

Ka mea ake te repo:

'Me he manawa whenua, e kore taku reo e ngaro! Kei konei tonu au. Kei konei tonu tātou.'

The wetland replied:

'My voice will never be lost, like a spring, it bursts forth from the land! I am still here. We are all still here.'

Te Reo o Te Repo – Kei konei tonu au is the third publication of the wetland handbook series written to promote the health and well-being of repo (wetlands) throughout Aotearoa New Zealand.

DESPITE EVERYTHING, OUR REPO ARE STILL HERE

The year 2020 will be long remembered as one of the toughest years of the 21st Century, given the onset of the virus COVID-19, and the incredibly overwhelming impacts felt in health, educational, and economic sectors around the world.



Testing the wetland delineation protocols along a dry-wet gradient, Taranaki. Photo: Beverley Clarkson

Previous page: Waihora Lagoon, Pureora Forest Park, is a marsh wetland type. It dries out in summer to reveal low-growing herbaceous vegetation. Photo: Susie Elcock

The leadership of Aotearoa – five million strong – faced the virus head-on almost immediately, seeking to protect communities from its effect on our health, and shut down the country's borders. For the first time in living memory, the Prime Minister, Rt Hon Jacinda Ardern, asked her fellow Kiwis (New Zealanders) to temporarily close factories, shops, and offices, hang up the car keys, and 'noho ki te kāinga – stay at home'.

CALL OF THE TWO WILDS SUPERMARKETS AND NATURE

The months of March and April 2020 gave us a collection of some of the strangest national memories – flour-gate and toilet-paper-gate – when New Zealanders frantically raced to stock up their pantry and bathroom supplies before the COVID rāhui (lockdown), causing the odd hiccup in the domestic supply system.

Perhaps the most astonishing experience for people around the world, was the way in which nature responded to the human shutdown. Marine life such as dolphins swam into estuaries where they hadn't been seen for decades; bird song seemed to double in volume as flocks of birds appeared in oddly quiet urban centres; wild animals came out of the forests to wander suddenly quiet streets; air pollution dissipated; unnatural noises and artificial lighting dropped to a mere murmur. Geological scientists revelled in the ability to finally be able to hear the vibrations of the Earth thanks to the removal of the steady traffic of cars, trucks, and trains. This became a period of environmental enlightenment – when humans were suddenly hit with the realities of their impact on nature, and the actual insignificance of their presence in the bigger picture.

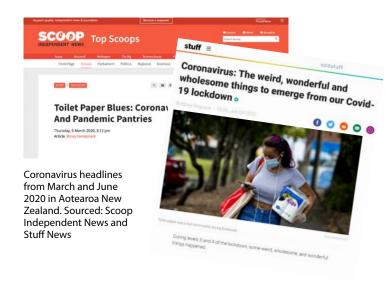
From that was (re)born a strong movement calling for global governments to learn from the experience and find a better way to co-exist with nature.

A number of businesses throughout Aotearoa strongly lobbied the New Zealand government to invest in a greener economy. Environmental advocacy groups (including the National Wetland Trust of New Zealand) developed media campaigns; and, thanks to the headspace created by being stuck at home, a generation of innovatives and creatives were reawakened.

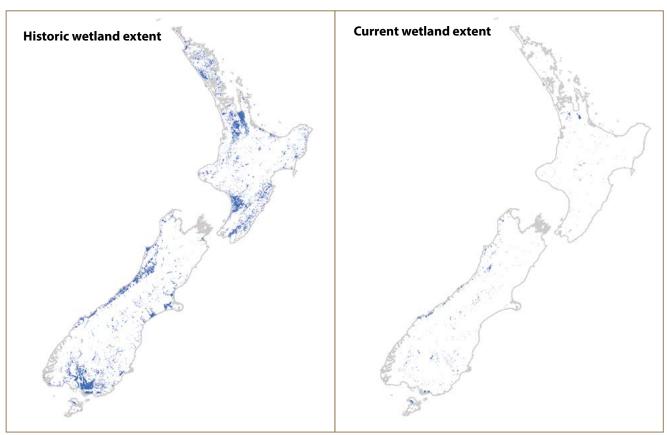
Sadly, as this excitement swelled within the community, the absence of basic enforcement and protection of our environment during lockdown led to increasing reports of illegal wetland drainage, destruction, or attempts to undermine wetland protection across the motu (country).

