



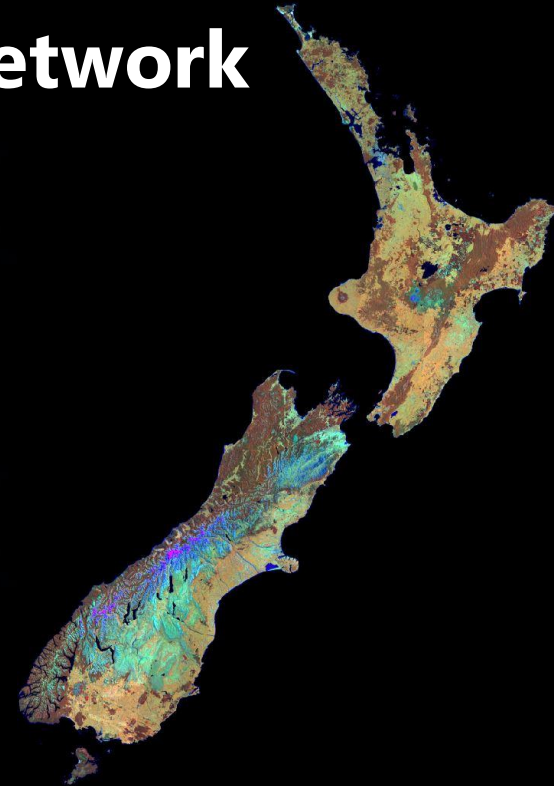
Manaaki Whenua  
Landcare Research

# New Zealand's Protected Areas Network - List it to love it!

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# Protected Areas Network NZ (PAN-NZ)

## National Level



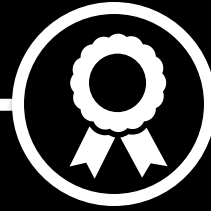
Brings together information on legally protected areas at a national level

## Data Aggregation



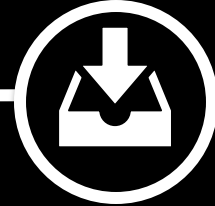
Department of Conservation, Queen Elizabeth II National Trust, Nga Whenua Rahui, and regional councils data...

## Underpins Conservation



Supports conservation efforts such as the creation of the national threatened environments classification

## Ad hoc Funding



Maintained and updated by Manaaki Whenua on an as-needed basis



# Drivers – Te Mana o te Taiao

## TIAKI ME TE WHAKAHAUMANU Protecting and restoring

We need to address the direct pressures causing a decline in biodiversity, ensure the sustainable use of biodiversity, and restore biodiversity in areas where it has been lost. These objectives set out what we will do to ensure biodiversity is resilient and secure.

### *What our 2050 objectives are:*

10. Ecosystems and species are protected, restored, resilient and connected from mountain tops to ocean depths
11. Management ensures that Biological threats and pressures are reduced through management
12. Natural resources are managed sustainably
13. Biodiversity provides nature-based solutions to climate change and is resilient to its effects



# Drivers - Kunming-Montreal Global Biodiversity Framework's "30x30"



## Target 3

"Ensure that at least 30 per cent globally of land areas and of sea areas, **especially areas of particular importance for biodiversity** and its contributions to people, **are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas** and other effective area-based conservation measures and integrated into the wider landscapes and seascapes."



# Drivers – Underpins Understanding

"However, our data strongly suggest that the current spatial distribution of site-based conservation, as reflected by PAN-NZ, is inadequate to protect a highly endemic carabid fauna"



## Assessment of protected area coverage of threatened ground beetles (Coleoptera: Carabidae): a new analysis for New Zealand

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**Abstract:** Gap analysis is a tool that allows conservationists to quantify the effectiveness of protected areas in representing species diversity, but the lack of distribution maps for invertebrates has precluded its application to the world's most diverse animal groups. Here, we overcome this limitation and conduct a gap analysis, using niche modelling, on the Pterostichini (Coleoptera: Carabidae) of New Zealand, one of the most diverse and most threatened tribes of ground beetles in the nation. Niche modelling uses data on abiotic parameters to model predicted species ranges based on records of their known distribution, and is a useful tool for conservation planning. This method is widely applicable where there is good taxonomical knowledge of the group in question and distribution records are available. We obtained sample localities from museum records for 67 species of Pterostichini, including 10 species listed as threatened, and modelled their spatial distributions based on climate, landforms and soil properties. Most species had small spatial distributions, with 48–75% of species having ranges of less than 100 000 ha. We found the areas with highest species richness fell largely outside of the protected area network, as did the distribution of most individual species, with just 20–25% of species having more than 30% of their range falling within a protected area. In terms of percent land area, New Zealand has one of the world's largest protected area networks, but the spatial distribution of that network affords little protection to this group of invertebrates. This analysis provides support for the creation of new reserves to increase the value and efficacy of the protected areas network.

