many invertebrates and fungi.

Captive management

Captive management supports and enhances wild populations of our threatened species. DOC and the Zoological and Aquarium Association have a Memorandum of Understanding to pursue threatened species conservation and advocacy, particularly through visitor engagement and quality animal welfare. The MOU affirms the commitment of both organisations to enhancing and strengthening outcomes for New Zealand's native fauna. Members of the Zoo and Aquarium Association, other captive-breeding facilities, and experts in captive management and reintroductions support threatened species recovery through captive breeding, and rearing and release programmes. Such programmes can help to maintain survivors of a species that can no longer persist in the wild or can be used to augment wild populations through the release of captive-bred individuals. Breeding and rearing rare species is a highly-specialised field, as are the facilities and expertise it requires.



Fenced sanctuaries

In the past 20 years, advances in technology have allowed specially designed fences to be used to exclude mammalian pests from conservation areas, dramatically increasing the potential for managing populations of highly vulnerable threatened species on mainland New Zealand. Prior to this, species such as hihi/stitchbird and tīeke/saddleback could be maintained only on offshore islands free of mammalian pests. The development of fenced sanctuaries has allowed such species to be returned to parts of their former range and has made them more accessible for the New Zealand public to experience.

In 1999, Zealandia, in Karori, Wellington, became the world's first fenced urban ecosanctuary. Since then, many more fenced sanctuaries have been established, the largest of which is Maungatautari Ecological Island. Other sanctuaries include Tawharanui Regional Park north of Auckland, Dunedin's Orokonui Ecosanctuary and Kotuku Peninsula Sanctuary on Great Barrier Island/Aotea.

A partnership with the Botanic Gardens Australia and New Zealand

DOC has entered into a formal partnership with the New Zealand members of Botanic Gardens Australia and New Zealand (BGANZ) to accelerate threatened plant conservation in New Zealand. The Memorandum of Understanding, to be signed at the Threatened Species Summit 2017, provides a framework for cooperation over a range of mutually important plant conservation matters.

The partnership will improve coordination, increase conservation capability, achieve more research and reduce costs by increasing the efficiency and effectiveness of plant conservation work nationally.

BGANZ members include the major botanic gardens in Auckland, Wellington, Christchurch and Dunedin as well as three public gardens that provide similar services: Pukekura Park (New Plymouth), Eastwoodhill Arboretum (Gisborne) and Hamilton Gardens. ▶

SPOTLIGHT

Key to the city

ALL OVER NEW ZEALAND, communities are already working towards a predator-free New Zealand by 2050. 'Halo' projects are building on existing conservation initiatives as they extend protection beyond sanctuary fences and enable expansion of threatened species populations to wider areas. These halos are being met with such enthusiasm and support that our capital city has signed up with an MOU to embed this in the city's future.

In Wellington, halo projects capitalise on the pest-free benefits of the Zealandia fenced ecosanctuary. The idea behind the city's halo is to extend protection for threatened species into Wellington's urban communities and out to adjacent reserves. Community groups are backed by the Wellington City Council, Greater Wellington Regional Council and DOC.

Just minutes from downtown Wellington, communities are securing reserves for kākā, pōpokotea/whitehead, and toutouwai/North Island robin. Residents of pest-free suburbs such as Khandallah and Wadestown protect corridors between reserves, and other groups focus on reserves to protect important habitat. Polhill Protectors, a group of runners, mountain bikers and nature lovers protect 70-ha Polhill Reserve, while Friends of Trelissick Park and Friends of Otari-Wilton Bush use a network of traps to keep those areas safe from rats and mustelids. Greater Wellington and Wellington City Council tackle possums.

Hundreds of Wellingtonians have helped secure reserves for kākā, which have expanded throughout the city and are now one of a few urban-dwelling populations known since the last century. Kākā are now settled members of the city's community. Wellington's pest control groups have given many species a safe haven right in the heart of our capital city.



SPOTLIGHT

Myrtle rust: an imminent threat to our native flora

AROUND THE WORLD, trees and shrubs in the myrtle family are under attack from a virulent disease, myrtle rust, which is rapidly approaching mainland New Zealand. Myrtle rust has had a devastating effect on myrtle species wherever it has encountered them and, to date, there is no effective remedy. New Zealand has 28 native species in six genera of the myrtle family, including popular trees such as pōhutukawa, northern rātā and southern rātā, as well as mānuka, kānuka, ramarama and swamp maire. Most of these native species and two of the genera are found nowhere else in the world.

Myrtle rust was detected on Raoul Island, the largest of the Kermadec Islands in early 2017, where it has already destroyed a patch of mature Kermadec pōhutukawa. If myrtle rust arrives on mainland New Zealand, there will be serious consequences for our native myrtle species. Currently the Ministry for Primary Industries, along with DOC, are leading the biosecurity and research programme to try and prevent myrtle rust from getting to mainland New Zealand.

If it does reach our shores, it is expected that most species would move into a threatened status in the space of a few years, so urgent work is required to secure propagating material of all species before the disease arrives. Seed banking will be an important focus of this work to ensure that enough seed is collected and stored to represent the genetic variation of all species. However, seed banking will not be a panacea. The seed of some species may not survive the drying and freezing necessary for long-term storage, and the viability in long-term storage of several other species is not known.

We all need to be vigilant. Report any sighting of myrtle rust to the MPI hotline on 0800 80 99 66 and do not attempt to touch or collect samples.

Seed banking: investing in the future of our native flora

Seed banking is the long-term storage of seed —an insurance policy against any loss of plant species in the wild. An increasingly important tool, seed banks are a reservoir from which we can restore species should some catastrophic event wipe them out in their natural range. For now, the technique is in its infancy in New Zealand – the seeds of just 100 species are held at the New Zealand Indigenous Flora Seed Bank – but the emerging threat of myrtle rust this year is a reminder that the effort will need to pick up pace.

However, it's not known whether all threatened plants can be safeguarded this way as some seed may not be 'bankable', so research is an important focus of this work.

We need to know, too, how to propagate from seed all of the species we hold (many native plants have quite specific germination requirements that are not fully understood) and we need to better understand their ecological requirements to ensure they can be successfully restored to natural habitats.

Biocontrols

We do not yet possess techniques or resources to control every pest. Some are simply too well established, so that there may not be sufficient resources to manage the pest everywhere. Wandering willie (*Tradescantia fluminensis*) and old man's beard (*Clematis vitalba*) are two examples where herbicides and manual removal can only do so much.

In such circumstances, biocontrols offer a welcome alternative. Predators, herbivores, parasites and diseases that regulate pest species in their native habitats are, after careful risk assessment, introduced to control pests, after extensive testing to ensure they target only that specific pest. Sometimes, biocontrol is multi-pronged, employing a number of different

biocontrol agents, each attacking a different aspect of the pest's biology. Three species are used, for instance, to control wandering willie.

Examples of successful biocontrol introductions include:

- ▶ The release of tradescantia biocontrol agents to protect bush fragments and riparian forest and threatened species such as *Pittosporum obcordatum*
- ▶ Buddleia leaf weevil to reduce riverbed infestations of buddleia (*Buddleja davidii*)
- ▶ White smut fungus to target mist flower
- ▶ Heather beetle to control heather, an invasive weed that affects iconic alpine vegetation and native reptiles in Tongariro National Park.