Soon after the rāhui, the New Zealand Government released the new and improved Essential Freshwater Package, as part of a national direction to protect and improve our rivers, streams, lakes, and wetlands. After months of revision, renegotiations, and hard pushes from those working within and around freshwater systems, we finally saw a real change in the way wetlands are to be viewed within land use planning and policy.

In particular, the National Policy Statement for Freshwater Management 2020 (NPS-FM 2020) includes new policies to avoid further loss of extent of natural inland wetlands, protect wetland values and promote wetland restoration. New wetland delineation tools based on vegetation,



hydric soils, and wetland hydrology provide more robust guidance for the identification of wetland areas. With only 10% of wetlands remaining nationally (Fig. 1), there is a growing recognition that we must prevent any further ecological and environmental losses, as had been promised by the once ground-breaking Resource Management Act 1991 (RMA 1991). However, the single-minded nature of some people and illegal behaviour regarding the drainage and destruction of wetlands during the March and April 2020 rāhui, highlighted that wetland protection may still be a pipedream until the Government commits to enforcing regulations of such behaviour.



Sourced from LINZ Data Service and licenced for re-use under the Creative Commons Attribution 4.0 New Zealand licence.

Figure 1. Maps of wetland historic (1840) and current (2008) extent (represented in blue) throughout Aotearoa. Adapted from Ausseil et al. 2008, Manaaki Whenua – Landcare Research

KEI KONEI TONU AU I AM STILL HERE

A study into wetland loss between 1996 and 2018 emphasised that, despite the Resource Management Act, which came into effect in 1991 and legislates for wetland protection, nearly 5,500 ha of wetlands have been destroyed. Most of this loss occurred between 2008 and 2012, when many wetlands were converted to pastoral farming.

Table 1 illustrates the changes that occurred regionally, and the percentage of wetlands lost. We note that all regions had wetland losses, apart from the smallest unitary authority, Whakatu (Nelson, South Island), with notable examples of individual large patches being lost in Waikato (221.1 ha) and Southland (202.9 ha).

Despite the challenges faced by wetlands throughout Aotearoa over the past 150 years, and especially within the last 30+ years, repo are STILL HERE. Despite the impacts to native wetland plant and animal species, they too are STILL HERE – albeit hanging on a more precarious precipice. Fundamentally, however, the hapū (subtribes) and iwi (tribes) associated with wetland systems for centuries are also STILL HERE.



The pārera, grey duck (Anas superciliosa) with the green speculum is one of our rarest native water bird species due to a huge reduction in numbers and cross breeding with exotic mallard ducks (A. platyrhynchos) with the purple speculum. Photo: © Raewyn Adams

Despite growing evidence of the parallel impacts of loss of our mātauranga (knowledge) associated with freshwater and marine systems, there are still relicts of that mātauranga, which could respond to a jump start. In some cases, our people (kaitiaki (guardians) from iwi and hapū) on the ground have achieved this, despite the odds, through the implementation of their own restoration programmes of action and business development in restoration spaces such as nurseries, restoration planting teams, Māori-centred and driven research programmes, or through active participation in policy development and implementation.

