



More Birds in the Bush

An introduction to the webinar
and the research programme


Neil Fitzgerald
photography



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Landcare Research



Thanks!



This webinar

1. Overview of the programme
2. Highlights from the Lake Alabaster experiment
3. Forest ship rat dynamics and responses to aerial management
4. Where is this all heading?
(applications)

Your questions

The screenshot shows the Manaaki Whenua Landcare Research website. The header includes navigation links for Publications, News, Events, About us, and Contact us. Below the header are links for Discover our research, Partner with us, Tools & resources, and a Search button. The breadcrumb trail reads: Home / ... / Species & ecosystem conservation / More Birds in the Bush. The main heading is "Mid programme update". A scroll-to-top button is visible. A navigation bar contains links for Overview, Session 1 through Session 7, and Unanswered questions. The main text states: "The more birds in the bush MBIE-funded programme has passed its midway point. This webinar event fed back and discussed the research we've completed so far, and initiated collaborations to apply what we have learned to management over the next two years." It further explains that presentations were given over two days and broken into eight sessions, with the first seven covering themes like resources in time and space, predators and management, and forest bird outcomes. Below the text is a section for "Session 1" titled "Introduction". A video player thumbnail is shown with the title "More Birds in the Bush - Introduction Webinar Programme" and the subtitle "Introduction - Susan Walker". The thumbnail also features a play button, a share icon, and the Manaaki Whenua Landcare Research logo. A "Watch on YouTube" link is present at the bottom left of the thumbnail.

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<https://www.landcareresearch.co.nz/.../more-birds-in-the-bush/mid-programme-update/>

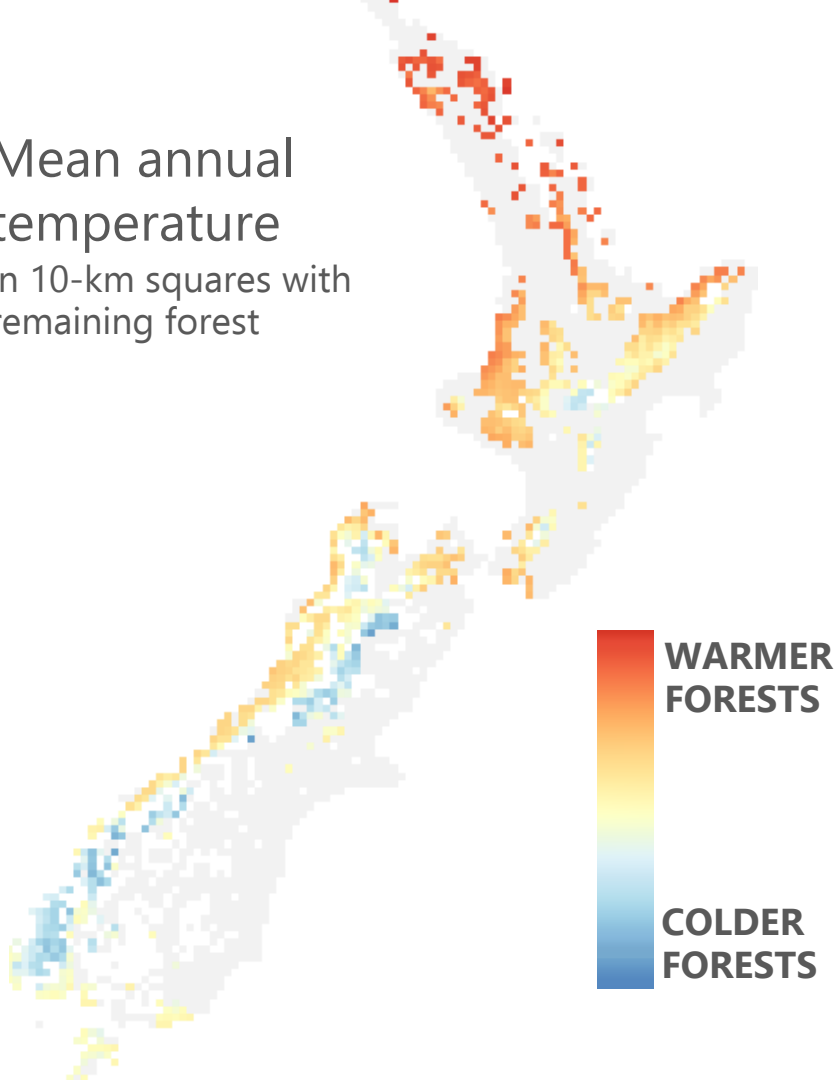


Research aim

To create the ability to predict threats
and forest bird
bird responses across all different
forest types

So NZ can achieve
more birds in the bush

Mean annual
temperature
in 10-km squares with
remaining forest



Temperature



The coldest
beech forests
of the south
are 'simple'



Warm forests
are richer and more complex

They should be more vibrant

more species, more food,
= more birds in the bush?



Cold forests are few



Temperature is
increasing



Warmth favours
ship rats



Food drivers of
ship rat *and* bird
populations
across forests

**1. Resources in
time and space**



How effective is our
management?

**2. Predators and
management in time and
space**



How do birds in the bush
respond to
food,
predators,
and our management?

3. Forest bird outcomes



**4. Applications
to management
(case studies)**



Highlights from the
Lake Alabaster experiment

What limits ship rats in cold forests?