Biocontrols are a collaborative endeavour between industry, regional and unitary councils, DOC and government research companies, primarily Landcare Research Manaaki Whenua, but also Scion and AgResearch. The Ministry of Business, Innovation and Employment funds government research companies under weed and pest control research contracts, with contributions from DOC and regional councils.

Biosecurity: preventing the arrival of new pests

Predator Free 2050 is one response to some of the introduced predators already in New Zealand, but control is also about preventing new threats.

New Zealand has an open economy, built on trading with the world. As more goods arrive on our shores, and we attract more tourists, the range of possible threats rises: this year, brown marmorated stink bug has been discovered at the border on several occasions, a stark reminder that New Zealand is not beyond the reach of harmful invaders. ▶



SPOTLIGHT

Biocontrols – tackling wandering willie

WANDERING WILLIE or tradescantia is one of the 'Dirty Dozen' weeds targeted in the 'War on Weeds' campaign. Wandering willie forms a dense carpet on the ground, preventing native species from establishing. It also causes an unpleasant allergic reaction in dogs. Because it's brittle, breaking into a multitude of segments when pulled, tradescantia is very difficult to contain – each broken segment can sprout anew. It is now so widespread that large-scale manual or chemical control is no longer feasible.

So DOC is trialling instead new biocontrol agents. Three species of tradescantia beetle – specific only to the weed – have been released around New Zealand, and early results suggest they're already having a significant impact. Research into another biocontrol option, the yellow leaf spot fungus, is also under way.

DOC is a member of the National Biocontrol Collective (NBC), a group that funds research into the biocontrol of serious environmental weeds, including tradescantia.



SPOTLIGHT

Island hopping – new pastures for the Mercury Islands tussock wētā

THE THREATENED Mercury Islands tussock wētā was discovered in 1970. This large (up to 70 mm in body length), carnivorous insect was known only from mammalian-free Atiu or Middle Island in the Mercury Island Group, off the eastern Coromandel coast. In the past, this wētā probably lived on neighbouring islands, and possibly mainland New Zealand, but it was exterminated by rats and other introduced mammals. Because its entire population was small and confined to a single island, the species was considered extremely vulnerable to random incidents, such as an invasion by rats.

To safeguard the wētā, DOC decided to establish new populations on neighbouring, rat-free Red Mercury and Double Islands. However, there were not enough wētā on Middle Island to spare without putting the founder population at risk. Clearly, the wētā would have to be bred up to healthy numbers in captivity instead, which had the added benefit of increasing our understanding of wētā biology and captive breeding requirements. Eventually, 120 captive-bred wētā were released on Double and Red Mercury Islands and they soon flourished. Later, more captive-bred wētā were translocated to nearby Korapuki, Ohinau and Kawhiti or Stanley Islands, where the species is now well established. With thriving populations on five new islands, the Mercury Islands tussock wētā now faces a much brighter future.

Biosecurity 2025 outlines the Government's moves to future-proof New Zealand's biosecurity systems and capability, building partnerships and enrolling all New Zealanders in the biosecurity challenge. As such, the Biosecurity 2025 project is a vital part of this Threatened Species Strategy.

Translocations

Moving species around – or translocation – has a long history as a tool for the conservation of threatened species in New Zealand. Translocations are commonly carried out to allow genes to mix or to protect populations from predation. Unexpected events or new pressures can suddenly threaten the survival of small or relict populations of threatened species. Such emergencies demand swift action and may require populations to be evacuated from the wild.

For example, in 1964, the remaining 36 tieke/ South Island saddleback were moved from their only location on Big South Cape Island to a safe site following invasion by rats. This marked the first time a translocation successfully rescued an endangered species from imminent extinction anywhere in the world. Responding to sudden, random or newly emerging threats will continue to be an important part of the conservation of threatened species.

Threatened species are also translocated to return them to locations and ecosystems from which they have been lost. This not only increases their range, but also often makes them more accessible for the New Zealand public to enjoy. For example, species such as kōkako and dactylanthus (wood rose) have been translocated to suitable parts of their former range following the implementation of effective pest control to protect them into the future. Occasionally, it is also appropriate to translocate threatened species to sites that are outside their natural range to safeguard them for the future.

Translocation is a highly technical tool for threatened species management. The appropriate

and successful use of this tool requires in-depth knowledge of the species' ecology and behaviour, and a thorough understanding of how the species should be managed in its new environment over the long term.

Regulation

Appropriate legislation protects species and their habitats, and grants managers the necessary powers to mount recovery operations or act promptly against new threats.

Some species are protected by law, but that does not protect them from impacts such as habitat loss, pollution, disease or climate change. Marine and aquatic life, and all invertebrates, can be protected through the Wildlife Act 1953, and freshwater fish through the Freshwater Fisheries Regulations 1983. However, plants receive no such direct legal protection – at present, they can only be safeguarded by formal protection of the land on which they grow.

Habitats can be secured through the creation of protected areas, covenants and kawenata, or, to a lesser extent, through Resource Management Act (1991) zoning. The Biosecurity Act 1993 and Wild Animal Control Act 1977 manage biosecurity threats, and fire legislation can also protect against catastrophic losses to runaway blazes.

Other threats, such as declining water quality or quantity, disruption from industry, or impacts from development or extraction, are largely managed through the Resource Management Act and fisheries regulations.

Presently, there are limited powers in the legislation to protect biodiversity on private land without the owner's agreement, which can be problematic if urgent action is needed.

Work is underway on a National Policy Statement on Indigenous Biodiversity by the stakeholder-led Biodiversity Collaborative Group. Marine protection legislation is a vital tool for protecting marine ecosystems, and plans for overhauling existing legislation are well under way.



SPOTLIGHT

Keeping seabirds safe

FISHING BYCATCH is a major cause of death in seabirds, particularly for albatrosses and petrels. Birds like the Salvin's albatross, a Nationally Critical species, are at risk from collisions with warp wires – steel ropes that drag fishing nets.

DOC's Conservation Services Programme encourages fishing practices that promote the recovery of threatened species. The fishing industry, scientists, environmental stakeholders and MPI are working together to better understand and find solutions to fishing impacts on seabirds.

One such example is the development of tori (bird-scaring) lines, which are deployed on trawlers to stop birds colliding with warps and are best suited to the operational requirements of New Zealand fishing vessels. The project also produces educational material for fishers, which has led to tori lines being more widely adopted – a welcome win for Salvin's albatross.





THE PLAN OF ATTACK

The scale, urgency and complexity of biodiversity loss mean that DOC cannot address this alone. Many conservation partners are already supporting threatened species recovery and ultimate success will come from the continued engagement of all New Zealanders. More teamwork is needed if we are to recover the populations of those species that are at greatest risk.

Setting goals

Setting clear goals for threatened species provides focus and a sense of urgency. Therefore, to create a platform for threatened species recovery, we will:

1 Manage 500 species for protection by 2025 – a 40% increase on today – and 600 species for protection by 2030.

- ▶ This goal reflects the work we can achieve through the landscape-based predator control that will be delivered through Predator Free 2050 and other initiatives such as War on Weeds. Protection is about ensuring the long-term survival of a species.