Table 1. Aotearoa New Zealand regional freshwater wetland loss 1996-2018

Region	Total in 1996_ha	Area lost since 1996_ha	% of 1996 extent lost	# patches lost	Average patch size lost_ha	Biggest patch lost_ha
Auckland	1310	11	0.8	2	5.4	7.1
Bay of Plenty	4235	32	0.7	7	4.5	10.1
Canterbury	18165	243	1.3	13	18.4	53.8
Gisborne	708	104	14.7	19	5.5	43.1
Hawke's Bay	1723	13	0.8	6	2.2	5.3
Manawatu-Whanganui	8537	92	1.1	22	4.2	5.9
Marlborough	873	4	0.4	1	3.5	3.5
Nelson	10	0	0.0	0	0	0
Northland	15420	380	2.5	40	9.5	87.7
Otago	24456	341	1.4	40	8.5	76.4
Southland	40936	2709	6.6	270	10	202.9
Taranaki	2615	83	3.2	56	1.5	7
Tasman	3572	15	0.4	4	3.7	6.5
Waikato	34275	484	1.4	39	12.4	221.1
Wellington	3325	100	3.0	22	4.6	23.6
West Coast	32562	788	2.4	77	10.2	65.7
Total	192722	5394	2.8	618	8.7	221.1

Derived from the Land Cover Database, see Denyer and Peters 2020

Te Reo o Te Repo – Kei konei tonu au provides additional snapshots from the repo to further enable or build on the jumpstart of mātauranga, and therefore, to support the platforms our people are building to be better positioned within the re-imaginings required for our future relationships with our environment.

As editors, the key message we want to share, based on what we've learned during the writing of *Kei konei tonu au*, is that nothing is ever truly lost, unless it is extinct. Our repo are not yet extinct nationally, although they are increasingly becoming endangered locally, as are their plant and animal species. Our traditional knowledge is not yet extinct either, although it is challenged by the gradual disappearance of native species that helped form that knowledge in the first place.

With this recognition comes a growing realisation of our responsibility to facilitate and expand knowledge to help our people and other passionate communities engage more meaningfully with wetland protection and restoration. It is especially heartening to see the faces of the next generation – our tamariki and rangatahi – featuring in a number of chapters in this volume. With them in mind, we have the responsibility to leave them a positive legacy. We need to use more appropriate and ethical tikanga (customary values and practices) and science, and the tools we have at our disposal to support knowledge regeneration in a way that is culturally and socially meaningful. We must champion its appropriate application in decisions related to the health and well-being of repo throughout Aotearoa. We can and must make a positive difference for the wetlands and wider freshwater and marine systems we still have left.

Kia kaha koutou katoa

Ka mea ake te repo: 'Kei konei tonu au. Kei konei tonu tātou.'

The wetland replied:
'I am still here. We – all of us
(including the people) – are still here.'



The diminutive swamp helmet orchid (*Corybas carsei*), once typical of northern restiad bogs, is now just hanging on in a single locality in Waikato. Photo: Bruce Clarkson



Longfin tuna (eel; *Anguilla dieffenbachi*), a highly valued cultural resource for Māori, have suffered large declines in population, partly due to wetland drainage and are now considered to be 'At risk – Declining'. Photo: Erina Watene-Rawiri



Co-editors of the *Te Reo o Te Repo – The Voice of the Wetland* handbook series, Cheri van Schravendijk-Goodman, Yvonne Taura, and Beverley Clarkson. Photo: Manaaki Whenua

HOW TO NAVIGATE AND USE TE REO O TE REPO

Handbook structure

The articles in Te Reo o Te Repo – Kei konei tonu au are a small sample of research, contributed by whānau and kairangahau from all over the motu. This edition has many examples from the Waikato region, to the result of a long-standing research partnership between Waikato-Tainui and Manaaki Whenua - Landcare Research. However, research topics from other areas of the motu are also included to provide readers with a broad range of wetland restoration activities. Whānau, marae, hapū and iwi, and kairangahau Māori are working together to enhance cultural priorities for repo restoration. Each article discusses the personal journey taken by the kairangahau and the whānau involved, to promote the connections, understanding, and learnings for the restoration of their repo. The handbook is divided into three sections.

Section One: Process of engagement

Environmental restoration work in Aotearoa cannot be undertaken without involving tangata whenua, as the Indigenous people whose culture and identity come from the land (hence 'people of the land'), and who have existed within the local environment for many generations. However, making the first step to engage with people from another culture and with a different worldview can be a daunting experience. This section explores some examples of engagement processes relevant to mahi (work) with tangata whenua.