**Keywords:** Carabidae; Coleoptera; gap analysis; invertebrates; New Zealand; Pterostichini

## Introduction

Invertebrates form the functional backbone of ecosystems around the world. They play globally important roles in processes as diverse as pollination (Ghazoul 2005), herbivory (Maron & Crone 2006), bioturbation (Meyersman et al. 2006), water purification (Boulton et al. 2008), and regulation of insect populations (Kromp 1999). Moreover, they are the most speciose group of animals and yet are thought to be undergoing a mass extinction event (Fonseca 2009). The importance of invertebrates and their diversity raises a difficult proposition: we need to conserve these species, but how can we best conserve such species-rich groups? Their sheer diversity precludes the widespread use of species-specific management actions, suggesting that site-based conservation approaches are the most practical route forward (McGuinness 2007). This approach is the most commonly employed conservation tactic around the world (Rodrigues et al. 2004a, b). The degree to which protected areas represent species diversity can now be quantified using gap analysis (Rodrigues et al. 2004a, b). Gap analyses require data on the spatial distribution of species, which is available for all of the birds (Orme et al. 2006), mammals (Schipper et al. 2008) and amphibians (Stuart et al. 2004) of the world. However, such information is commonly unavailable for invertebrates, making gap analysis impractical and leaving it as a tool that is not routinely employed for assessing the conservation protection afforded to the world's most diverse taxon. Data are available now for a diverse group of invertebrates in New Zealand, allowing us to conduct the

first national-scale gap analysis for invertebrates in one of the world's 25 biodiversity hotspots (Myers et al. 2000).

New Zealand is notable for its highly endemic biota, which has evolved in isolation from any other landmass for at least the last 25 million years. There is considerable discussion now as to whether isolation was longer due to the claims and rebuttals for the 'Oligocene inundation' (Goldberg et al. 2008; Giribet & Boyer 2010 and references therein). Following very extensive land extension and mountain building during the Pliocene and Pleistocene, the warmer climates of the interglacials and last 10 000 years in the South Island have led to a diversity of habitats and vegetation associations. On the lowlands dense wet forests dominated the west and dry forests and shrublands the east (Craig et al. 2000). However, the landscape suffered much modification from its natural state with the arrival of humans. New Zealand was one of the last countries in the world to be colonised by people and European settlers arrived less than 200 years ago (MfE 1997) with grazing animals and tillage practices. Since this time, forest-burning, agricultural land modification, hunting and the introduction of exotic species, both productive and pest, have had a significant impact on the natural habitats of New Zealand (McGlone 1989), causing the extinction of unique species and threatening many more (Fonseca 2009).

The family Carabidae is one of the New Zealand invertebrate taxa that are listed high on the priorities of conservationists (Laroche & Larivière 2001; Johns 2003, 2005). However, information on relative abundance and distribution of rare species is incomplete and, as such, an

# PAN-NZ Phase 1

Planzer S, Harris L, van Noppen F, Price R, Law R, Belliss S. 2023. Protected Areas Network New Zealand methodology review and report. Manaaki Whenua – Landcare Research Report LC 4299 prepared for Ministry for Environment.55p.

## Objectives



Identify the various types of protected areas



Identify protected area data sources



Record data gaps



Assess the data sharing maturity of each source.