2 Enhance the populations of 150 prioritised threatened and at risk species by 2025.

- ▶ This goal focuses conservation effort on ensuring that the long-term health of 150 threatened and at risk species will be improved.



3 Integrate Te Ao Māori (the Māori world view) and mātauranga Māori (Māori knowledge) into species recovery programmes by 2025.

- ▶ This goal is about integrating the Māori world view into species recovery plans. Māori possess a wealth of knowledge that will help us to recover threatened species.



4 Support research, particularly through the National Science Challenges, that helps us to better understand data deficient species.

- ▶ This goal moves us towards filling the information gaps that are currently preventing us from effectively managing some threatened species. We would like to engage citizen science and researchers in this area.



What do we mean by ‘protection’?

‘Protection’ means the long-term protection of species, including managing all threats to secure species from extinction and ensuring their populations are buffered from the impacts of loss of genetic diversity, and longer term environmental events such as climate change.

What do we mean by ‘enhanced’?

‘Enhanced national population’ means that conservation management has successfully enabled the recovery and long-term sustainability of a species. This will result in an increase in the total number of individuals nationally, the geographic range of the species, or the viability of the population by addressing genetic problems such as limited gene flow or inbreeding.



SPOTLIGHT

An encore for kōkako

THE SUCCESSFUL RECOVERY of the North Island kōkako shows what can be achieved when New Zealand animals are given a chance to thrive in an environment without predators.

Kōkako are recognised for their haunting song – slow, mournful notes that echo through the forest. Known as the blue-wattled crow because of the distinctive flaps of skin on their cheeks, kōkako forage for food among the branches of the tawa and taraire forests they prefer to call home.

Vulnerable to possums and rats that prey on their nests, killing chicks and eating eggs, the North Island kōkako was reduced to only 400 pairs by 1999, making it among the most threatened species in New Zealand with a classification of Nationally Critical.

Through research, DOC realised that the only way to ensure the survival of the kōkako was through a determined predator control programme. When predators were removed or under sustained control, the birds were able to breed and flourish again. Today, there are an estimated 1600 pairs of kōkako at 22 pest-managed sites from Northland to Kapiti Island.

Ten original populations have recovered and an additional 12 have been newly re-established by translocation to offshore islands and managed mainland sites. The goal now is to increase that number to 3000 pairs by 2025, stepping up pest control through the Predator Free 2050 programme.



SPOTLIGHT

An unseen foe – kauri dieback

KAURI ARE FOUND only in New Zealand and are among the world's mightiest trees. They grow to more than 50 metres tall and their trunks can be up to 16 metres around. They are a symbol of Northland and considered a taonga species by many northern iwi.

Though not endangered, these forest giants are at risk from a disease called kauri dieback, which is caused by a microscopic fungus that scientists believe arrived in New Zealand in the 1950s but has only recently been discovered.

Kauri dieback lives in soil and attacks tree roots. It prevents kauri from taking up water and nutrients, and gradually starves them to death. Almost all infected trees die and so far no cure has been found.

The fungus is easily spread on muddy shoes, equipment, vehicles and animals. It has infected trees across the upper North Island and has the potential to wipe out one of our most precious species. At Waipoua, DOC is working with Te Roroa iwi on a number of kauri dieback initiatives, including the development of a tactical plan and pig control.

DOC, MPI, iwi and councils are working together to protect kauri. To stop the movement of contaminated soil, DOC is upgrading tracks through kauri forests and installing footwear cleaning stations. A public education programme is also under way. The extent of kauri forests is being mapped and hygiene procedures for earthworks near kauri are being put into regional and district council plans. The New Zealand Transport Agency is actively engaged in assessing how it can reduce the risk of spread of kauri dieback along the highway in Waipoua forest and treat the materials collected from the road and sumps.

Meanwhile, scientists are researching ways to track and treat kauri dieback. Trials that have injected infected trunks with the chemical phosphite have had some success in slowing the impact on infected trees. Methods for deactivating the disease in soil collected from people and machinery are being refined. LIDAR (light imaging, detection and ranging) and satellite technologies are being investigated to see if they can be used to find and track the disease.

150 priority species

Conservation is about making choices. A strategy that says we will focus on everything is not a strategy. To provide focus for action, we have identified a draft list of 150 species with the goal of enhancing the populations of these species.

A broad list that covers a full range of species sends a clear message that conservation needs to go beyond focusing on those species that are popular and appealing. On the other hand, conservation is also about delivering on what is important to people. Social science research into our attitudes to species protection gives us insights into the species we value. The list includes some species such as kōkako which, thanks to the hard work of recent years, is no longer categorised as threatened but rather as 'at risk – recovering'.

The purpose of the list is not to limit action to only those 150 species. Rather, it provides focus for what species work will be done to 'enhance' their populations. The goal of increasing the number of species that are actively protected to 500 picks up many additional species.

DOC will continue to monitor those threatened species that are not being actively managed and will react if there is a threat of extinction.

How the list was made

To develop the list of 150 species, we first identified 50 species that are notable to New Zealanders and are currently receiving management. Following this initial list, 100 more were selected using scientific criteria to represent the diversity of species that DOC works on (plants, bats, beetles, etc). The selection of these species takes into account how threatened the species is, whether the species has close relations and whether the species is unique to New Zealand.



SPOTLIGHT

Cultivation in gardens secures kākābeak

KĀKĀBEAK is internationally recognised as one of New Zealand's seriously threatened distinctive plant genera. Known to Māori as ngutu kākā, by the time New Zealand was settled by Europeans, kākābeak was already a seriously threatened plant. Threats include animal and insect browse, habitat loss and lack of recruitment. Luckily cultivation has offered a way to secure kākābeak from extinction – indeed experts now believe there is more genetic variation in gardens than in the wild. Using cultivated plants and Kiwi ingenuity, kākābeak is being restored to the stream gorges of the East Cape region by fringing seed, loaded into shotgun pellets, into the canyon walls, while some 600 plants have been established on islands in the Hauraki Gulf. White kākābeak has also been returned to its traditional home with help from Scion, a Crown Research Institute.

Strategic themes

This Strategy plots a course back to a rich, vibrant and secure future for our land, freshwater and marine species. The actions we need to take can be grouped under five broad themes, all of which are needed to significantly advance threatened species conservation.

Uniting against invaders on a landscape scale

New Zealand has a well-deserved, global reputation for rescuing threatened species, nearly all of which owe their decline to the impacts of introduced predators and browsers. Over the years, collaborative research by science agencies has refined methods and technologies that can knock down populations of invasive species, and keep them down, so that threatened species – and their habitats – can recover.

To capitalise on that success, we need to manage invasive pests more effectively over larger areas. Doing this will protect more of our species and make their populations more resilient. Predator Free 2050, Battle for our Birds and War on Weeds are significant national initiatives that will bring massive benefits to our threatened species as their momentum builds and their implementation continues over broad tracts of habitat. While initiatives such as Predator Free 2050 target the most significant causes of decline to threatened species, we will also continue to work with our partners to improve methods of controlling other predators, such as feral cats, which continue to decimate New Zealand's native wildlife.