Jo Carpenter, James Griffiths, John Innes, Dean Anderson, Adrian Monks

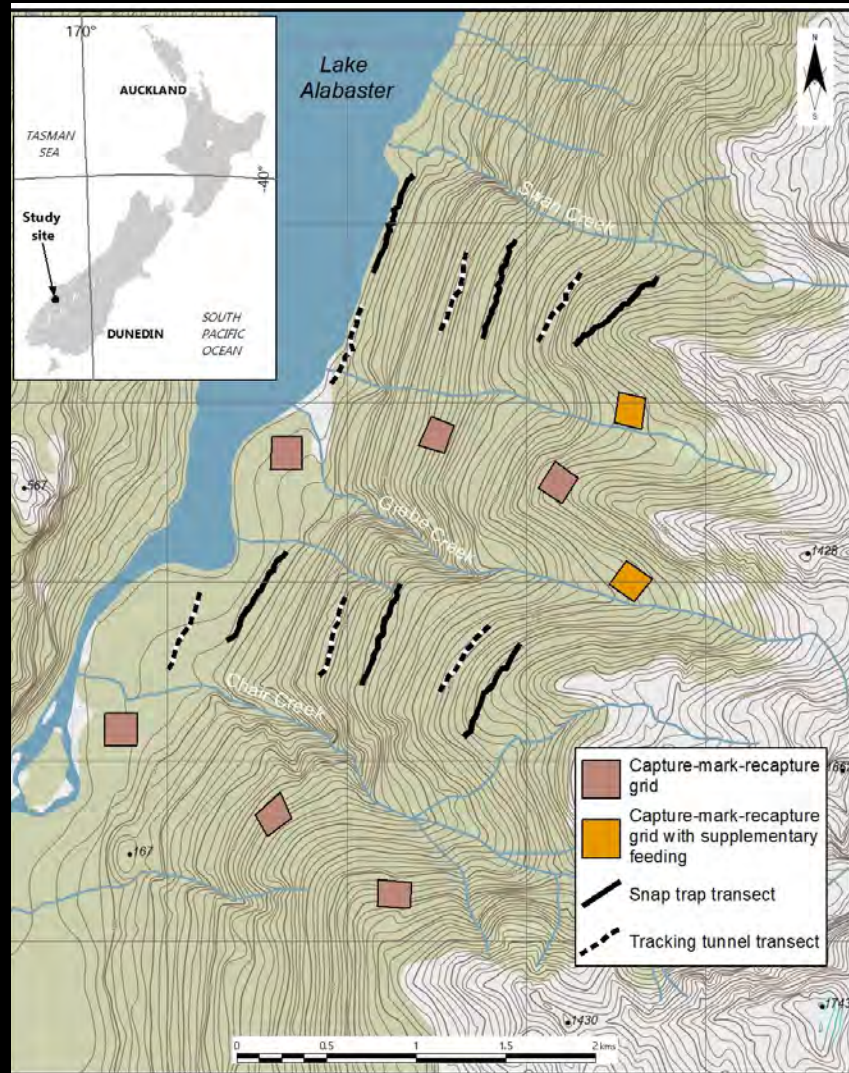
Direct temperature limitation?

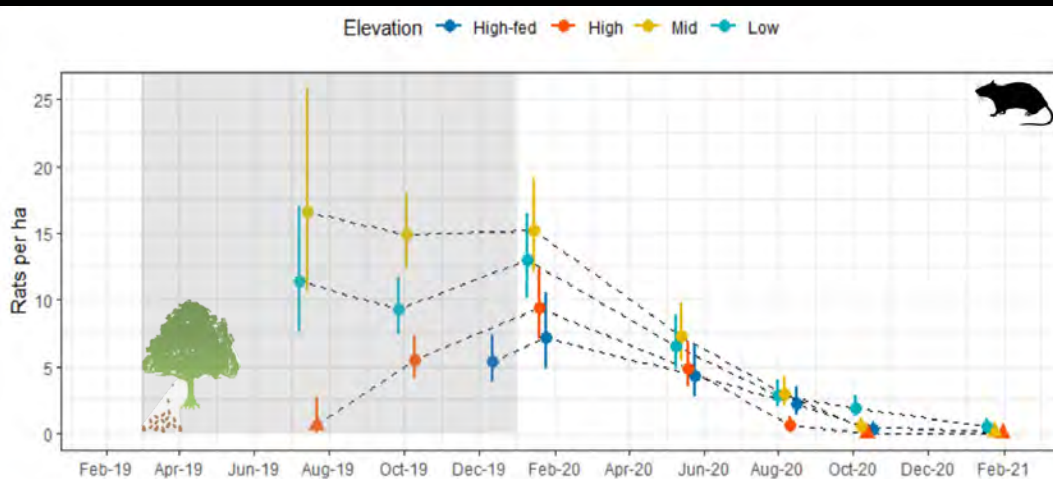


Food limitation?