Section Two: Cultural Resources

A tī kouka (cabbage tree; *Cordyline australis*) dominated wetland remnant in western Waikato. Photo: Cheri van Schravendijk-Goodman

Many things – living and non-living – can be considered to be cultural resources. In the context of *Te Reo o Te Repo*, these are naturally sourced materials associated with repo, which are considered valuable by tangata whenua and are incorporated into the local culture. Articles in this section aims to shine a spotlight on a number of rare and endangered wetland species, so that we can rebuild mātauranga, and better support the health and wellbeing of our repo.

Section Three: Mātauranga Māori

Tools and Approaches

Mātauranga Māori (Māori knowledge) is a multifaceted knowledge system that reflects an understanding of the world from an indigenous cultural perspective and is intimately linked through whakapapa (connections to place and natural resources). This section explores the application of mātauranga Māori and whakapapa for the restoration of repo by tangata whenua.

The *Te Reo o Te Repo* cultural wetland handbook series are available for free download.

Te Reo o Te Repo – The Voice of the Wetland https://www.landcareresearch.co.nz/publications/te-reo-o-te-repo

Te Reo o Te Repo – Kei konei tonu au: The Voice of the Wetland – I am still here

http://www.landcareresearch.co.nz/publications/te-reo-o-te-repo-kei-konei-tonu-au



HOW OUR STORIES CONNECT ACROSS THE LANDSCAPE



- 5. Te Reo o Te Repo The language of the swamp Pūrekireki Marae, Pirongia, Waikato
- 6. Pulling nature back from the brink Weaving culture, science, art and *Sporadanthus*
- 7. Swamp Maire
 Te Pūaha o Waikato, Waikato
- 8. Restoring and enhancing tuna Rāhui Pōkeka, Waikato
- Me pēwhea te whakarauora i ngā repo o Ngāti Maniapoto
- 15. Wharekorino Wetland enhancement project Enhancing a significant site of plenty Wharekorino Wetland, Tokanui, Kihikihi, Waikato
- Chapter locations from Te Reo o Te Repo
- O Chapter locations from Te Reo o Te Repo Kei konei tonu au

Te Waipounamu South Island 12. Ngā roto tāpokapoka – Te hiku o te ika: Dune lakes restoration Dune lakes, Te Hiku, Te Tai Tokerau

Te Ika-a-Māui North Island

14. Poukawa te waiū – Poukawa the life force Lake Poukawa, Te Hauke, Te Matau a Māui

Aotearoa | New Zealand

- Te haerenga o ngā pukapuka repo –
 Connecting wetlands and people through stories
- When hands hear the landscape speak –
 Reconciling te reo o te repo and landscape design
- 4. Ngā rongoā o ngā repo A wetland perspective
- 9. The wetland paddlers of Aotearoa Ducks, swans and grebes
- Te reo tipu Kaupapa Māori views of molecular research with rākau rongoā o ngā repo used for Type II Diabetes (T2D)
- 11. Tuia ngā repo me ngā tāngata Reconnecting communities with their wetlands
- 16. GIS mapping tools for wetland projects

MĀORI CONVENTIONS USED THROUGHOUT THE HANDBOOK

Haimona Waititi (Te Whānau-ā-Apanui, Ngāti Porou, Ngāi Tahu)

Official languages of New Zealand

Throughout the handbook, we have used both te reo Māori and English as they are official languages of Aotearoa New Zealand. A comprehensive glossary of all Māori terms used throughout the handbook can be found at the end of the handbook.