Collaboration with the private sector, such as the partnership between DOC and the pest control company Goodnature, has driven significant advances in kill-trap technology and efficiency. Goodnature's innovative carbon dioxide-powered self-resetting traps now provide a humane and non-toxic additional tool for ground-based possum, rat and stoat control. The traps for rats and stoats will reset up to 24 times and for possums will reset up to 12 times, reducing the amount of effort required to check the devices and making them really popular for community

groups and private landowners. The research and development partnership with ZIP (Zero Invasive Predators Ltd) is testing new technologies and strategies to allow predator eradication to occur at the very large landscape scale on the New Zealand mainland that is needed to meet our national Predator Free 2050 goal.

Progress is also being made through collaborative efforts between iwi, private businesses, philanthropists, scientists and the Government. The NEXT foundation, a philanthropic trust, supports the growing effort by helping to fund regional pest control programmes such as Project Janszoon, a public/private initiative to restore Abel Tasman National Park; and Project Taranaki Mouna, an ambitious effort to make Egmont National Park the first predator-free national park and a haven for native wildlife.

This Strategy recognises the importance of New Zealanders working together to reduce and ultimately remove the pervasive threat that invasive pests pose to our native species. It seeks to unite New Zealanders under a single vision against pests, be they browsers, predators, weeds, invertebrates or pathogens.

Managing ecosystems at scale to protect species

To get the best gains for threatened species we need to integrate large-scale ecosystem predator control programmes with the location of threatened species. This Strategy will integrate species recovery with ecosystem conservation, thereby securing maximum benefits for both threatened species and the habitats that support them. Protecting whole ecosystems using landscape-scale management can protect many more species – on land, in freshwater and at sea – and prevents more species from becoming threatened. The outcome of this holistic approach is better ecological function and connection between ecosystems and species, and improved resilience against new and existing pressures. ►



SPOTLIGHT

ZIP Ltd – going large with ‘Remove and Protect’

IT IS GENERALLY ACCEPTED that rats, possums and stoats are the main causes of biodiversity loss in New Zealand. Together, they kill an estimated 25 million native birds and countless other species every year.

Although New Zealand is a recognised leader in island pest eradication, we still lack the tools to permanently rid large tracts of the mainland from these pests.

ZIP Ltd (Zero Invasive Predators) was established by DOC and the NEXT Foundation in 2015 as a pest control research and development start-up, with the express aim of addressing that lack of tools. ZIP is developing new tools and methods that will completely remove rats, possums and stoats from entire landscapes, and prevent them from getting back in.

Backed by other investors, notably the dairy industry, ZIP leverages an average \$6 for every \$1 invested by DOC. If successful, its ‘Remove and Protect’ operating model will create large tracts of predator-free habitat in which threatened species can once again thrive – a blueprint for action that will see surrounding habitats brought into an expanding ‘rolling front’ as we edge towards a predator-free 2050.

For now, ZIP is trialling ‘Remove and Protect’ at a 400-ha site at Bottle Rock Peninsula in Queen Charlotte Sound, where it is testing a virtual barrier of traps and prototype pest control technologies to defend the site from predators. As at April 2017, the virtual barrier was stopping 97% of possums and 96% of rats that attempted to invade Bottle Rock. ZIP is already looking for a larger site – between 4000 and 5000 ha – where it can start scaling up its research.

Sequencing the genomes of an entire species

THE KĀKĀPŌ is endemic to New Zealand, and the world's heaviest and only flightless parrot. Once common, it was driven to the brink of extinction by predation from introduced mammals and human hunting. The remaining birds were translocated to predator-free offshore islands, but by the inception of the Kakapo Recovery Programme in 1995 there were just 51 individuals left.

The population has since tripled to just over 150 birds, as the result of an intensive and innovative recovery programme which has its roots in the pioneering work of Richard Henry, the international figure in the live transfer of birds to island refuges. Led by Don Merton, Paul Jansen and Deidre Vercoe, and driven by the dedication of a team including instrumental figures such as Gary Aburn and Daryl Eason, the recovery efforts have saved the kākāpō from extinction. However, it is still listed as Nationally Critical, threatened by disease, low fertility, and the impacts of low genetic diversity.

Genetic management is central to kākāpō conservation, used to guide aspects such as translocations, artificial insemination and prioritisation of breeding management. After the kākāpō genome was sequenced in 2015, Dr Andrew Digby of the Kakapo Recovery Programme kick-started 'Kakapo125+', an ambitious project to sequence the genomes of every individual kākāpō – a world-first for any species. The individual genomic data are being made publicly available to international researchers, which will spark a wealth of research with the potential to transform kākāpō conservation.

The research will provide a full population pedigree, examine the genetic causes of the infertility and disease which hamper recovery efforts, and assess the impact of the loss of genetic diversity on the species. It will provide many more benefits to kākāpō conservation, and will further understanding of the evolution of this unique bird.

The Kakapo125+ project is an international collaboration between DOC, universities, and science funding and facilitation organisations. Funding for the project has been coordinated by the Genetic Rescue Foundation through a combination of crowd-funding, private donors and genome sponsorship. So far about \$80,000 has been raised from around the world, and 81 genomes have been sequenced. The goal is to sequence the genomes of the 125 kākāpō alive when the project began, plus some important individuals which died before that: 137 kākāpō in total. The remaining fundraising and sequencing should be complete by early 2018.



This Strategy promotes the use of spatial planning tools to identify and prioritise Ecological Management Units (EMUs) – sites that contain mosaics of related ecosystems and threatened species. Around 1000 national EMUs embrace the full range of ecosystem types found in New Zealand. The conservation management of priority units provides ‘umbrella protection’ to the broad composition, structure and function of the ecosystems within each EMU, and also benefits many of the species that live in them. This approach considers the conservation work of iwi, communities, businesses and others to avoid duplicating their contribution within a national context of ecosystem and species priorities.

A good example is Moehau. This 5000-hectare coastal forest at the tip of the Coromandel Peninsula is home to kauri, rimu, northern rātā, coastal pōhutukawa, and threatened species such as brown kiwi, kākā, long-finned eels, Moehau stag beetle, and Archey’s and Hochstetter’s frogs. Landscape-scale pest control at Moehau using compounds such as 1080 ensures that these species are protected and the ecosystem is kept in good working order, thanks to the functions and roles they carry out.

This Strategy promotes the implementation of this shift towards managing ecosystems using the prioritisation approach. This will help optimise the use of resources, prevent more species from becoming threatened, and provide for the recovery and protection of a larger number of species within healthy and functional ecosystems.

Building our science and knowledge base

This Strategy will be backed by science and mātauranga Māori – Māori knowledge and understanding. Support structures, systems and specialist expertise will provide robust technical and strategic advice to support species recovery planning, and the knowledge gained will be shared across the public and private conservation sectors. ▶

Science leading the way

New Zealand’s science initiatives lead threatened species recovery. The Conservation and Environment Science Roadmap (CESR) identifies Government research priorities, where new scientific knowledge is needed to support decision-making for conservation and environmental management over the next two decades.

The roadmap has six themes:

- ▶ Environmental monitoring and data management
- ▶ Mātauranga Māori
- ▶ Climate change
- ▶ Biosecurity
- ▶ Integrated ecosystems and processes
- ▶ Social and economic factors.

The roadmap promotes collaboration between government agencies working on overlapping priorities and aims to align with the National Science Challenges. The Challenges are designed to ensure New Zealand takes a strategic approach to science investment by targeting a series of goals which, if achieved, will have a major and enduring benefit for New Zealand. New research and greater collaboration will be the step change we need in threatened species conservation as we look to reverse the decline in our native species.