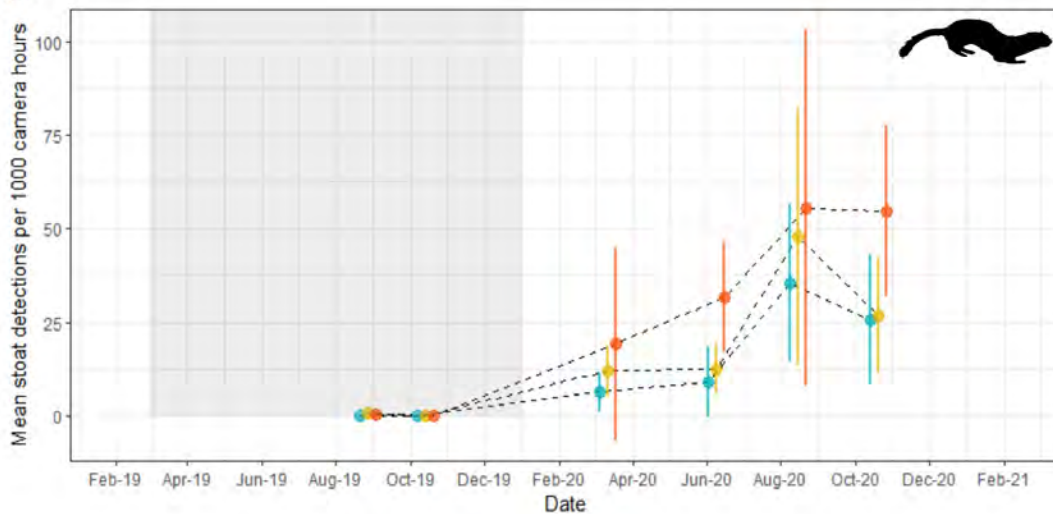
Lake Alabaster, Fiordland

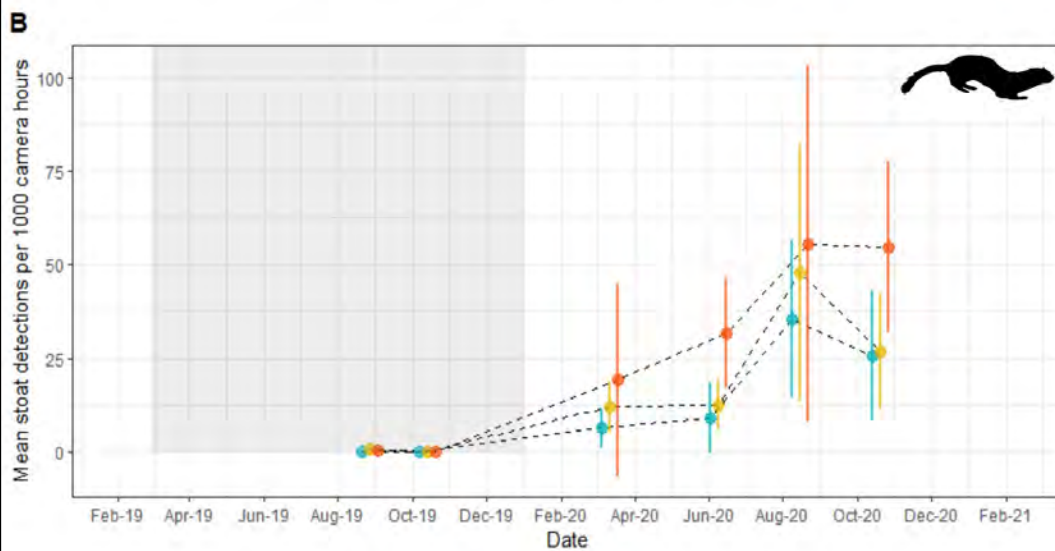
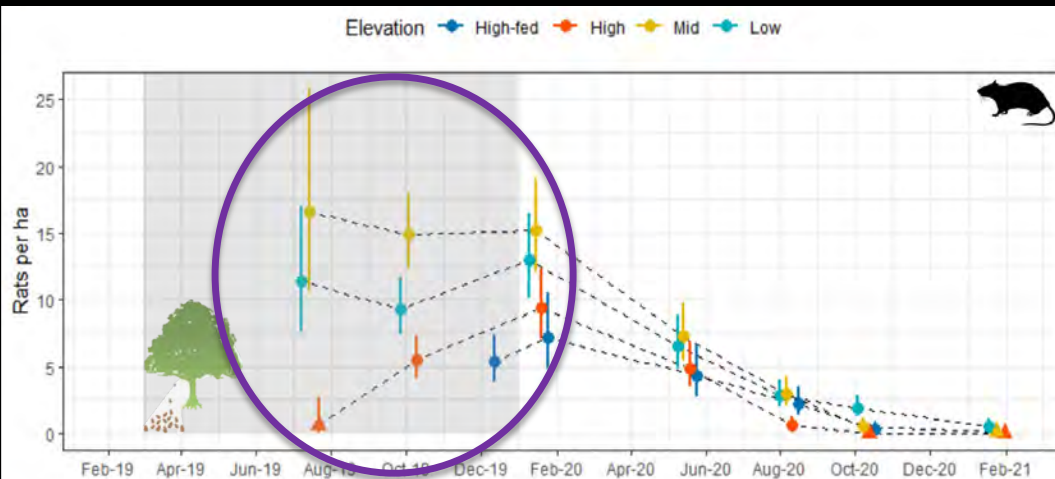
- Large beech mast autumn 2019.
- Study from July 2019 – January 2021.
- Quarterly ship rat density estimation (CMR) from 20 – 900 m asl.
- Supplementary food to two high elevation grids (January 2020 – September 2020).
- Indexed stoats, seeds and invertebrates.