Assess the suitability of Significant Natural Areas (SNAs) for inclusion within PAN-NZ

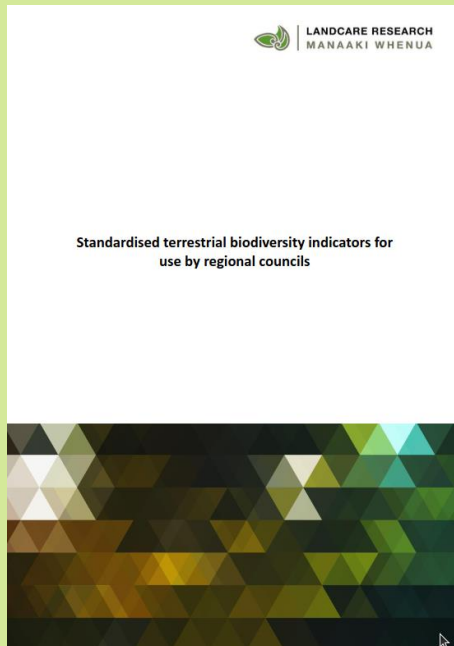


Develop a survey to understand the nature of data entities hold about protected areas



# Protected Area Type

Standardised terrestrial biodiversity indicators for use by regional councils (Bellingham et al. 2016)



**Table 15-7** Classification of areas legally protected for biodiversity purposes

Class	Designation	Legal Mechanism
5	<b>National Park</b>	<b>National Parks Act 1980</b>
	Purpose: s 4 Preserving areas in perpetuity as national parks, for their intrinsic worth and for the benefit, use, and enjoyment of the public, areas that contain scenery of such distinctive quality, ecological systems, ornate natural features so beautiful, unique, or scientifically important that their preservation is in the national interest; including that they shall be preserved as far as possible in their natural state and native plants and animals shall as far as possible be preserved and the introduced plants and animals shall as far as possible be exterminated	
5	<b>Nature Reserve</b>	<b>Reserves Act 1977</b>
	Purpose: s 20 (1) Protect and preserve in perpetuity indigenous flora or fauna or natural features that are of such rarity, scientific interest or importance, or so unique that their protection and preservation are in the public interest.	
5	<b>Sanctuary Area</b>	<b>Conservation Act 1987</b>
	Purpose: s 22 Preserve areas in their natural state indigenous plants and animals in it, and for scientific and other similar purposes shall be preserved as far as possible in its natural state.	
5	<b>Scientific Reserve</b>	<b>Reserves Act 1977</b>
	Purpose: s 21 (1) Protect and preserve in perpetuity for scientific study, research, education, and the benefit of the country, ecological associations, plant or animal communities, types of soil, geomorphological phenomena, and like matters of special interest; (2) (a) indigenous flora and fauna shall as far as possible be preserved and the exotic flora and fauna shall as far as possible be exterminated; (c) where scenic, historic, archaeological, biological, or natural features are present those features shall be managed and protected to the extent compatible with the principal or primary purpose of the reserve; (d) to the extent possible compatible with the principal or primary purpose, maintain value as a soil, water, and forest conservation area; (e) with consent, manipulate for experimental purposes or to gain further scientific knowledge.	
5	<b>Water Conservation Order</b>	<b>Resource Management Act 1991</b>
	Purpose: s 199 (1) The purpose of a water conservation order is to recognise and sustain – (a) outstanding amenity or intrinsic values which are afforded by waters in their natural state: (b) where	