The New Zealand’s Biological Heritage National Science Challenge is central to implementation of the Threatened Species Strategy. Cabinet has agreed a funding envelope of up to \$207 million over ten years for the New Zealand’s Biological Heritage Challenge, with a mission to ‘Reverse the decline of New Zealand’s biological heritage, through a national partnership to deliver a step change in research innovation, globally leading technologies and community and sector action.’

The Challenge aims to enhance and restore New Zealand’s land-based and freshwater ecosystems by deepening our understanding of which species we have, and seeking science-based solutions to dealing with threats – pest animals and insects, weeds, pathogens and climate change.

The roadmap also recognises the importance of citizen science. Government-funded programmes like Curious Minds aim to help share the value of science and technology by working with communities, businesses and educators through new and existing initiatives. Curious Minds has allocated \$9m in funding in the 2016/17 year and some of the funded projects are directly related to threatened species management.

National
SCIENCE
Challenges



Before you can protect a species, you need to know some basic facts about it. What taxonomic group does it belong to? Is it a separate species or some variation of one? Why does it live where it does? What does it need to thrive? This is a common conundrum, particularly among freshwater fish, plants, fungi and lizards, and finding out the answers usually demands lengthy, meticulous research.

Many of our conservation success stories – kākāpō, tīeke, kōkako, tuatara – have resulted from decades of study and adaptive management before reaching a happy ending. But the challenge doesn't stop with the species itself – we also have to understand how its management might affect other species. Recovery plans must also try to anticipate incursions by new pests, or the impacts of disease, climate change and human pressures.

This Strategy recognises the complexity of obtaining robust evidence, and seeks to develop science and research-based approaches and solutions.

Focusing beyond public conservation land

A high proportion of threatened and at risk species are found outside public conservation areas – indeed, some occur only on private land. These include species that inhabit lakes, many river margins, wetlands, coastal and marine environments, drylands, and often naturally rare ecosystems that are under-represented in public conservation areas.

Many of these species need conservation management to survive, and that requires the support and collaboration of landowners and managers. To fulfil this Strategy's vision, we will need to focus new effort towards those species that are found outside public conservation areas.

Ngā Whenua Rāhui supports Māori landowners to protect the mauri of a site or species. Sometimes expressed as life essence, the mauri is natural integrity of blocks of land, or survival of a species that holds high ecological and biodiversity value. Mātauranga Māori is centred around mauri. Ngā Whenua Rāhui provides protection for Māori landowners through the use of 25-year renewable kawenata (covenants). The funding programme exists to protect the natural integrity of Māori land and preserve matauranga Māori.

The Queen Elizabeth II National Trust (QEII) was established under the Queen Elizabeth the Second National Trust Act 1977 to aid conservation on private land. The purpose of the Act is “to encourage and promote, for the benefit of New Zealand, the provision, protection, preservation and enhancement of open space.” QEII helps private landowners permanently protect special natural and cultural features on their land with open space covenants, including habitat for threatened species. These covenants are an important conservation mechanism for ensuring the long-term persistence of populations of threatened species on private land.

By 2017, QEII has registered 4226 covenants totalling more than 180,000 ha, with covenant sizes ranging between 40 ha and 21,910 ha. Habitat has been protected for threatened species including kākī/black stilt and North Island brown kiwi, and habitat formed for threatened plants, invertebrates and birds such as the New Zealand falcon.

Once the Strategy has been implemented, DOC will continue to work with iwi, landowners and managers wherever threatened species are found, and will foster their efforts to protect them and the habitats they need. Where necessary, statutory processes will safeguard against the effects of development and extraction. ►

SPOTLIGHT

A new genesis for whio

WHIO ARE FOUND nowhere else in the world. As river specialists, they prefer clean, fast-flowing streams in the forested upper catchments of New Zealand rivers. Whio are highly sensitive to stoat predation, and monitoring has shown that up to 90% of nests fail, 60% of fledged young are killed and around 50% of adult females can be killed during the moult period (when they are flightless) in areas where these predators are not controlled.

Genesis Energy has sponsored the Whio Forever Programme since 2011. During the first 5 years, Whio Forever has enabled DOC to double the number of managed pairs to more than 560 along 14,000 km of North and South Island rivers that are protected by more than 5000 new stoat traps. Shared development of the online game Whio Bootcamp, where users navigate the challenges of life as a fledgling whio in order to 'make it' in the wild, spreads an important conservation message in an engaging, fun and unconventional way. The bulk of future Genesis Energy sponsorship will help DOC and volunteer community groups to maintain those trap networks. The Genesis Energy and DOC partnership is highly successful because the people involved share a passion for whio and their recovery.





SPOTLIGHT

Return from exile – the New Zealand sea lion

NEW ZEALAND SEA LIONS are classified as Nationally Critical and are one of the rarest sea lion species in the world. The best estimate of the New Zealand sea lion population is 11,800, almost all inhabiting New Zealand's subantarctic Auckland and Campbell Islands. Recently, they have returned to the mainland on beaches in Otago, Southland and Stewart Island/Rakiura. The Stewart Island population is recognised as the first breeding colony on the mainland since sealing ended.

New Zealand sea lions face a raft of threats. Disease, competition with and accidental bycatch in commercial fishing operations, climate-induced changes in food availability, pup deaths from falling into natural mud holes, and disturbance from dogs and humans are all hampering their recovery.

Every year sea lions drown due to incidental entanglement in commercial fisheries. Concern over this contributed to the establishment of the Auckland Islands Marine Mammal Sanctuary and Marine Reserve. Fishing is now prohibited within 12 miles of the islands. In addition, all vessels fishing for squid deploy Sea Lion Exclusion Devices to minimise the risks of sea lions drowning in fishing gear, and government observers witness at least 50% of squid fishing effort around the Auckland Islands. The Minister for Primary Industries sets an annual fishing-related mortality limit, which would result in the closure of the fishery if reached. Effort, estimated and observed sea lion mortalities are reported to government and stakeholders on a weekly basis.

Limits on the numbers of sea lions that can be taken in nets each year is set by the Minister of Fisheries each year. Recognising the complex nature of threats facing sea lions, DOC and the Ministry for Primary Industries have worked to develop the New Zealand Sea Lion Threat Management Plan, due for release in 2017. The plan provides a work programme aimed at sustaining and eventually increasing the sea lion population within 20 years. A preliminary report indicated an increase in pup production at the Auckland Islands of about 14% over last year (1965 pups for 2016–17; 1727 pups for 2015–16). The plan recognises that there is no single threat that is impacting the sea lion population, and recovery will require mitigating multiple threats at the range of breeding sites.

Under current legislation, many threatened species have no legal protection on private land. The stakeholder-led Biodiversity Collaborative Group, which is comprised of industry, environmental NGOs and iwi, along with government agencies, is leading the development of a National Policy Statement on Indigenous Biodiversity. This will set out national objectives and policies for biodiversity protection under the Resource Management Act 1991. The Biodiversity Collaborative Group is also developing recommendations to enable and guide more conservation efforts on private and public lands.

Working together in partnerships

We all benefit from our natural environment and have a role to play in its protection and enhancement. Some great work is being done by private landowners, including farmers, to protect the biodiversity they have on their properties. More of this great work is needed.