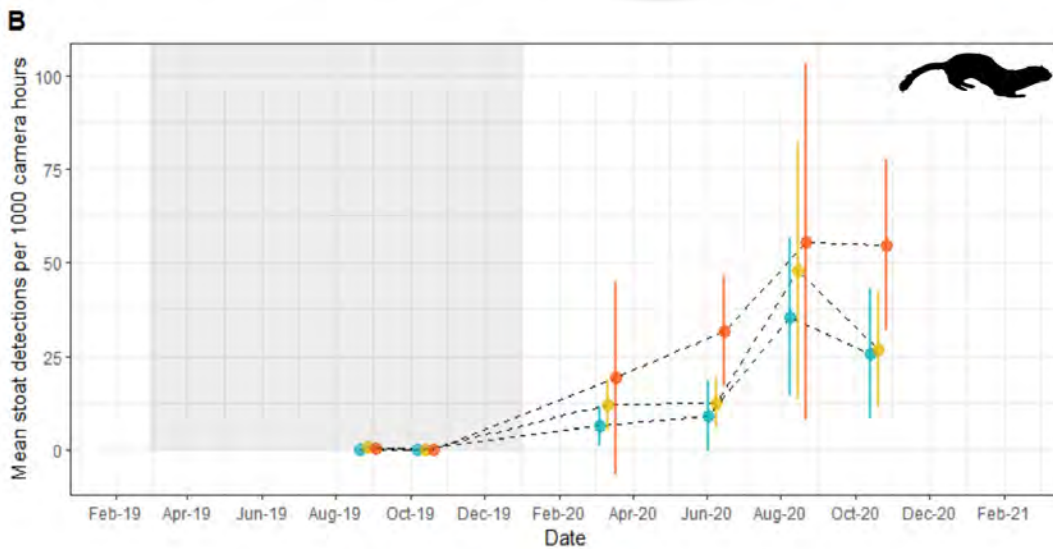
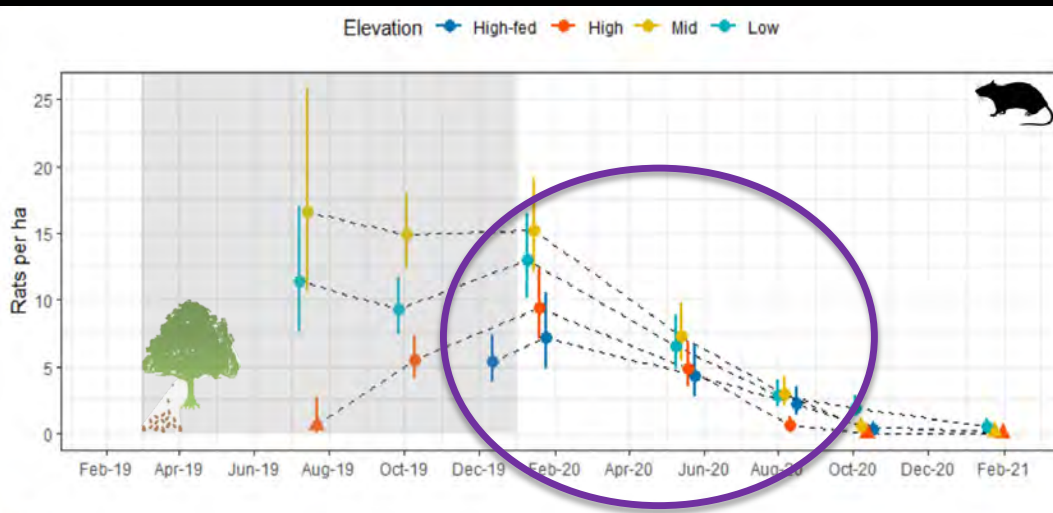


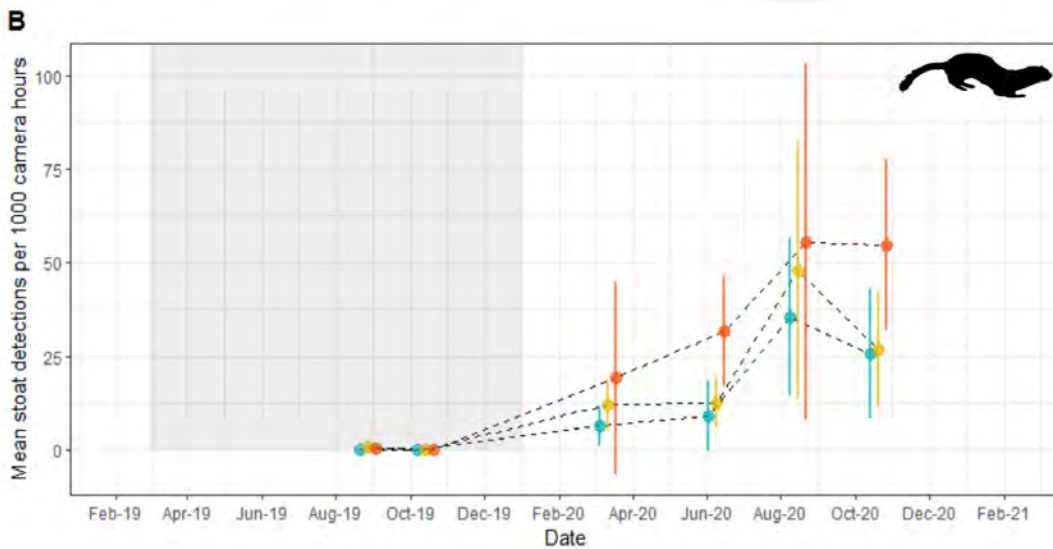
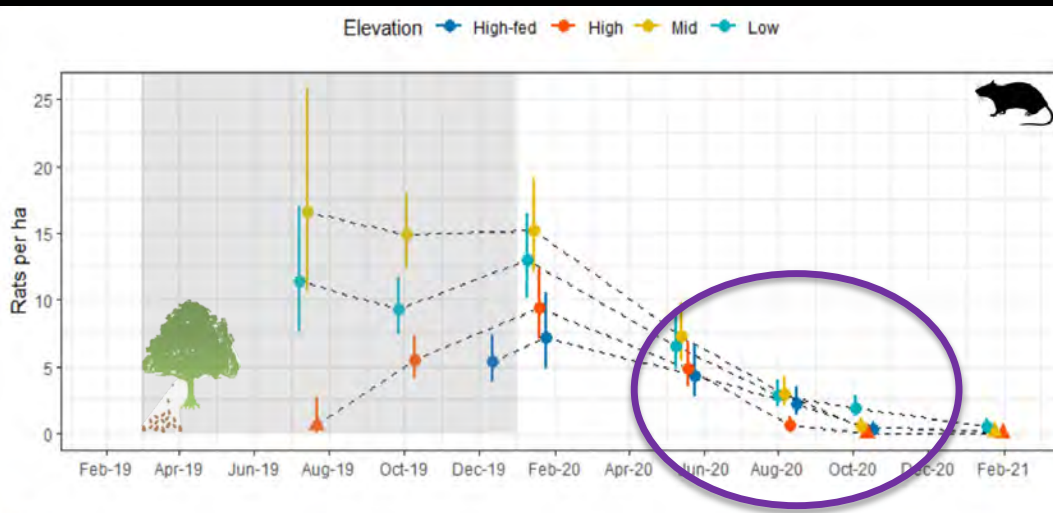


