

# SILVER LININGS

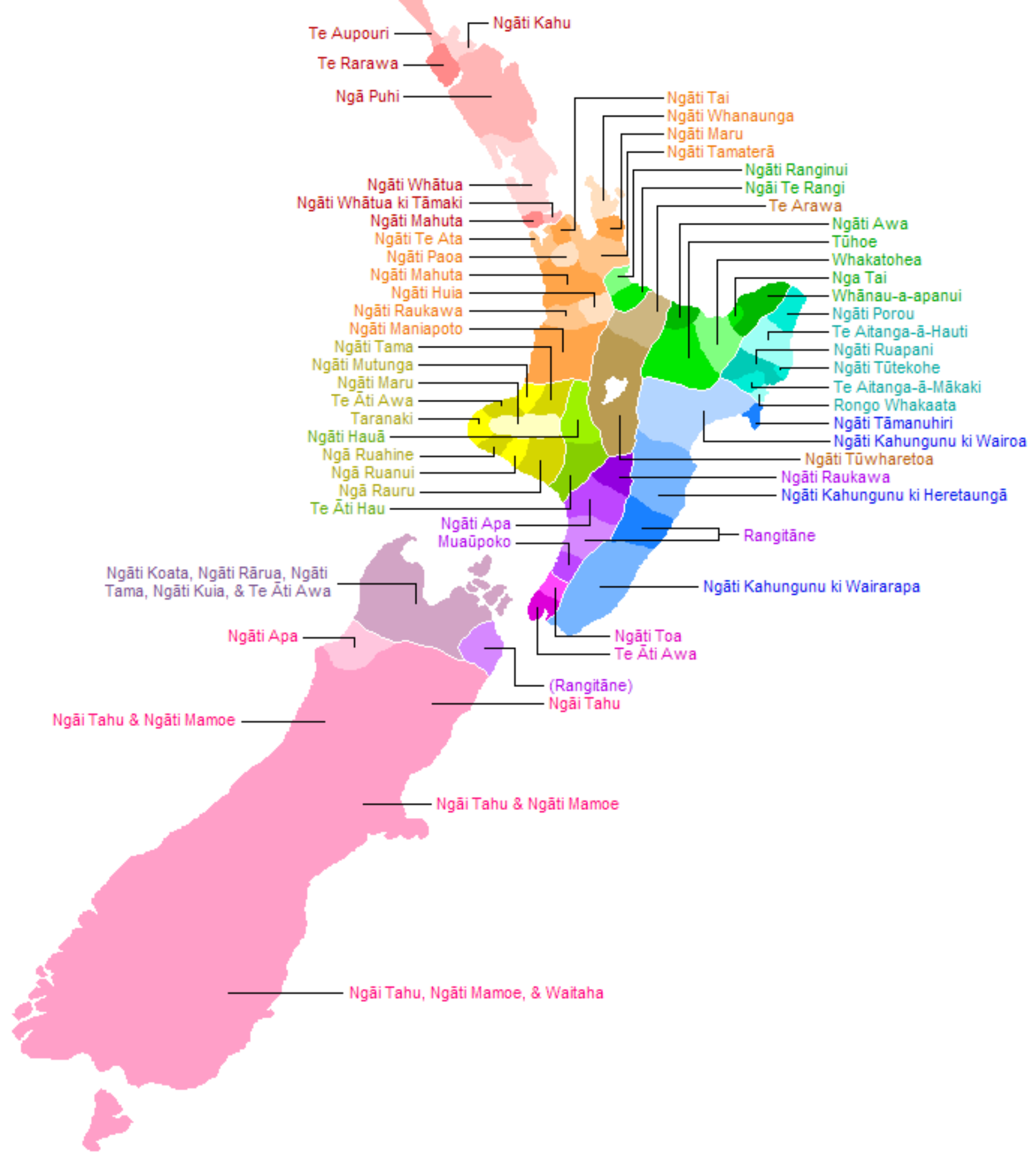
## Decline and dispersal of a translocated kakaruai population