# Protect Area Classifications

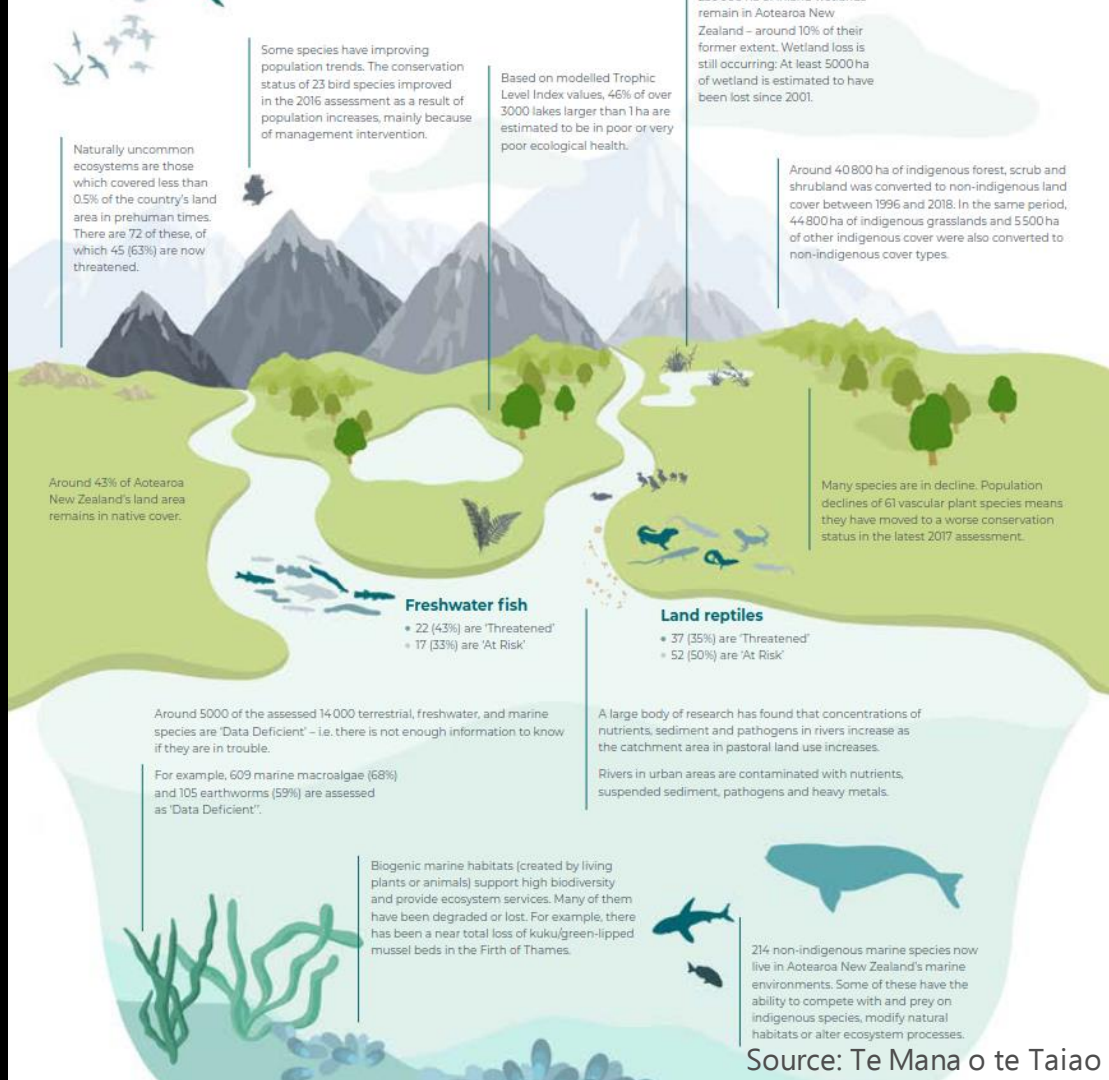
Standardised terrestrial biodiversity indicators for use by regional councils (Bellingham et al. 2016)

## Appendix 15 – IUCN Protected Area management categories

Code	Name	Description	New Zealand Protected Areas*	
la	Strict Nature Preserve	Category Ia protected areas are strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphological features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values. Such protected areas can serve as indispensable reference areas for scientific research and monitoring	National Parks Act of 1980 Conservation Act 1987 Reserves Act 1977 Wildlife Act 1987 Marine Reserves Act 1971 Marine Mammal Protection Act 1978 Fisheries Act 1983 & Harbours Act 1950 Sugar Loaf Islands Marine Protected Area Act 1991	Specially protected areas Ecological areas Sanctuary areas Nature reserves Scientific reserves Wildlife sanctuaries Marine reserves Marine mammal sanctuaries Marine parks Marine protected areas
lb	Wilderness Area	Category Ib protected areas are usually large, unmodified or slightly modified areas, retaining their natural character and influence without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.	National Parks Act of 1980 Conservation Act 1987	Wilderness areas Wilderness areas
II	National Park	Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with	National Parks Act of 1980 Conservation Act 1987	National parks (balance) Conservation parks