B











Summary – Alabaster study

- Ship rat irruption at high elevation contingent on immigration.
 - 1.8 rats ha⁻¹ without (modelled).
 - 6 to 10 rats ha⁻¹ observed.
- Decline caused by food limitation and hastened by stoat predation.
- Direct impacts of temperature trumped by baseline food.



Ship rat dynamics and
responses to aerial management

Our questions

How are ship rat tracking rates affected by

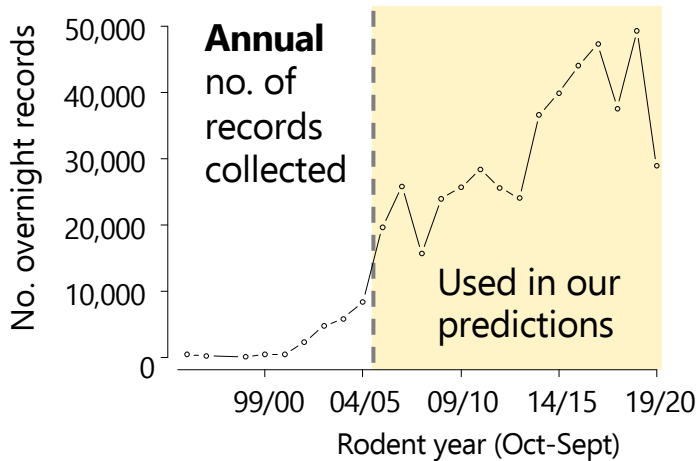
1. Aerial management and ecosystem productivity?
2. Management regimes and control cycles?