To make the substantial advances that are necessary to recover our threatened species and prevent extinctions, we need to work together. Government agencies cannot achieve this on their own. We need to find new ways to engage people and rekindle their concern. We need to empower iwi to regain their role as kaitiaki. We need to mobilise funding and in-kind support, promote partnerships, and encourage cooperation across existing conservation programmes. This Strategy will take the first, critical step by informing us about the state of our species, the priorities for action and how they can help.

The New Zealand Government will continue to provide leadership for the conservation of our natural environment, including our species, to ensure the effective national coordination of programmes, prevent duplication and avoid conflict between competing priorities. However, the support of iwi, local government, communities, researchers, the business sector and landowners is critical. Only by working together can we effectively prioritise and optimise the use of resources to protect our species.

By tapping into our love for our native wildlife, DOC will continue to foster and grow partnerships with iwi, local government, communities and private landowners. We will embrace the principles of kaitiakitanga and rangatiratanga to best protect those native species that are most at risk.

Consistent with the Conservation and Environment Science Roadmap, there are significant opportunities for New Zealand's research institutions to contribute to this goal. DOC's website will provide a list of species for which more information is required to determine their conservation status and inform their conservation management. Universities will be encouraged to find students to review relevant information and undertake research to fill these information gaps. DOC will work with other organisations, where possible, to support this work.

This Strategy acknowledges that sustainable development is a shared opportunity and responsibility. Success requires that we face the difficult and contentious challenges head on, rather than avoid them. It means being open, frank and honest about the impacts on our native species, and working together to find innovative ways to protect them.

Top 10 actions

The following Top 10 actions are needed to achieve the threatened species goals:

- 1. Achieve the Predator Free 2025 goals including:**
 - ▶ Continuing with Battle for our Birds – monitoring and taking appropriate action when a major mast event occurs
 - ▶ 1 million additional hectares of predator control
 - ▶ Eradicating predators from at least 20,000 hectares of mainland New Zealand without the use of fences
 - ▶ A predator-free status for all nature reserve islands
 - ▶ The ability to eradicate at least one mammal predator.
- 2. Continue to invest in improving tools and technologies for predator control by:**
 - ▶ Focusing the science system through the Conservation and Environment Science Roadmap and the Biological Heritage Science Challenge.
 - ▶ Supporting innovation by the private sector through companies like Goodnature and R&D joint ventures such as ZIP Ltd.
 - ▶ Continuing to improve the efficiency and effectiveness of 1080 as a mission-critical tool for conservation.
- 3. Identify a priority list of threatened and at risk plant species, and ensure that their seeds are held in a recognised seed storage facility by 2025.**
- 4. Biosecurity 2025**
 - ▶ Strengthening New Zealand’s biosecurity system as outlined in the November 2016 Biosecurity 2025 Direction Statement.
- 5. Progress key regulatory reforms:**
 - ▶ New marine protection legislation to provide more flexible tools for protecting marine ecosystems.
 - ▶ The continued development of a National Policy Statement for Indigenous Biodiversity by the stakeholder-led Biodiversity Collaborative Group.
- 6. Implement freshwater reforms, particularly setting and implementing environmental limits; and continue support for freshwater habitat restoration.**
- 7. Identify and publish threatened species ‘hotspots’ both on and off public conservation land to identify the key areas and threatened species for potential protection.**
- 8. Select 500 of the data deficient species to focus researchers on further scientific work.**
- 9. Ensure that national recovery planning systems and processes are fit for purpose, efficient and integrate mātauranga Māori.**
 - ▶ Incorporate Māori principles and knowledge
- 10. Develop and implement a comprehensive monitoring regime that can be used by all those involved in species management that:**
 - ▶ Provides timely useful information on threatened species
 - ▶ Specifies a trigger for intervention to avoid extinction or increase the threat status of a species.

WE CAN WIN THIS

Protecting and restoring our threatened species is a formidable and complex challenge. But the combined energy, knowledge and enthusiasm of iwi, communities, businesses and the Government provides a powerful opportunity to address that challenge. With strong science-based approaches and the momentum of national key initiatives such as Predator Free 2050, this Strategy will succeed.

Led by the Government in partnership with iwi, community, businesses and local government, we can bring our threatened species back from the brink of extinction. Now is the time for us to join forces, take action and play our part in protecting our species.



150 priority threatened and at risk species

For this Strategy, the Department of Conservation has selected 150 species currently managed for protection which will be enhanced. The species are selected to focus initial effort and to direct New Zealanders' attention towards threatened and at risk species conservation (see below).

The selected species are a first instalment that will be reviewed and updated as recovery progress is made and new information about the priority status of other species is obtained. These species are not the sole focus of the Strategy. Many more species in need of action will benefit from the other Strategy themes and focus areas.

Notable species

Birds



SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS
<i>Apteryx australis</i> "Haast"	Haast brown kiwi, Haast tokoeka	Nationally Critical
<i>Apteryx rowi</i>	Ōkarito brown kiwi, rowi	Nationally Critical
<i>Diomedea antipodensis antipodensis</i>	Antipodean wandering albatross, toroa	Nationally Critical
<i>Himantopus novaezelandiae</i>	Black stilt, kakī	Nationally Critical
<i>Petroica traversi</i>	Black robin	Nationally Critical
<i>Porphyrio hochstetteri</i>	Takahē	Nationally Critical
<i>Pterodroma magentae</i>	Chatham Island tāiko	Nationally Critical
<i>Strigops habroptilus</i>	Kākāpō	Nationally Critical
<i>Apteryx australis lawryi</i>	Stewart Island brown kiwi, Stewart Island tokoeka	Nationally Endangered
<i>Botaurus poiciloptilus</i>	Australasian bittern, matuku hūrepo	Nationally Endangered
<i>Fregatta maoriana</i>	New Zealand storm petrel	Nationally Endangered
<i>Nestor notabilis</i>	Kea	Nationally Endangered
<i>Xenicus gilviventris</i>	Rock wren, piwauwau	Nationally Endangered
<i>Anarhynchus frontalis</i>	Wrybill, ngutu-pare	Nationally Vulnerable
<i>Apteryx australis australis</i>	Southern Fiordland brown kiwi, southern Fiordland tokoeka	Nationally Vulnerable
<i>Apteryx haastii</i>	Great spotted kiwi, roa, roroa	Nationally Vulnerable

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS
<i>Apteryx mantelli</i>	North Island brown kiwi	Nationally Vulnerable
<i>Hymenolaimus malacorhynchos</i>	Blue duck, whio	Nationally Vulnerable
<i>Megadyptes antipodes</i>	Yellow-eyed penguin, hoiho	Nationally Vulnerable
<i>Mohoua ochrocephala</i>	Yellowhead, mohua	Nationally Vulnerable
<i>Nestor meridionalis meridionalis</i>	South Island kākā	Nationally Vulnerable
<i>Nestor meridionalis septentrionalis</i>	North Island kākā	Nationally Vulnerable
<i>Notiomystis cincta</i>	Stitchbird, hihi	Nationally Vulnerable
<i>Limosa lapponica baueri</i>	Eastern bar-tailed godwit, kuaka	At Risk – Declining
<i>Apteryx owenii</i>	Little spotted kiwi, kiwi pukupuku	At Risk – Recovering
<i>Callaeas wilsoni</i>	North Island kōkako	At Risk – Recovering
<i>Philesturnus carunculatus</i>	South Island saddleback, tīeke	At Risk – Recovering
<i>Philesturnus rufusater</i>	North Island saddleback, tīeke	At Risk – Recovering