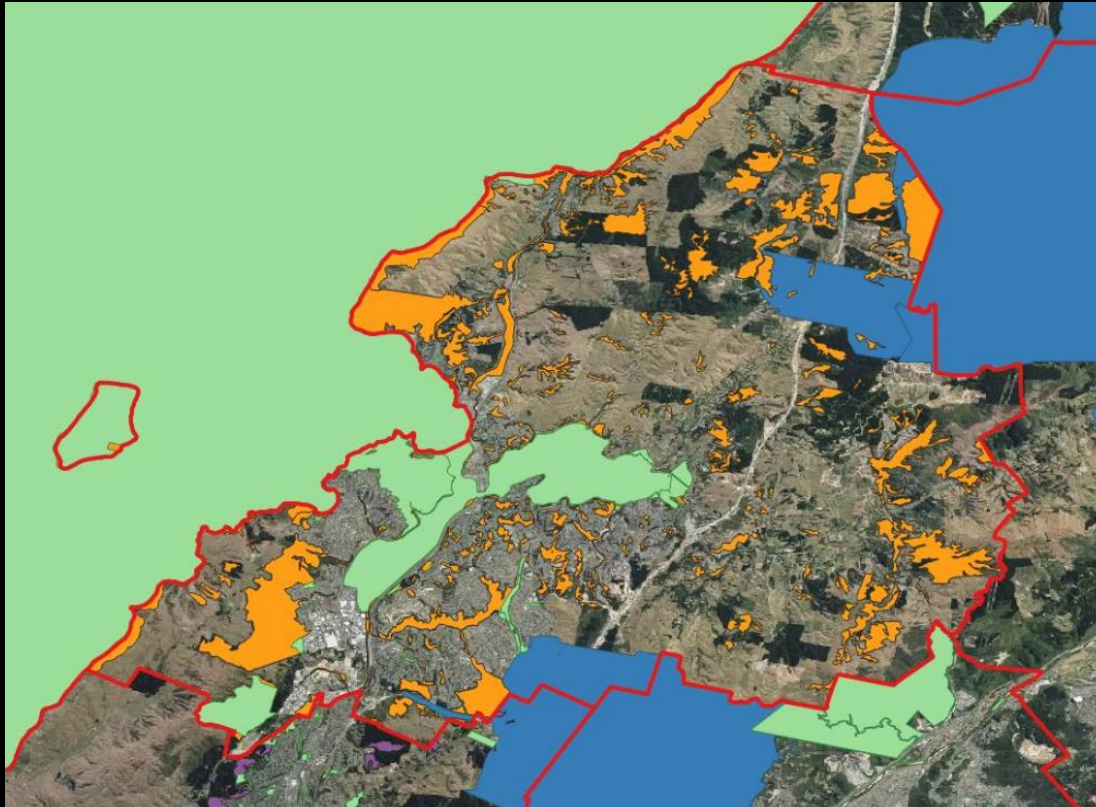
# Those not identified by Bellingham et al.

- Internationally protected areas
  - RAMSAR Wetlands
  - UNESCO World Heritage Sites
- Marine protected areas
- Te Urewera
- Not limited to





# Significant Natural Areas (SNAs)



- Councils have had to protect areas with significant native biodiversity since the Resource Management Act (RMA) was introduced in 1991.
- Recent National Policy Statement for Indigenous Biodiversity (NPSIB) increase mandates