Important to predict forest bird outcomes of management



Data

National database of overnight rodent tracking records



Overnight tracking

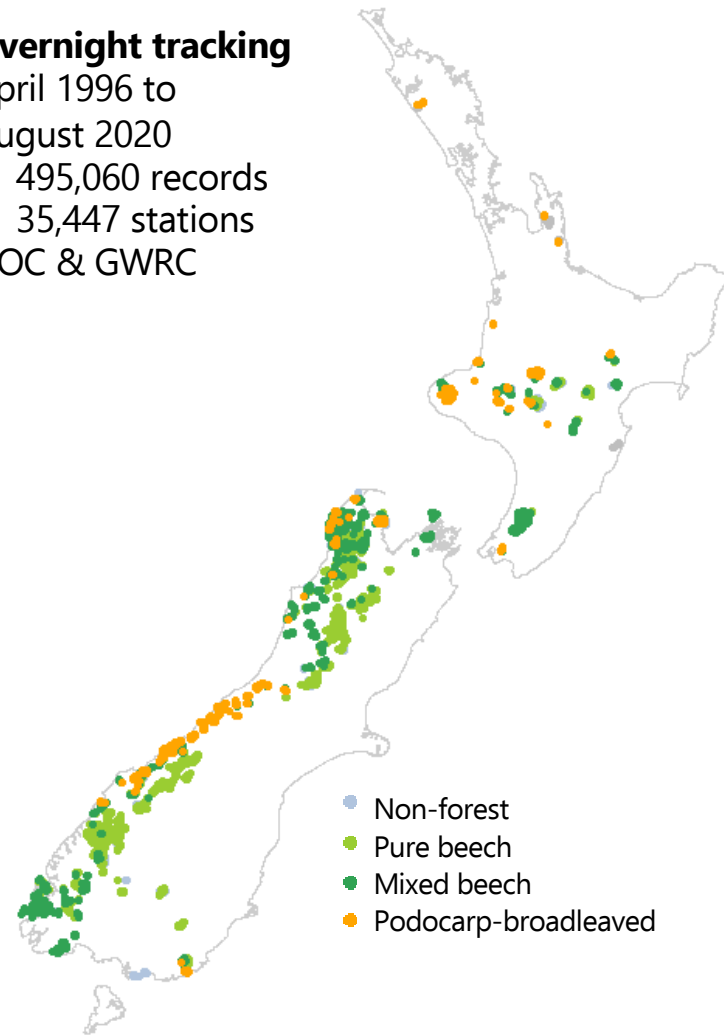
April 1996 to

August 2020

- 495,060 records

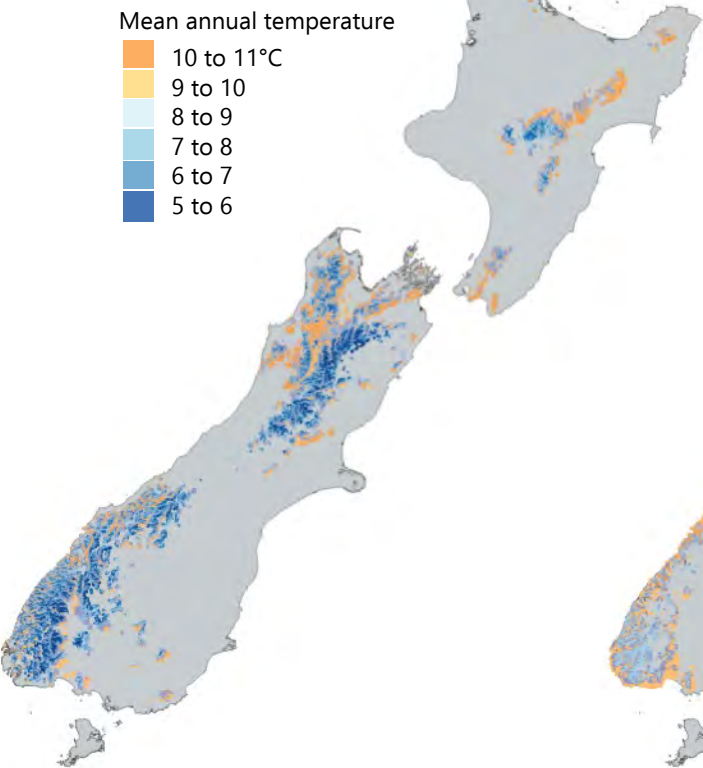
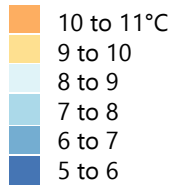
- 35,447 stations

DOC & GWRC



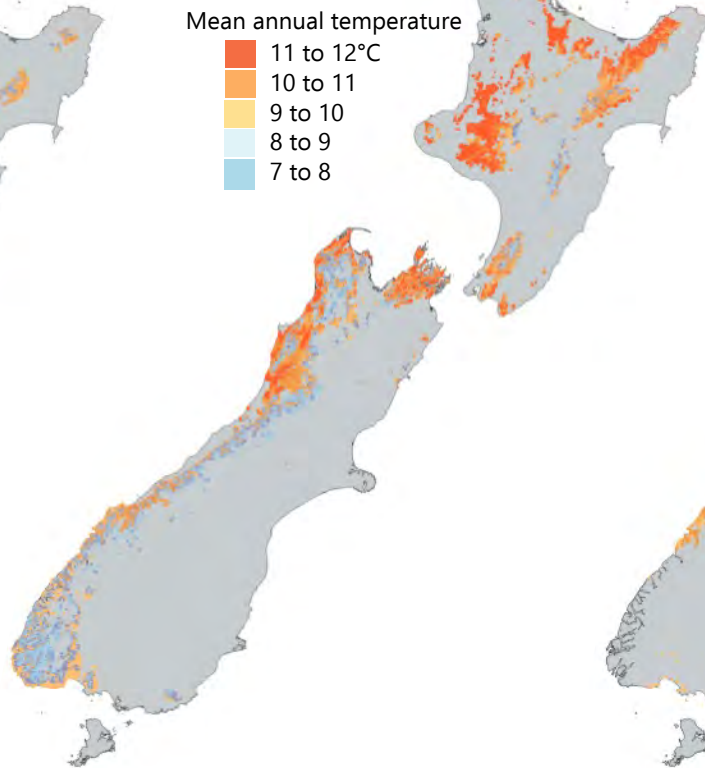
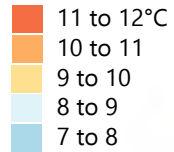
Pure beech