Bilingual names of government agencies

Most government departments and agencies throughout Aotearoa have bilingual names. Throughout the handbook, the Māori name has been used in preference of the English name, for those organisations with registered bilingual trade names. Within the articles the abbreviated version of the organisation may also be used. Agencies with bilingual trade names such as:

- Manaaki Whenua Landcare Research/MWLR
- Te Papa Atawhai/Department of Conservation/ DOC
- Āta mātai, mātai whetū/AgResearch

Taihoro Nukurangi/National Institute of Water and Atmospheric Research/NIWA Te Whare Wānanga o Waikato/University of Waikato/UoW Waikato/UoW Te Whare Wānanga o Waikato/University of Waikato/UoW Te Whare Wānanga o Waikato/UoW Te Whare Wānanga o Waikato/Uow Te Whare Wānanga o Waikato/Uow Te Waikato/Uow T

Flora and fauna species

The Māori names for native flora and fauna species have been used in preference to common and scientific names. A comprehensive glossary of all flora and fauna species used throughout the handbook can be found at the end of the handbook.

Whakataukī - Proverbs

For many of the articles within the handbook, we have used Māori proverbs called whakataukī or whakatauākī, which are sayings that reflect the thoughts, values, and advice of past generations. They are usually very succinct and often use metaphor to convey key messages. Proverbs are important to the revival of the Māori language – they have flair, imagery, and metaphor embodying the uniqueness of the language. Māori proverbs comment on many aspects of Māori culture, including history, religious life, conduct, ethics, land, warfare, love, marriage, and death. While, some sayings refer to cultural practices or attributes that have since changed or no longer exist, most can be adapted and applied to present-day situations. The Māori proverbs chosen for selected articles within the handbook, help highlight the importance of the topic from a cultural perspective.

Pekapeka Wetland and boardwalk meandering through the restored wetland, Te Hauke, Hawkes Bay. Photo: © John Nelson

Tribal affiliations

Māori, the Indigenous people of Aotearoa, have a holistic worldview that respects and acknowledges the environments to which they are connected. One of the environments on which Māori place great importance is the natural world. Māori will identify themselves through their connection to an ancestral maunga (mountain), awa (river), moana (ocean), waka (canoe), hapū, iwi, and tūpuna (ancestors) before their own name.

This is known as a pepeha (formulaic tribal identity expression). Because of this symbiotic relationship, the role Māori play as kaitiaki (guardians) is of great importance.

The authors of this handbook have their tribal affiliations following their name rather than their professional title, as you might find in other handbooks of similar format. This is intended to recognise that these authors are first and foremost indigenous to Aotearoa and therefore are upholding their role as kaitiaki. Fortunately, most of our contributors have found employment with research institutions or organisations tasked with environmental management, to allow further expression of their roles as kaitiaki. Their professional title, however, is not at the centre of who they are.

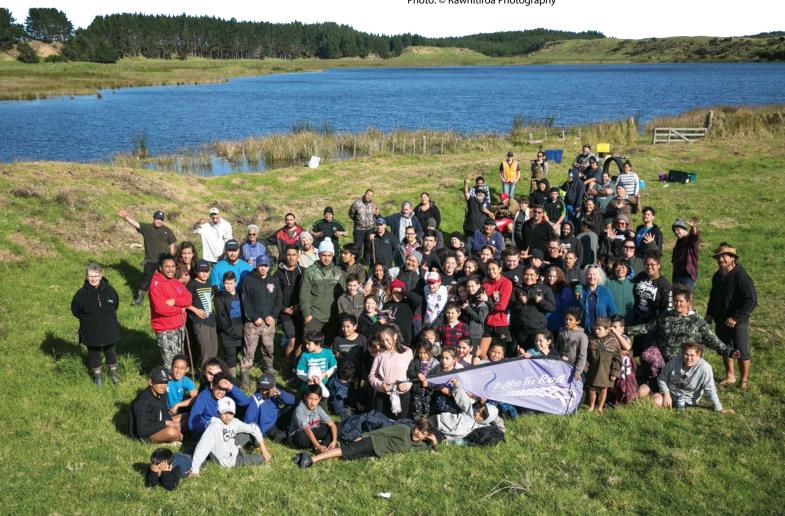
Tribal dialect

Māori are a tribal people. Each tribe is unique on many levels. These unique characteristics are historical and have developed over time. They can extend from dialectal language differences to tikanga (customs) and are anchor points for tribal identity and mana motuhake (independence, self-determination).