# Identify Data Source

Category	Rank	Legislation	Legislation section	Data custodian	Data sources	Licence	Published date	Last updated	Accessibility	Comment on data
<b>Terrestrial legally protected as identified by Bellingham et al. (2016)</b>										
National parks	5	National Parks Act 1980	s.12 - Specially Protected Area s.14 Wilderness Area s.15 - Amenities Area s.4 - National Park	DOC	<a href="#">DOC Public Conservation Land</a> (1)	CC BY 4.0 licence	8 March 2018	Weekly	Download only	s.12 only Comes with the disclaimer 'Care should be taken in deriving conclusions from any data or information supplied.'
				LINZ	<a href="#">LINZ Protected Areas</a> (2)	CC BY 4.0 licence	2 Feb 2017	2 May 2022	Download, OGC WFS	The Department cannot guarantee the accuracy of the information. Rather it represents best endeavours to maintain an accurate record of conservation land. This data set has had c. 5000 downloads.
Nature reserve	5	Reserves Act 1977	s.20 - Nature Reserve	DOC	<a href="#">DOC Public Conservation Land</a> (1)	CC BY 4.0 licence	8 March 2018	Weekly	Download only	
				LINZ	<a href="#">LINZ Protected Areas</a> (2)	CC BY 4.0 licence	2 Feb 2017	2 May 2022	Download, OGC WFS	
Sanctuary area	5	Conservation Act 1987	s.22 - Sanctuary Area	DOC	<a href="#">DOC Public Conservation Land</a> (1)	CC BY 4.0 licence	8 March 2018	Weekly	Download only	
				LINZ	<a href="#">LINZ Protected Areas</a> (2)	CC BY 4.0 licence	2 Feb 2017	2 May 2022	Download, OGC WFS	
Scientific reserve	5	Reserves Act 1977	s.21 - Scientific Reserve	DOC	<a href="#">DOC Public Conservation Land</a> (1)	CC BY 4.0 licence	8 March 2018	Weekly	Download only	
				LINZ	<a href="#">LINZ Protected Areas</a> (2)	CC BY 4.0 licence	2 Feb 2017	2 May 2022	Download, OGC WFS	
Water Conservation Order	5	Conservation Act 1987								DATA GAP 15 listed here: <a href="https://www.epa.govt.nz/assets/Uploads/Documents/RMA-Proposals/Guidance/8f2f439a69/MFE-Infosheet-Water-Conservation-Orders.pdf">https://www.epa.govt.nz/assets/Uploads/Documents/RMA-Proposals/Guidance/8f2f439a69/MFE-Infosheet-Water-Conservation-Orders.pdf</a>
Wilderness area	5	Conservation Act 1987	s.20 - Wilderness Area	DOC	<a href="#">DOC Public Conservation Land</a> (1)	CC BY 4.0 licence	8 March 2018	Weekly	Download only	
				LINZ	<a href="#">LINZ Protected Areas</a> (2)	CC BY 4.0 licence	2 Feb 2017	2 May 2022	Download, OGC WFS	
Wildlife management area	5	Conservation Act 1987	s.23B - Wildlife Management Area	DOC	<a href="#">DOC Public Conservation Land</a> (1)	CC BY 4.0 licence	8 March 2018	Weekly	Download only	
				LINZ	<a href="#">LINZ Protected Areas</a> (2)	CC BY 4.0 licence	2 Feb 2017	2 May 2022	Download, OGC WFS	
Wildlife sanctuary	5	Wildlife Act 1953	s.9 - Wildlife Sanctuary	LINZ	<a href="#">LINZ Protected Areas</a> (2)	CC BY 4.0 licence	2 Feb 2017	2 May 2022	Download, OGC WFS	
Amenity areas	4	Conservation Act 1987	s.23A - Amenity Area	DOC	<a href="#">DOC Public Conservation Land</a> (1)	CC BY 4.0 licence	8 March 2018	Weekly	Download only	
				LINZ	<a href="#">LINZ Protected Areas</a> (2)	CC BY 4.0 licence	2 Feb 2017	2 May 2022	Download, OGC WFS	



## Identified data gaps

A data gap refers to incomplete or missing data that are required in order to obtain a full picture, at a national level, of where protections have been applied across New Zealand's terrestrial and marine environments

- Conservation Covenants (Reserves Act 1977) held by local authorities, and reserves vested (Reserves Act 1977) in local authorities
- Protected private land (Reserves Act 1977)
- SNAs
- Gaps in data. For example, RAMSAR.