**Manaia Pearmain-Fenton**

Ngāti Awa, Te Whakatōhea



**Manaaki Whenua**  
Landcare Research



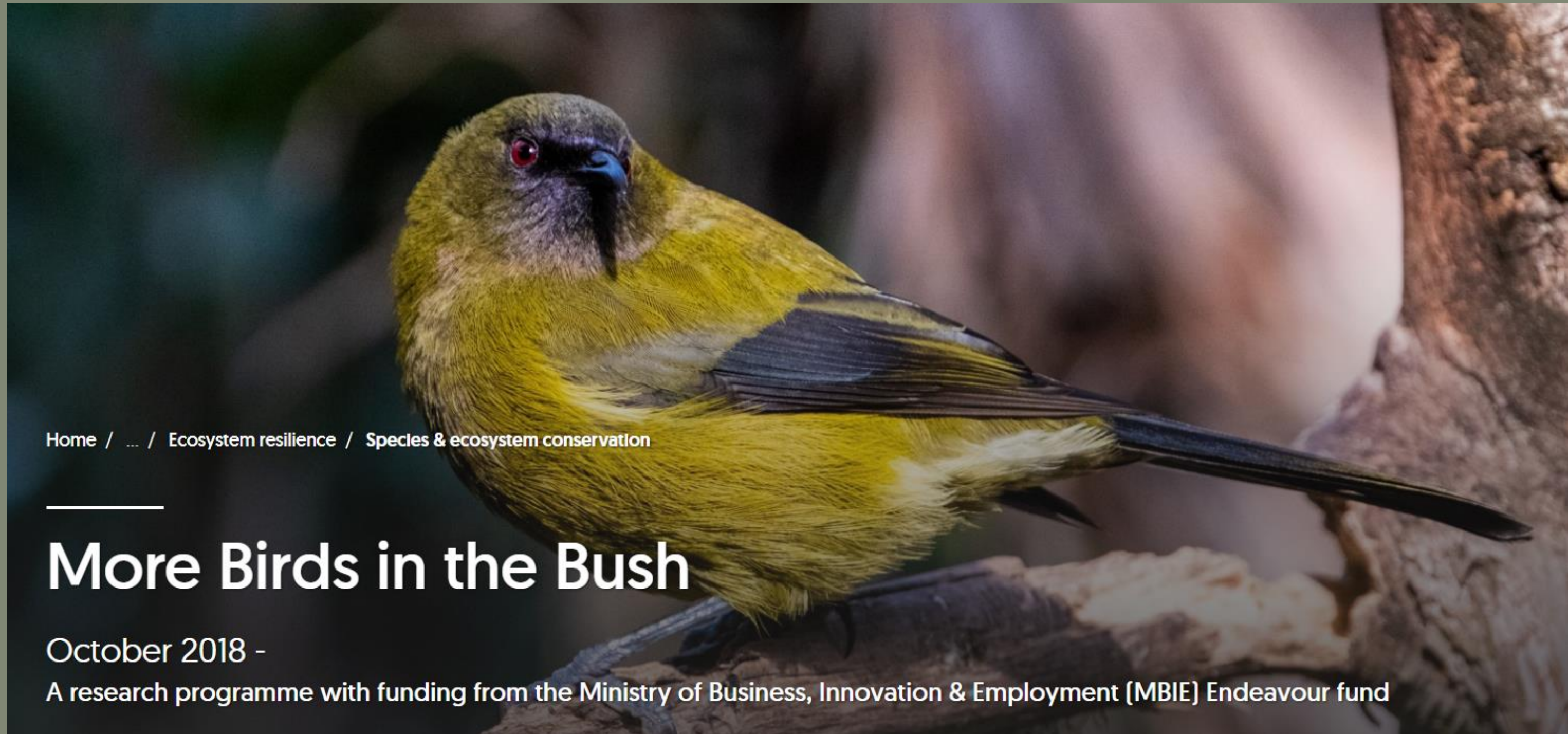
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# More Birds in the Bush

October 2018 -

A research programme with funding from the Ministry of Business, Innovation & Employment (MBIE) Endeavour fund



# How do food and predators influence nesting success and juvenile dispersal?

Introduction

Overseas research suggests that **predation and food availability are interactive** (*Zanette, Clinchy & Smith 2006*)

Effective dispersal includes not just movement to new areas, but the **successful establishment of new territories** (*Innes et al., 2022*)

**'Nor can any imported bird sing and keep up a morning anthem like the native robin before sunrise, and seldom do they waste their melody to the sluggard'.**

**Aparata Renata, published in the Otago Daily Times, (1894).**



**Study species**

# A NOTE ON NAMING

Ingoa Māori for the South Island Robin:

Kakaruai/kakaruwai/karuwai

Pītoitoi

Totoara

Toitoireka

Tarapō/ mokorā (specifically for the female)



Study species

## Herries S. Beattie

Notebook entitled; New Zealand land birds  
written as a young boy in 1894 and 1895 with  
later notes added in 1897-1898.

From the Hocken Collections archives.

The instinct to kill is strong in boys. I remembered being with  
a party of boys (re shooting) which killed either 55 or 65 birds many  
robins. This helps to thin them. Robins were once extremely  
numerous but now they are far less so. There are several causes for  
their disappearance, as; cutting down the bush, & settlement  
therein, shooting by boys, & by imported vermin. They are  
rapidly decreasing but I hope they will increase again.  
Their extinction would be a pity. They are still a plenty  
in the Croydon bush where once they were just  
beginning to come & I wish they will long remain  
& increase. The native robin is not found any  
where else in the world besides N.Z. The robin always keeps on  
the ground & never flies or settles at a greater height of say 30 or  
40 feet. They never settle on a tree but always on the ground or a log.



Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri

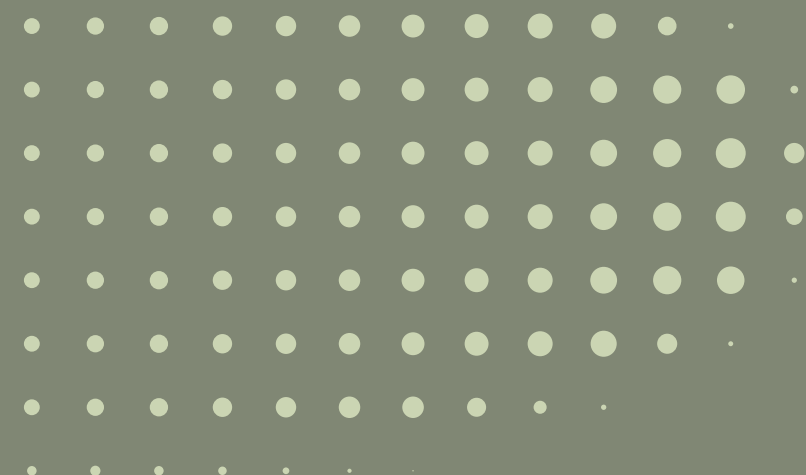




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Arriving at Silver Stream

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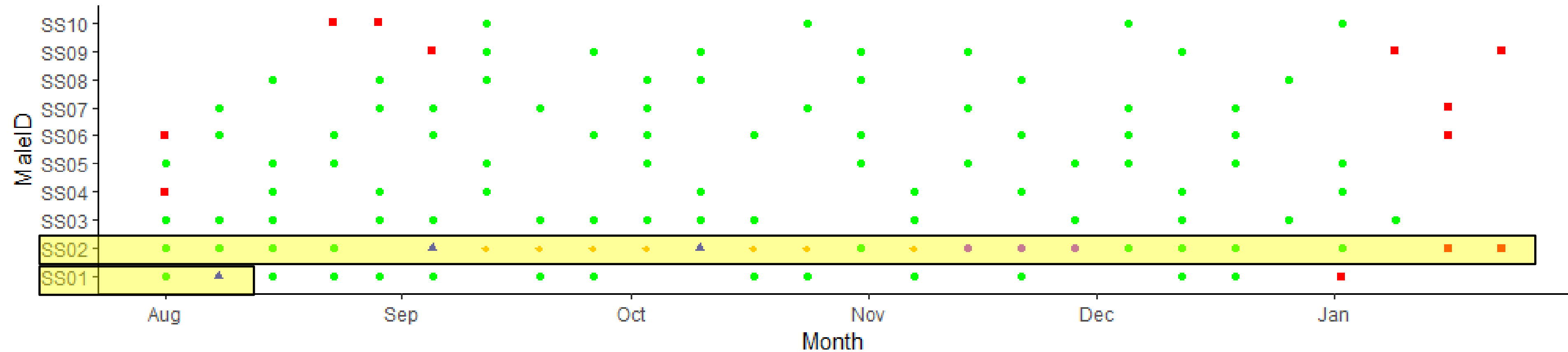


**'Fifteen years ago or less, these birds were quite common about the town belt, but now not a single pair are to be seen on it, and even about Flagstaff they are rare, and soon will be extinct.'**

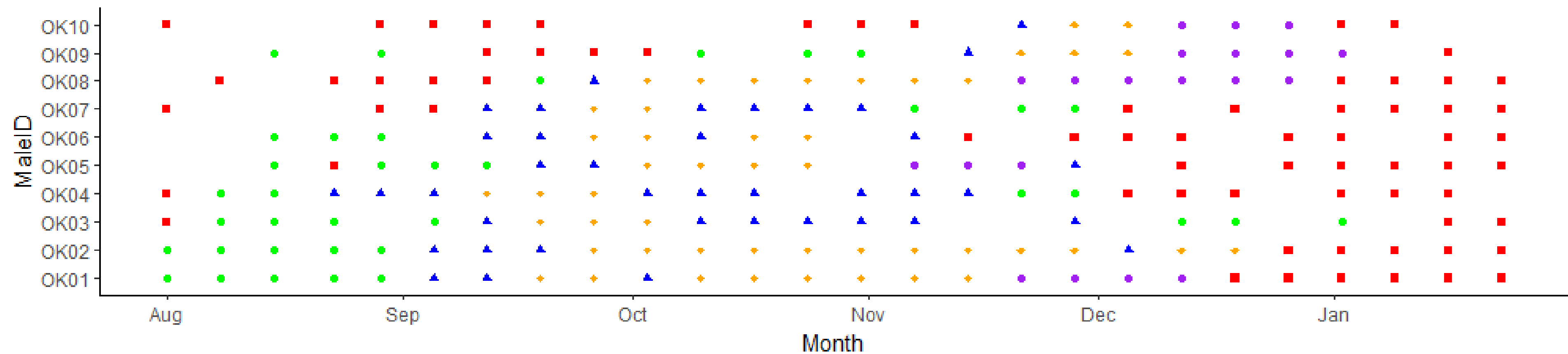
**Aparata Renata, published in the Otago Daily Times, (1894).**