Plants



<i>Clianthus puniceus</i>	Kākābeak, ngutu kākā	Nationally Critical
<i>Metrosideros bartlettii</i>	Bartlett's rātā	Nationally Critical
<i>Pittosporum serpentinum</i>	Surville Cliffs pittosporum, kōhūhū tangihua	Nationally Critical
<i>Ranunculus paucifolius</i>	Castle Hill buttercup	Nationally Critical
<i>Myosotidium hortensia</i>	Chatham island forget-me-not	Nationally Vulnerable

Marine mammals



<i>Balaenoptera edeni brydei</i>	Bryde's whale	Nationally Critical
<i>Cephalorhynchus hectori maui</i>	Māui dolphin	Nationally Critical
<i>Phocarcos hookeri</i>	New Zealand sea lion	Nationally Critical
<i>Cephalorhynchus hectori hectori</i>	Hector's dolphin	Nationally Endangered
<i>Tursiops truncatus</i>	Bottlenose dolphin	Nationally Endangered

Marine fish



<i>Carcharodon carcharias</i>	Great white shark	At Risk – Declining
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Marine invertebrate



<i>Paragorgia alisonae</i>	Bubblegum coral	Nationally Vulnerable
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Freshwater fish



SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS
<i>Anguilla dieffenbachii</i>	Longfin eel	At Risk – Declining
<i>Galaxias argenteus</i>	Giant kōkopu	At Risk – Declining

Bat



<i>Chalinolobus tuberculatus</i>	Long-tailed bat	Nationally Vulnerable
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Reptiles



<i>Oligosoma otagense</i>	Otago skink	Nationally Endangered
<i>Naultinus gemmeus</i>	Jewelled gecko	At Risk – Declining
<i>Sphenodon punctatus</i>	Tuatara	At Risk – Relict

Frog



<i>Leiopelma archeyi</i>	Archey's frog	Nationally Vulnerable
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Invertebrates



<i>Brachaspis robustus</i>	Robust grasshopper	Nationally Endangered
<i>Powelliphanta superba prouseorum</i>	Large land snail	Nationally Vulnerable
<i>Deinacrida mahoenui</i>	Mahoenui giant wētā	At Risk – Recovering

100 managed threatened and at risk species

Birds



SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS
<i>Anas nesiotis</i>	Campbell Island teal	Nationally Critical
<i>Charadrius obscurus obscurus</i>	Southern New Zealand dotterel, tūturiwhatu	Nationally Critical
<i>Haematopus chathamensis</i>	Chatham Island oystercatcher, tōrea tai	Nationally Critical
<i>Larus bulleri</i>	Black-billed gull, tarāpuka	Nationally Critical
<i>Leucocarbo onslowi</i>	Chatham Island shag	Nationally Critical
<i>Pelecanoides georgicus</i> “Codfish Island”	South Georgian diving petrel	Nationally Critical

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS
<i>Sternula nereis davisae</i>	New Zealand fairy tern, tara iti	Nationally Critical
<i>Stictocarbo featherstoni</i>	Pitt Island shag	Nationally Critical
<i>Thinornis novaeseelandiae</i>	New Zealand shore plover, tuturuatu	Nationally Critical
<i>Chlidonias albostrigatus</i>	Black-fronted tern, tarapirohe	Nationally Endangered
<i>Hemiphaga chathamensis</i>	Chatham Island pigeon, parea	Nationally Vulnerable

Plants



<i>Ackama nubicola</i>	Makamaka	Nationally Critical
<i>Atriplex hollowayi</i>	Holloway's crystalwort	Nationally Critical
<i>Brachyscome pinnata</i>	Daisy	Nationally Critical
<i>Carmichaelia carmichaeliae</i>	Pink broom	Nationally Critical
<i>Carmichaelia curta</i>	Waitaki broom	Nationally Critical
<i>Ceratocephala pungens</i>	Ranunculaceae (a buttercup)	Nationally Critical
<i>Chenopodium detestans</i>	New Zealand fish-guts plant	Nationally Critical
<i>Clianthus maximus</i>	Kākābeak, kōwhai ngutu-kākā	Nationally Critical
<i>Corybas carsei</i>	Swamp helmet orchid	Nationally Critical
<i>Craspedia</i> "Lake Heron"	Woollyhead	Nationally Critical
<i>Koeleria</i> aff. <i>novozelandica</i> "Awahokomo"	Subalpine grass	Nationally Critical
<i>Lepidium aegrum</i>	Banks Peninsula scurvy grass	Nationally Critical
<i>Lepidium banksii</i>	Coastal peppergrass	Nationally Critical
<i>Lepidium kirkii</i>	Salt-pan cress	Nationally Critical
<i>Lepidium oblitum</i>	Scurvy grass	Nationally Critical
<i>Lepidium panniforme</i>	Mangere Island scurvy grass	Nationally Critical
<i>Lepidium rekohuense</i>	Chatham Islands scurvy grass	Nationally Critical
<i>Myosotis colensoi</i>	Castle Hill forget-me-not	Nationally Critical
<i>Myosotis matthewsii</i>	Matthews's forget-me-not	Nationally Critical
<i>Myosotis pottsiana</i>	Potts's forget-me-not	Nationally Critical
<i>Olearia adenocarpa</i>	Tree daisy	Nationally Critical
<i>Pachycladon fasciarium</i>	Chalk cress	Nationally Critical
<i>Pennantia baylisiana</i>	Three Kings kaikōmako	Nationally Critical
<i>Pseudognaphalium ephemerum</i>	Kettlehole cudweed	Nationally Critical
<i>Scutellaria novae-zelandiae</i>	New Zealand skullcap, shovel mint	Nationally Critical
<i>Simplicia laxa</i>	Simplicia (a grass)	Nationally Critical

Plants continued



SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS
<i>Tecomanthe speciosa</i>	Tecomanthe, akapuaea (a liane)	Nationally Critical
<i>Australopyrum calcis</i> subsp. <i>optatum</i>	Limestone wheatgrass	Nationally Endangered
<i>Lepidium oleraceum</i>	Cook's scurvy grass	Nationally Endangered
<i>Melicytus drucei</i>	Mt Egmont shrub mahoe	Nationally Endangered
<i>Myosurus minimus</i> subsp. <i>novaezelandiae</i>	New Zealand mousetail	Nationally Endangered
<i>Wurmbea novae-zelandiae</i>	Wurmbea (a lily)	Nationally Endangered
<i>Amphibromus fluitans</i>	Water brome	Nationally Vulnerable
<i>Dactylanthus taylorii</i>	Woodrose, pua o Te Rēinga	Nationally Vulnerable