Mean annual temperature



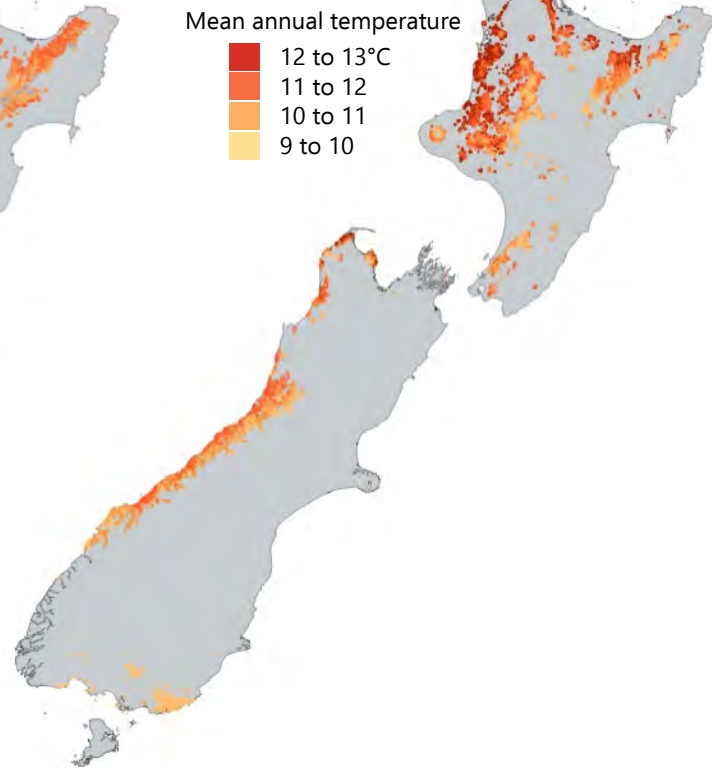
Mixed beech

Mean annual temperature



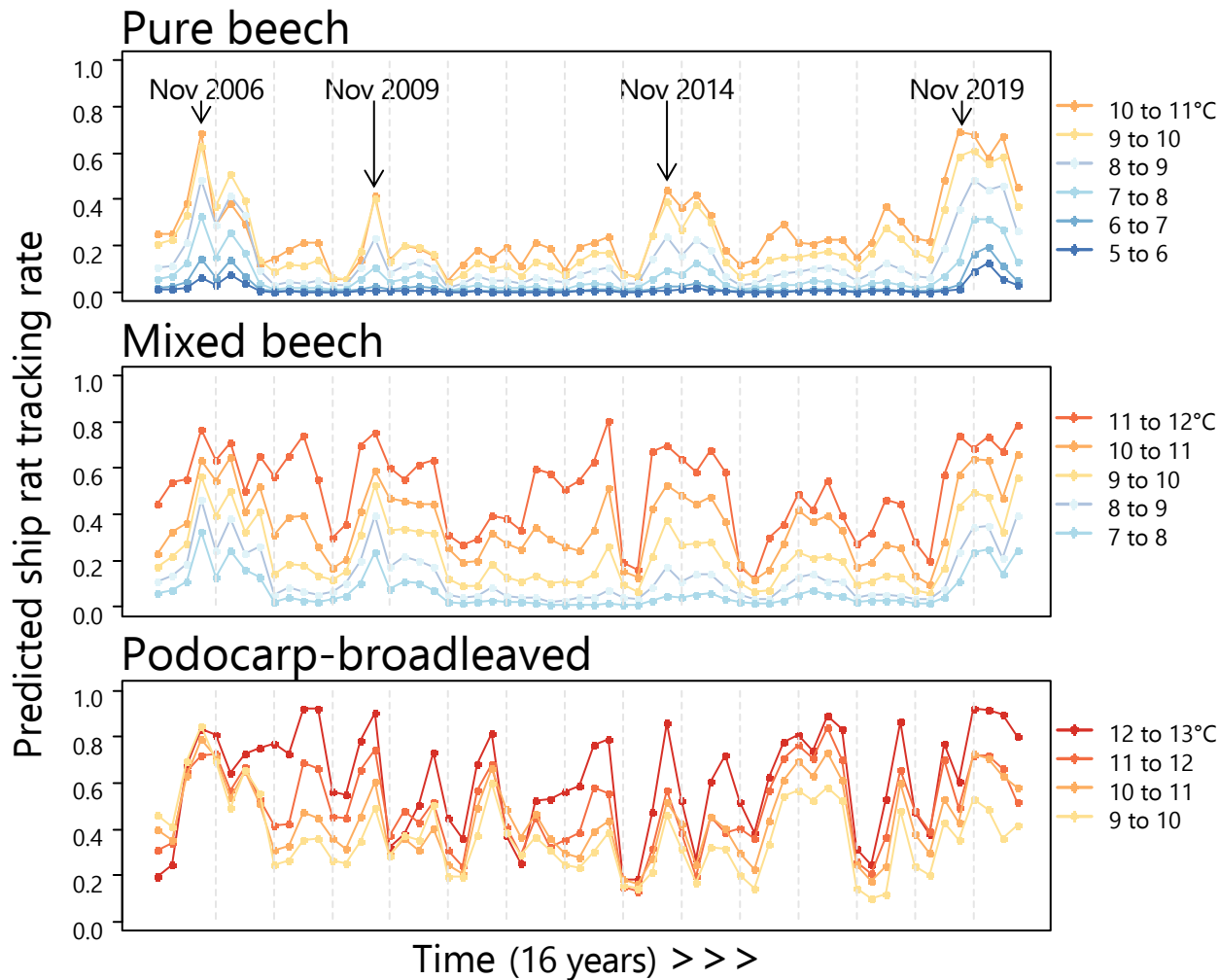
Podocarp- broadleaf

Mean annual temperature