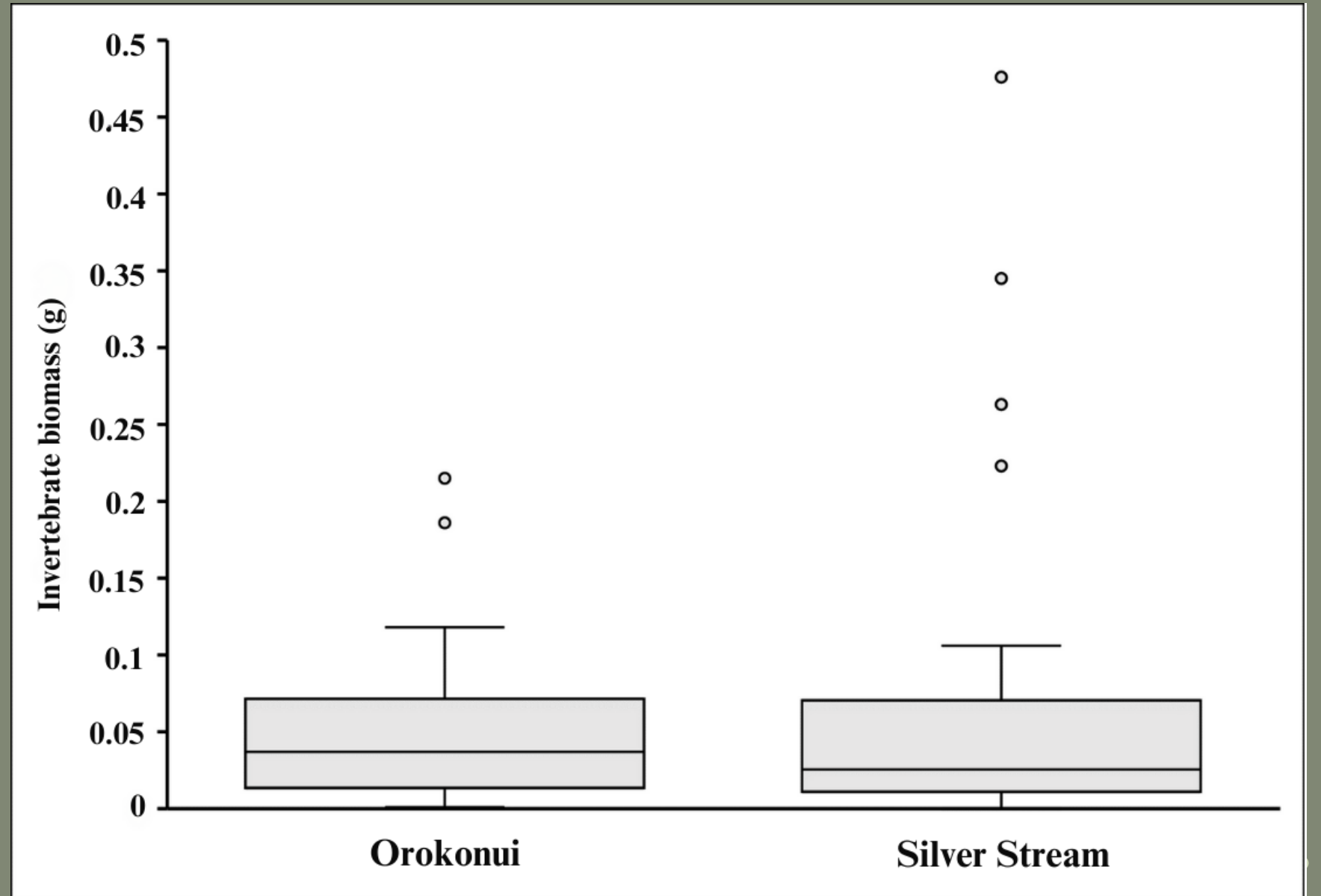
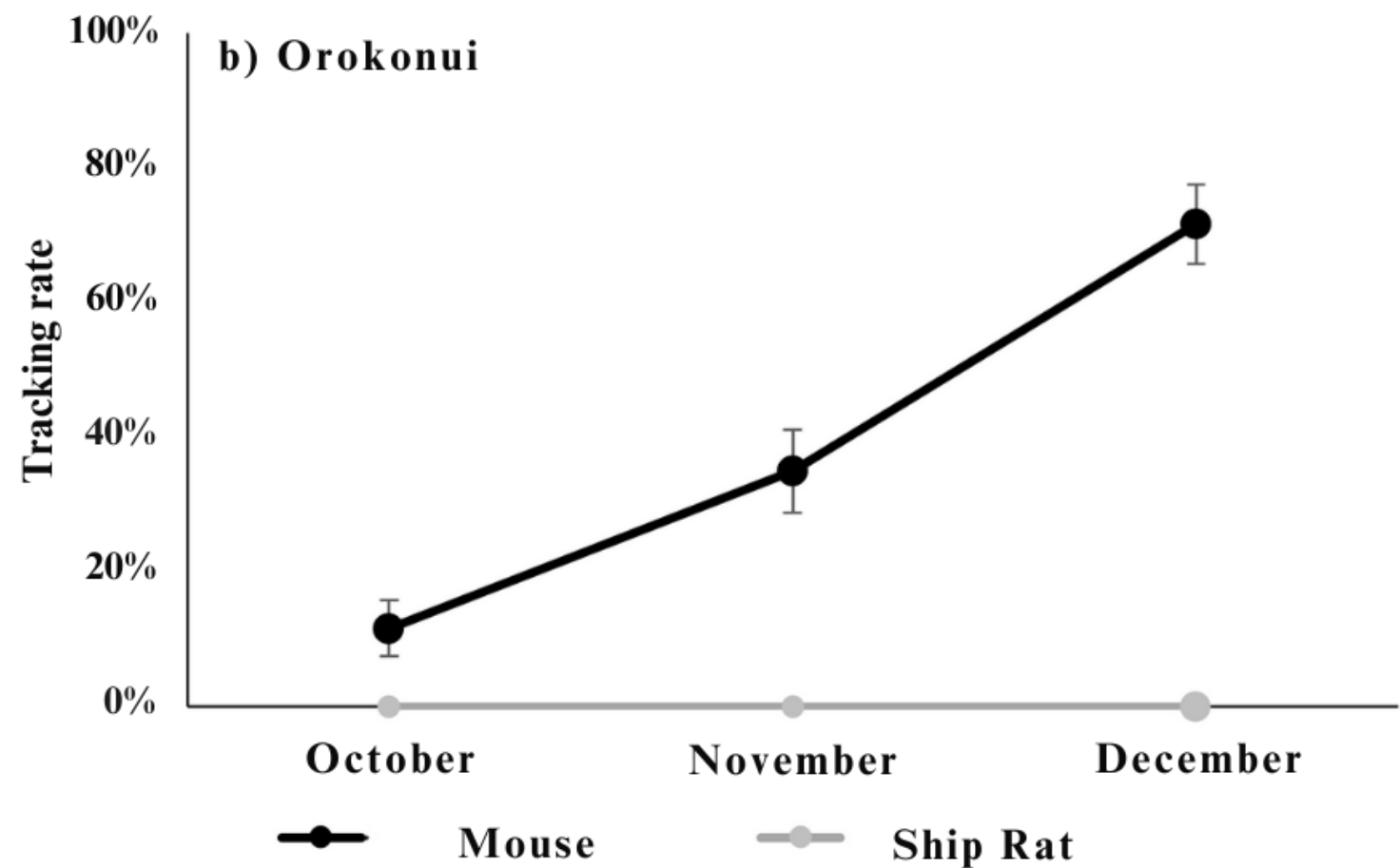