# Data Source Maturity

Focused on three measures of data maturity



## Licensing

Licensing allow distribution and reuse



## Access

- Email and request
- Download
- Web Services / APIs ✓



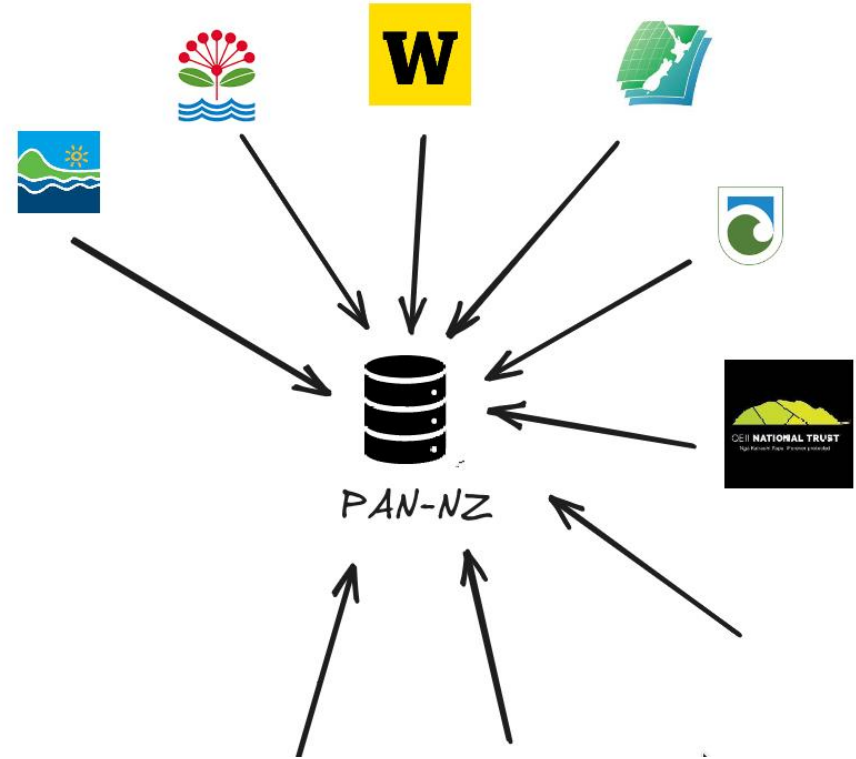
## Metadata

- Last updated
- Known limitations
- License details

# PAN-NZ: Aggregator not creator

## Potential Data Providers (91+):

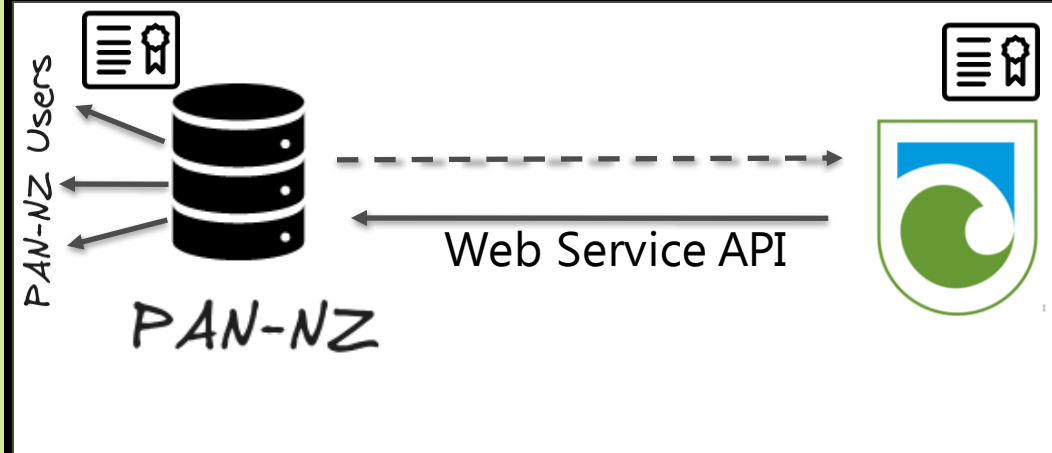
- 67 Territorial Authorities
- 11 Regional Councils
- DoC
- LINZ
- QEII National Trust
- Etc...



# Lowering transaction cost in collecting protected area data



- Webservices
  - REST API
  - WFS
- Licensing





# Protected Areas Source Data Stocktake

	<b>Central Govt</b> PAN-NZ Data Sources		<b>Territorial Authority</b> Potential SNA Data Sources	
<b>Sources Identified</b>	8		15	
<b>Licensing</b>	8	100%	4	27%
<b>Downloads Available</b>	8	100%	6	40%
<b>Webservices</b>	3	38%	3	20%

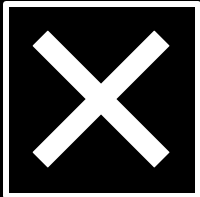
# Recommendations



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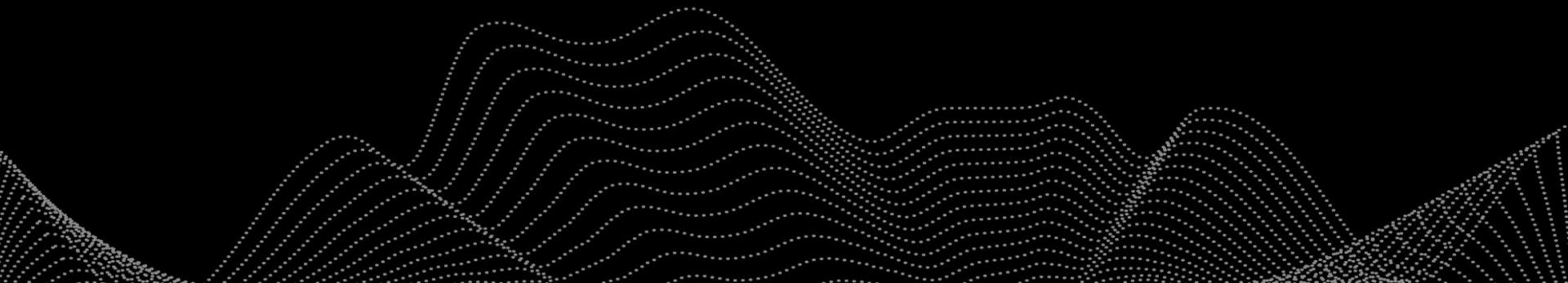
- PAN-NZ Requires ongoing funding
- The data sharing ecosystem must be lifted
- A cross agency group should be formed to oversee the improvement of protected areas data and data sharing
- Common solutions to common problems must be found
- Protected area classifications should be updated
- PAN-NZ data should be released under open license