Freshwater fish



<i>Galaxias</i> sp.	Clutha flathead galaxias	Nationally Critical
<i>Galaxias</i> "Teviot"	Teviot flathead galaxias (Teviot River)	Nationally Critical
<i>Galaxias</i> aff. <i>cobitinis</i> "Waitaki"	Lowland longjaw galaxias (Waitaki River)	Nationally Critical
<i>Neochanna burrowsius</i>	Canterbury mudfish	Nationally Critical
<i>Galaxias</i> "Nevis"	Nevis galaxias (Nevis River)	Nationally Endangered
<i>Galaxias</i> aff. <i>paucispondylus</i> "Manuherikia"	Alpine galaxias (Manuherikia River)	Nationally Endangered
<i>Galaxias anomalus</i>	Central Otago roundhead galaxias	Nationally Endangered
<i>Galaxias eldoni</i>	Eldon's galaxias	Nationally Endangered
<i>Galaxias pullus</i>	Dusky galaxias	Nationally Endangered
<i>Galaxias postvectis</i>	Shortjaw kōkopu	Nationally Vulnerable
<i>Geotria australis</i>	Lamprey	Nationally Vulnerable
<i>Cheimarrichthys fosteri</i>	Torrentfish	At Risk – Declining

Bat



<i>Mystacina tuberculata tuberculata</i>	Southern short-tailed bat	Nationally Endangered
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Reptiles



<i>Oligosoma</i> aff. <i>infrapunctatum</i> "Chesterfield"	Chesterfield skink	Nationally Critical
<i>Oligosoma</i> aff. <i>longipes</i> "Rangitata"	Rangitata skink	Nationally Critical
<i>Mokopirirakau</i> "Open Bay Islands"	Open Bay Islands gecko	Nationally Endangered

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS
<i>Oligosoma burganae</i>	Burgan skink	Nationally Endangered
<i>Oligosoma grande</i>	Grand skink	Nationally Endangered
<i>Oligosoma judgei</i>	Barrier skink	Nationally Endangered
<i>Oligosoma pikitanga</i>	Sinbad skink	Nationally Endangered
<i>Oligosoma taumakae</i>	Open Bay Islands skink	Nationally Endangered
<i>Oligosoma whittakeri</i>	Whittaker's skink	Nationally Endangered
<i>Toropuku stephensi</i>	Cook Strait striped gecko	Nationally Vulnerable
<i>Hoplodactylus duvaucelii</i>	Duvaucel's gecko	At Risk – Relict

Invertebrates



<i>Bembidion tillyardi</i>	Back Beach beetle	Nationally Critical
<i>Cryptodacne rangiauria</i>	Fungus beetle	Nationally Critical
<i>Cytora taipa</i>	Snail	Nationally Critical
<i>Delos</i> sp.	Snail	Nationally Critical
<i>Delouagapia tasmani</i>	Snail	Nationally Critical
<i>Fectola melchior</i>	Snail	Nationally Critical
<i>Geodorcus ithaginis</i>	Mokohinau stag beetle	Nationally Critical
<i>Holcaspis brevicula</i>	Ground beetle	Nationally Critical
<i>Kiwaia</i> sp. "Cloudy Bay"	Moth	Nationally Critical
<i>Powelliphanta augusta</i>	Large land snail	Nationally Critical
<i>Powelliphanta</i> "Buller River"	Large land snail	Nationally Critical
<i>Powelliphanta gilliesi brunnea</i>	Large land snail	Nationally Critical
<i>Powelliphanta patrickensis</i>	Large land snail	Nationally Critical
<i>Pseudhelops antipodensis</i>	Darkling beetle	Nationally Critical
<i>Rhytida oconnori</i>	Snail	Nationally Critical
<i>Rhytida webbi</i>	Snail	Nationally Critical
<i>Stathmopoda campylocha</i>	Moth	Nationally Critical
<i>Tepakiphasma ngatikuri</i>	Stick insect	Nationally Critical
<i>Xylotoles costatus</i>	Pitt Island longhorn beetle	Nationally Critical
<i>Amborhytida</i> sp.	Snail	Nationally Endangered
<i>Costaliodiscus parrishi</i>	Snail	Nationally Endangered
<i>Placostylus bollonsi</i>	King Island turret snail	Nationally Endangered
<i>Succinea archeyi</i>	Snail	Nationally Endangered
<i>Wainuia clarki</i>	Snail	Nationally Endangered

Invertebrates
continued



SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS
<i>"Acroclita" discariana</i>	Moth	Nationally Vulnerable
<i>Cephalissa siria</i>	Moth	Nationally Vulnerable
<i>Geodorcus capito</i>	Stag beetle	Nationally Vulnerable
<i>Gingidiobora nebulosa</i>	Moth	Nationally Vulnerable
<i>Kupea electilis</i>	Moth	Nationally Vulnerable
<i>Paryphanta wattii</i>	Kauri snail, pupurangi	Nationally Vulnerable
<i>Houdinia flexilissima</i>	Moth	At Risk – Relict

Photographs

COVER

Kōkako. Photo: © Neil Fitzgerald

PAGE 2

Tuatara. Photo: Sabine Bernert

PAGE 6

Whio/blue duck. Photo: Liz Carlson

PAGE 9

Rangi Raki volunteering with Kiwis for kiwi in Te Teko, Bay of Plenty. Photo: Sabine Bernert

PAGE 11

(left)

Wild ginger forms thickets choking native plants.

Photo: Weedbusters

(right)

Wilding conifer pest control.

Photo: Herb Christophers

PAGE 13

Māui dolphin, the world's rarest subspecies of dolphin. Photo: Martin Stanley

PAGE 14

Whangamarino Wetland, Waikato.

Photo: Mary Beech

PAGE 15

Aerial view of Whangamarino Wetland. Photo: DOC

INSET

Giant kōkupu. Photo: Andy Hicks

PAGE 16

Takahē release in the Murchison Mountains.

Photo: Brent Beaven

PAGE 19

Mohua/yellowhead. Photo: Sabine Bernert

PAGE 20

Maungatautari excluder fence.

Photo: © Neil Fitzgerald

PAGE 21

Kākā. Photo: Sabine Bernert

PAGE 22

Myrtle leaves showing *Puccinia psidii* rust.

Photo: Forest and Kim Starr

PAGE 23

Wandering willie (*Tradescantia fluminensis*) smothers native plants. Photo: Weedbusters

PAGE 24

Mercury Island tusked wētā.

Photo: Chris Winks CCO 1.0

PAGE 25

Albatross attracted to a trawl vessel hauling the catch. Photo: DOC

PAGE 26

Aiden releasing a long-tailed bat.

Photo: © Neil Fitzgerald

PAGE 29

Kōkako. Photo: © Neil Fitzgerald

PAGE 30

Kauri (*Agathis australis*). Photo: Jack Mace

INSET

The cleaning station at Tāne Mahuta.

Photo: Mike Williams of MWDDesign

PAGE 31

Kākābeak (*Clianthus puniceus*).

Photo: Bernard Spragg

PAGE 33

ZIP staffer Susannah Aitken baits a 'TUN200' prototype trap.

Photo: Robyn Janes (Media Fix)

PAGE 34

Kākāpō. Photo: Sabine Bernert

PAGE 37

(left)

Whio/blue duck. Photo: Sabine Bernert

(right)

DOC staff member working with Genesis Energy in the Mangatepopo.

Photo: Herb Christophers

PAGE 38

New Zealand sea lion. Photo: © Neil Fitzgerald

PAGE 41

Jewelled gecko. Photo: Sabine Bernert

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