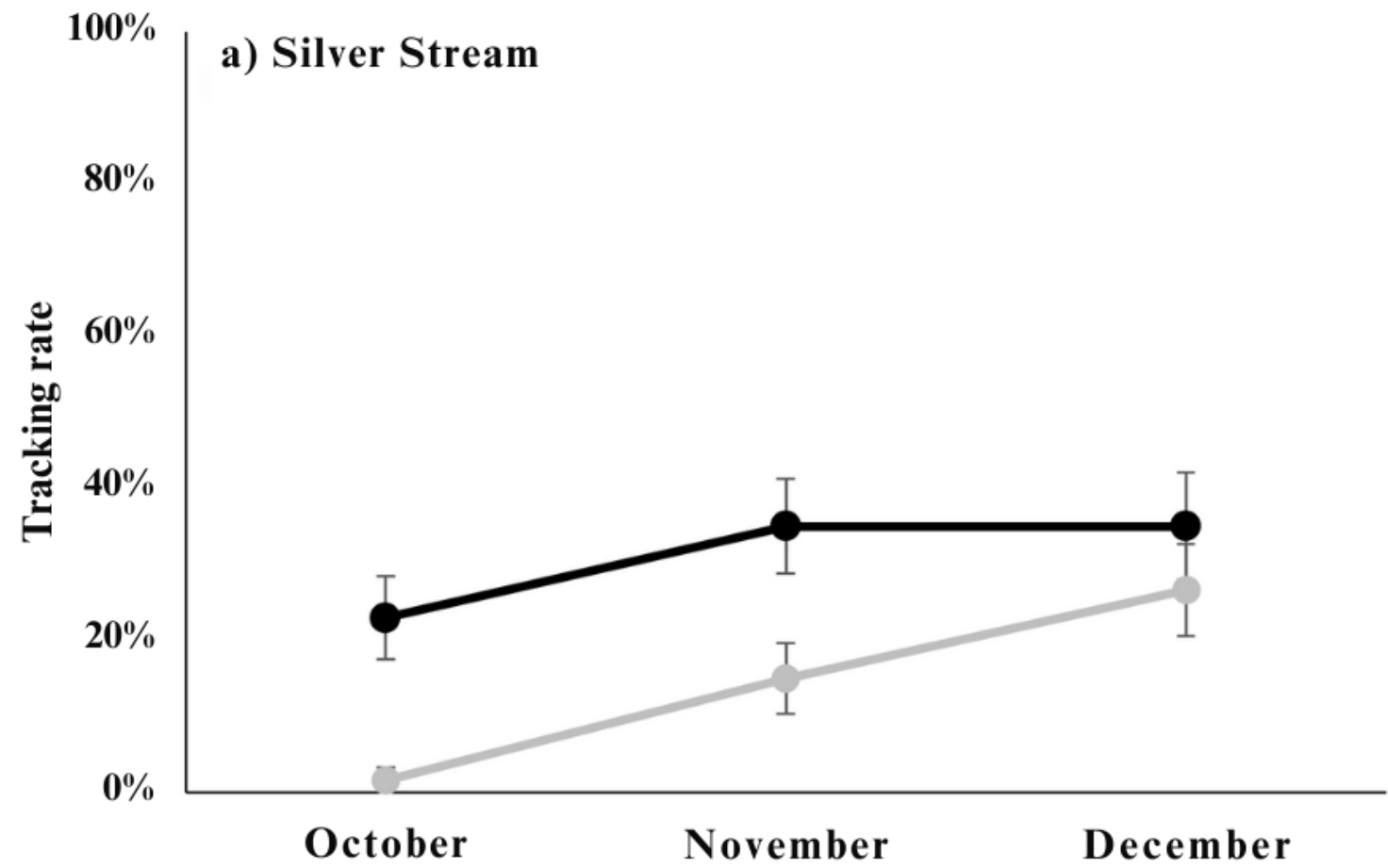
### A) Silver Stream