# POLL



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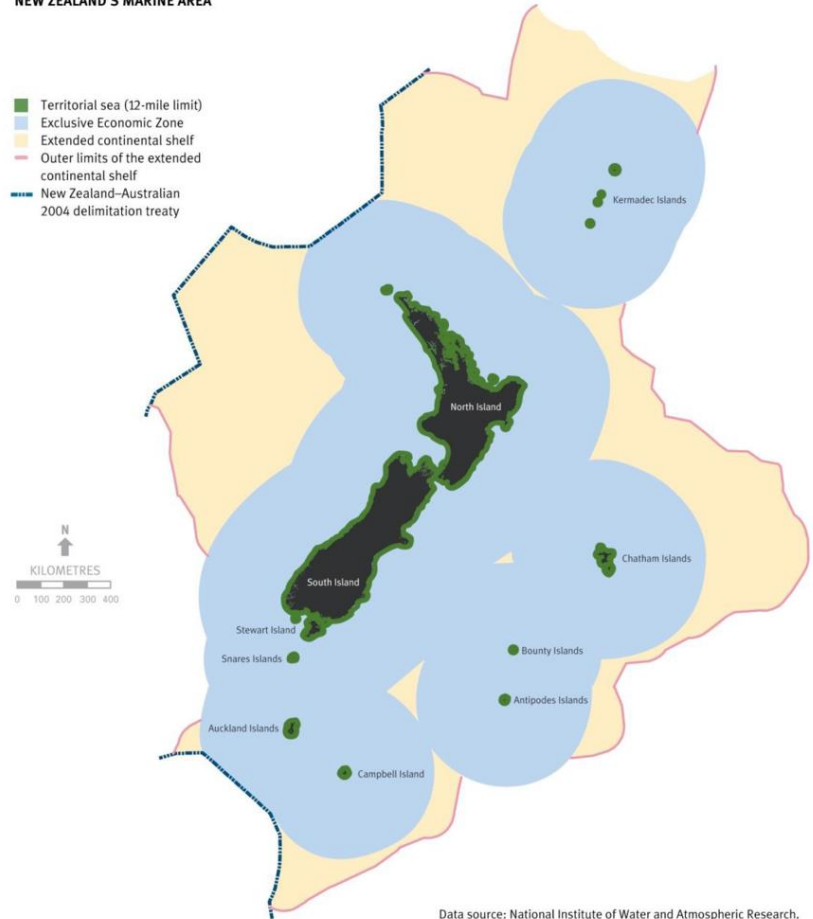
**Poll Question: Does your organisation hold or manage data on protected areas?**



# PAN-NZ Phase 2

- Update 2023 report to incorporate new legislation
- Workshop with natural resource sector agencies to ensure all relevant entities included
- Carry out a survey to gather information from key data providers, stakeholders and end-users
- Determine how PAN-NZ should develop as a database

+ FIGURE 11.1:  
NEW ZEALAND'S MARINE AREA



# Phase 2 – Engagement

- Will be sending out a survey to custodians of protected area data to gather information about the protected area data they possess
- Engage with groups solving similar problems with many of the same data custodians

## PAN-NZ data sources

### Availability of protected areas data and meta data

6. Have you (your organisation) contributed data to PAN-NZ in the past?

- Yes  
 No  
 I don't know

7. Do you know of spatial or other digital data related to protected areas (click all applicable options)?

- Within your agency  
 From other organisations  
 Neither

8. Do you coordinate with other organisations or individuals to collect and manage PA data?

- Yes  
 No

If yes, who?

9. Do you provide this protected area data to other agencies?

- Yes  
 No



# Questions?