Each of the author's research has remained in the language and dialects that they have chosen to use, and for this reason, no attempts have been made to standardise the Māori terms used across this handbook. Because of these tribal differences, different tribes have different dialects that are used in the handbook. For example, Waikato-Tainui (tribal people of the Waikato region) use double vowels instead of a macron (which is the more common way of writing), i.e. whaanau instead of whānau, hapuu instead of hapū. this style of writing does not change the meaning of the term. Taranaki (tribal people of the Taranaki area) are known for their 'dropped' or aspirated 'h'. Having different names for the same species of plants and animals is also common among tribes – whitebait has many different names throughout the country: matamata, īnanga, īnaka, karohi, karohe, etc.

These differences are acknowledged in this handbook in recognition of the mana motuhake of each tribe.

Kaitiakitanga at work – community support for the lake environments, Te Hiku schools planting day, Lake Onepū, Te Tai Tokerau (Northland). Photo: © Rawhitiroa Photography



TERMINOLOGY

Beverley Clarkson and Cheri van Schravendijk-Goodman

Terminology and jargon are everywhere, particularly within the ecological restoration space. Although, the majority of us may be able to communicate in English, it doesn't mean that we actually understand each other! This can definitely be the case when different cultures meet to work on a shared kaupapa (matters for discussion) or take (issue), and even across different research disciplines.

A good example where we can all trip each other up is when we refer to the origin of a species:

- Native refers to an organism that is indigenous to, or originating from a given area, in this case Aotearoa New Zealand
- Exotic refers to an organism from another country but can sometimes also refer to an organism that comes from another region within Aotearoa. Other similar terms include introduced, alien, non-indigenous and non-native. It is important that everyone becomes clear on which definition applies at the start.

These definitions can be complicated further when references are then made as to whether a species is:

- Endemic means that the organism occurs naturally (native) only in Aotearoa or some part of Aotearoa
- Invasive is the introduction of an exotic (in most cases) organism, which has the potential to spread and cause harm to human health, the economy and the environment.

Sometimes the words 'pest' or 'weed' are also used in a similar context to 'invasive'. Depending on the situation and goals of the restoration programme, there can be subtle differences:

- A weed is usually defined as a plant that is not wanted and requires some type of intervention to remove it. Weeds are mainly exotic species but they can also be native
- A pest is more general and refers to both plants and animals (usually insects or small animals).
 Again, it generally means an organism that is not wanted, and may require some intervention to manage.

Pests and weeds may also be invasive, which can require significant funds to manage, to eradicate, and to repair the damage they have created. It is also important to remember, that something that might be considered a weed or pest to one person or group, may not necessarily mean the same thing to another.

In some situations, 'weedy' or 'pest' organisms may be valued as a culturally important kai (food), e.g. puha (sow thistle) or morihana (common gold fish). Some invasive species may have also held historical value such as the brown bull-headed cat fish which was considered to be an important food item to some Waikato kaumātua (elders) when 'native trout' (adult whitebait) become harder to source.

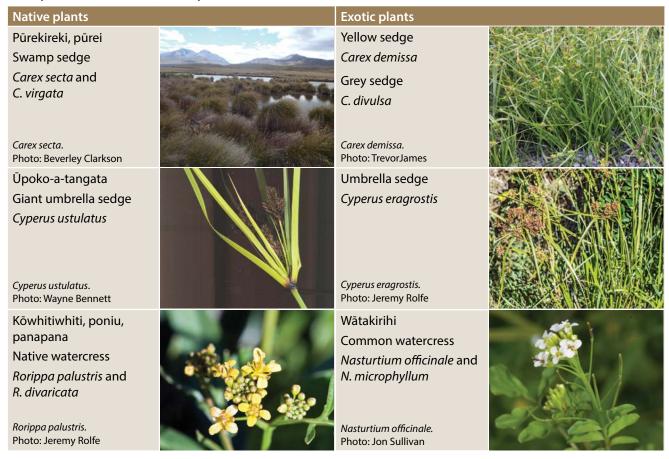
An exotic tree that is high on the list for recommended control along freshwater systems: alder (or 'rākau Pākehā' as they called it), has an interesting cultural history along the Waikato River, where it was once a source of income for local tangata whenua who worked on the river barges. The trees were harvested to fuel the barges because they can be burnt green (freshly harvested) at high heats. This does not mean that tangata whenua in the area prefer the alder over a stand of kahikatea or native reed bed.