### B) Orokonui

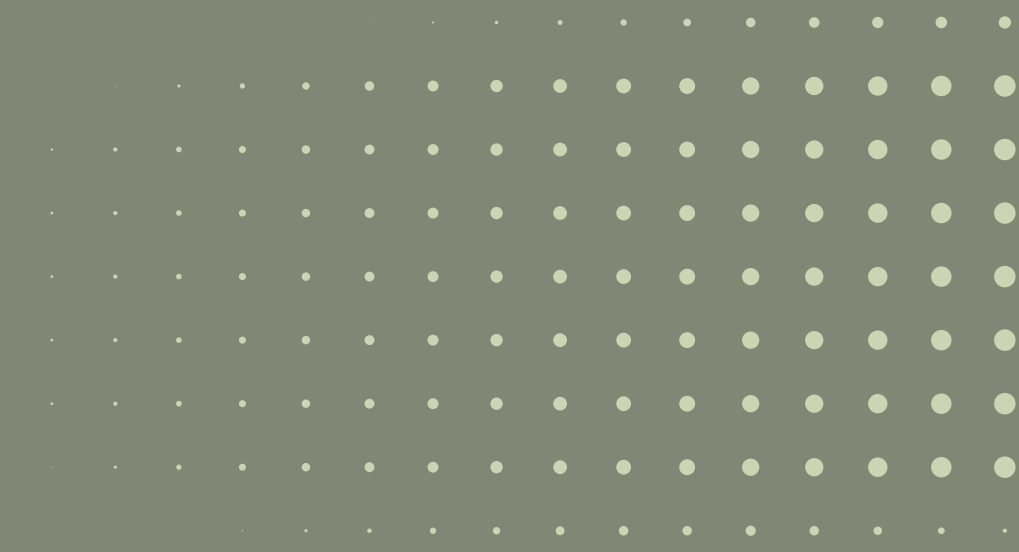


Behaviour ■ No breeding behaviour ● Territory calling ▲ Courtship feeding ◆ Incubation/Nesting ● Fledging





Detail from Kōwhaiwhai  
(2022) by Robin Slaw



**Movement allows populations to adapt and respond to changing environments.**

**Movement for forest birds in Aotearoa is restricted by habitat fragmentation.**



# The importance of connected habitats

## Structural connectivity

physical attributes of the landscape

## Functional connectivity

behavioural responses to different landscape  
attributes (Tischendorf & Fahrig, 2000, Baguette et al., 2013).



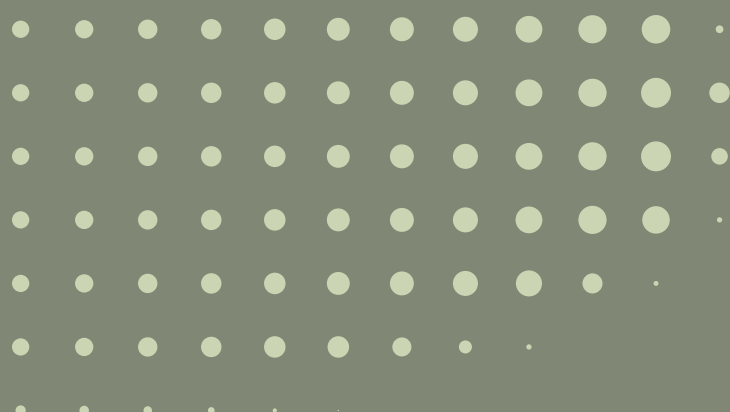
# When is dispersal 'effective?'

**Fenced ecosanctuaries act as 'arks' for predation sensitive species** (Burge et al., 2021).

**Spillover effect requirements:**

1. suitable habitat
2. habitat corridors
3. low predation

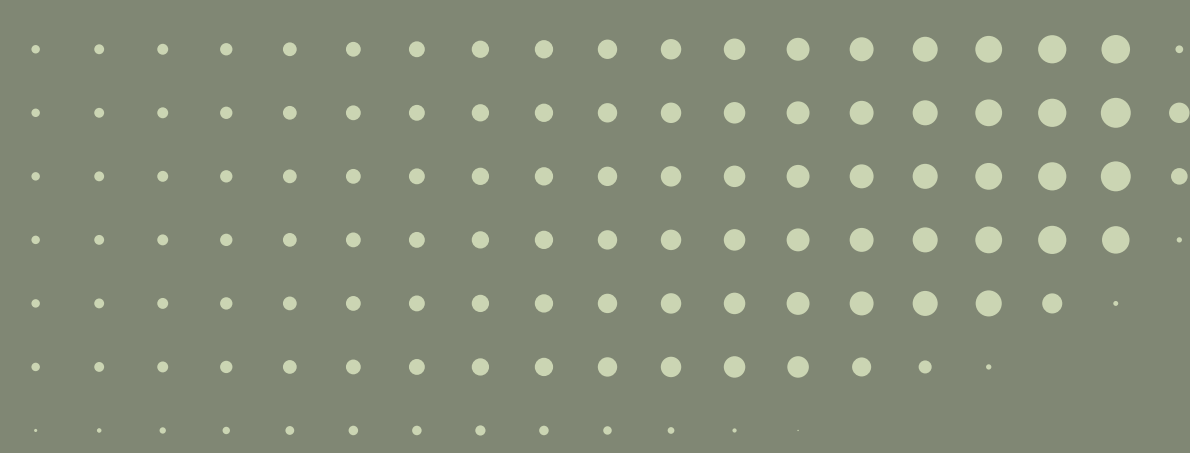




**'To my mind the robin, with his extreme tameness, is the most lovable of all our birds and it is most regrettable that not the slightest effort is being made by authorities to save the species from extinction'.**


**Lance Richdale, published in Otago Daily Times, (1941)**





**Species with low dispersal abilities rely on habitats with high connectivity in order to disperse effectively** (Burge et al., 2021; Innes et al., 2022).

**For populations inside ecosanctuaries, when they ‘spill-over’ the fence, are there habitats they can reach? are they appropriately connected, and actually suitable for living in?**





# PROJECTED OUTCOMES

Adapted from Pickerell (2020)

- **1. persistence of individuals at the same sites over multiple years**
- **2. an increase in the number of individuals and territories within specific sites**
- **3. new sites are colonised**

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Spillover indicators

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Orokonui Ecosanctuary

Orokonui Ecosanctuary

Dunedin City

**Legend**

- Survey Sites
- Halo Project Boundary (55,000ha)
- Inner Halo Boundary (3,900ha)
- Orokonui Ecosanctuary Boundary (307ha)





# SURVEY METHODS

Modified point counts - listening for male territorial breeding calls at 100m intervals, waiting for 2 minutes at each.

No lures (audio playback or food/bait)

Adapted from Pickerell, (2020). Halo Project Robin Survey 2018-2019.



# 2018



# 2019



# 2022





# OBSERVED OUTCOMES

● 1. persistence of individuals at the same sites over multiple years



● 2. an increase in the number of individuals and territories within specific sites