However, understanding the history of an organism (whether exotic or native) opens the door for enhancing understanding of our shared values; provides for greater shared learnings; and may even provide clues as to how these organisms could be better managed and utilised.



Towing barge of harakeke (NZ flax) on the Waikato River near Churchill, Waikato c. 1900. Photo: Sir George Grey Special Collections, Auckland Libraries, AWNS-19000413-6-2

Examples of native versus exotic plants



THE NEW ZEALAND THREAT CLASSIFICATION SYSTEM

Throughout the handbook, we shine a spotlight on native species that are classified under the New Zealand Threat Classification System. This system lists plants and animals of Aotearoa New Zealand according to their threat of extinction in the following categories:

Threatened

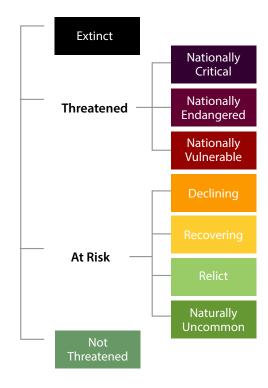
Threatened species have the greatest risk of extinction.

- Nationally Critical: most severely threatened, facing an immediate high risk of extinction
- Nationally Endangered: facing high risk of extinction in the short term
- Nationally Vulnerable: facing a risk of extinction in the medium term.

At Risk

At Risk species are not considered Threatened but can become so if the decline continues or if a new threat arises.

- Declining: population declining but still common
- Recovering: small population but increasing after previously declining
- Relict: small population stabilised after declining
- Naturally Uncommon: naturally small population and therefore susceptible to harmful influences.



Relationship of the New Zealand Threat Classification System

For more information, go to the Te Papa Atawhai (DOC) website: https://www.doc.govt.nz/nature/conservation-status

WANT TO LEARN MORE?

Note: If you are having problems with the hyperlinks below try copying and pasting the web address into your browser search bar.

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Useful websites

Department of Conservation - Te Papa Atawhai

The NZ Threat Classification System

https://www.doc.govt.nz/nature/conservation-status

Wetlands

https://www.doc.govt.nz/nature/habitats/wetlands

Ducks Unlimited NZ

https://ducks.org.nz/wetlands

Essential Freshwater package

https://environment.govt.nz/what-government-is-doing/areas-of-work/freshwater/e/freshwater-reform

Fish and Game New Zealand

https://fishandgame.org.nz/environment/protecting-nz-game-bird-habitats/wetlands

National Policy Statement for freshwater management

https://environment.govt.nz/acts-and-regulations/ national-policy-statements/national-policystatement-freshwater-management

National Wetland Trust of New Zealand

https://www.wetlandtrust.org.nz

New Zealand Plant Conservation Network

https://www.nzpcn.org.nz

Resource Management Act 1991

https://www.legislation.govt.nz/act/public/1991/0069/latest/DLM230265.html

Te Reo o Te Repo – The Voice of the Wetland

https://www.landcareresearch.co.nz/publications/te-reo-o-te-repo

Tuihonoa Te Reo o Te Repo

https://www.sciencelearn.org.nz/images/4473-tuihonoa-te-reo-o-te-repo

Wetland Restoration Handbook

https://www.landcareresearch.co.nz/publications/wetland-restoration

Also check the websites of your local Regional and District Councils, and local marae, hapū, and iwi