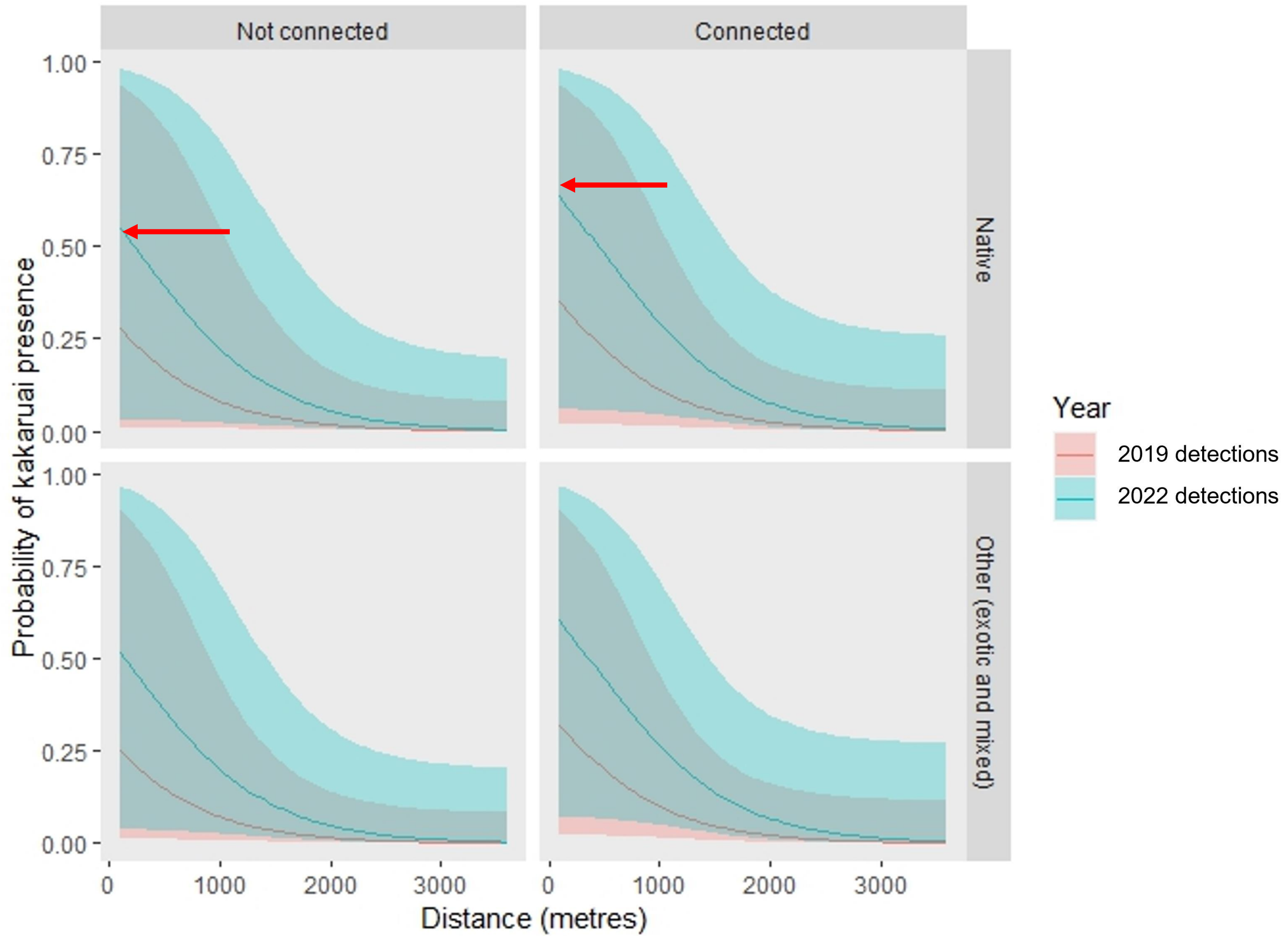
● 3. new sites are colonised



Spillover indicators

<b>Site</b>	<b>Habitat type</b>	<b>Functional connectivity</b>	<b>Distance from Orokonui (m)</b>
<b>Estuary Track</b>	<b>Other (fragmented native and plantation)</b>	<b>Yes</b>	<b>100</b>
<b>White Rd</b>	<b>Other (fragmented native and exotic)</b>	<b>Yes</b>	<b>1200</b>
<b>Mt Cargill Rd</b>	<b>Other (extensive native and plantation)</b>	<b>Yes</b>	<b>1300</b>
<b>Mihiwaka</b>	<b>Native</b>	<b>Yes</b>	<b>1300</b>
<b>Cedar Farm</b>	<b>Other (extensive plantation)</b>	<b>Yes</b>	<b>1400</b>
<b>Mihiwaka Station Rd</b>	<b>Native</b>	<b>No</b>	<b>1100</b>
<b>Osbourne</b>	<b>Other (fragmented native and exotic)</b>	<b>No</b>	<b>1400</b>
<b>Pūrākaunui Inlet</b>	<b>Other (fragmented native and exotic)</b>	<b>No</b>	<b>2000</b>
<b>Deborah Bay</b>	<b>Other (fragmented native and exotic forest and scrub)</b>	<b>Yes</b>	<b>2100</b>
<b>Reynoldstown Rd</b>	<b>Other (fragmented native and exotic forest and scrub)</b>	<b>No</b>	<b>3000</b>
<b>Grahams Bush</b>	<b>Native</b>	<b>Yes</b>	<b>3000</b>

Dispersal modelling

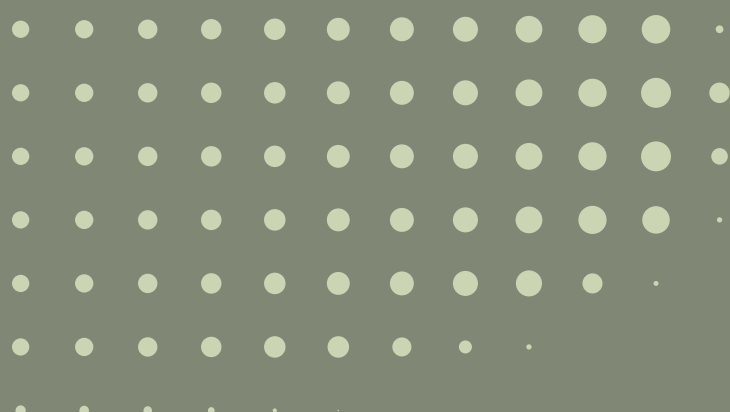


In 2018, 307 active traps had caught 270 pests inside the Inner Halo.

By the following year, the project area expanded, and 790 traps had caught 1 807 pests.

By 2023, 3 858 traps had caught 24 926 pests.





**'Sometimes I like to dream, tis but a vain imagining - that the exceeding trustfulness of the robin may have been evolved during some long gone golden age when mankind really loved his birds.'**

**H. Guthrie-Smith, (1914).**



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Archival material

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For ecosanctuaries to provide landscape-scale biodiversity benefits, they must be connected to other suitable habitats.

Individuals may select for less than ideal habitats over more suitable ones if they are easier to reach.



# IMPLICATIONS



The role of ecosanctuaries

# ACKNOWLEDGEMENTS

- Landscape Connections Trust  
(The Halo Project)
- Orokonui Knowledge Group &  
Ecosanctuary Staff
- Kāti Huirapa Rūnaka ki Puketeraki
- Te Rūnanga o Ōtakou
- Zohara Rafi
- Georgina Pickerell





# NGĀ MIHI NUI