Unmanaged ship rat tracking rates

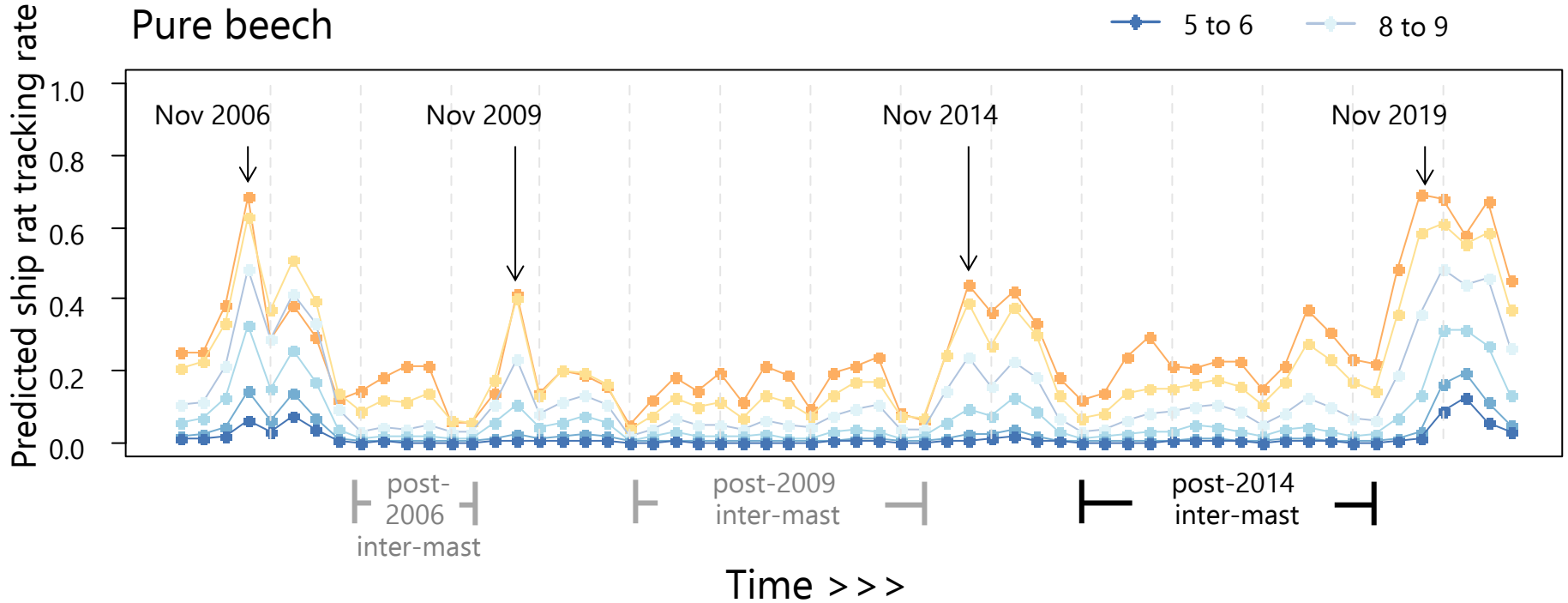
medians of
predicted



Rising ship rat population baselines?

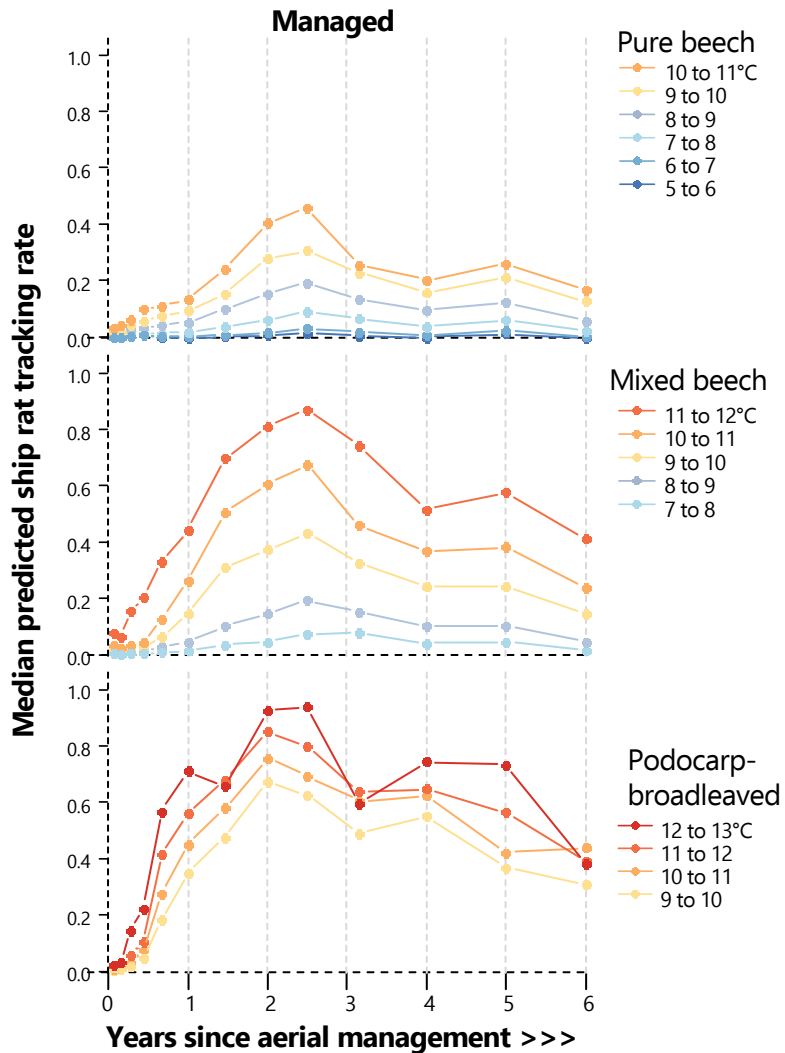


Pure beech



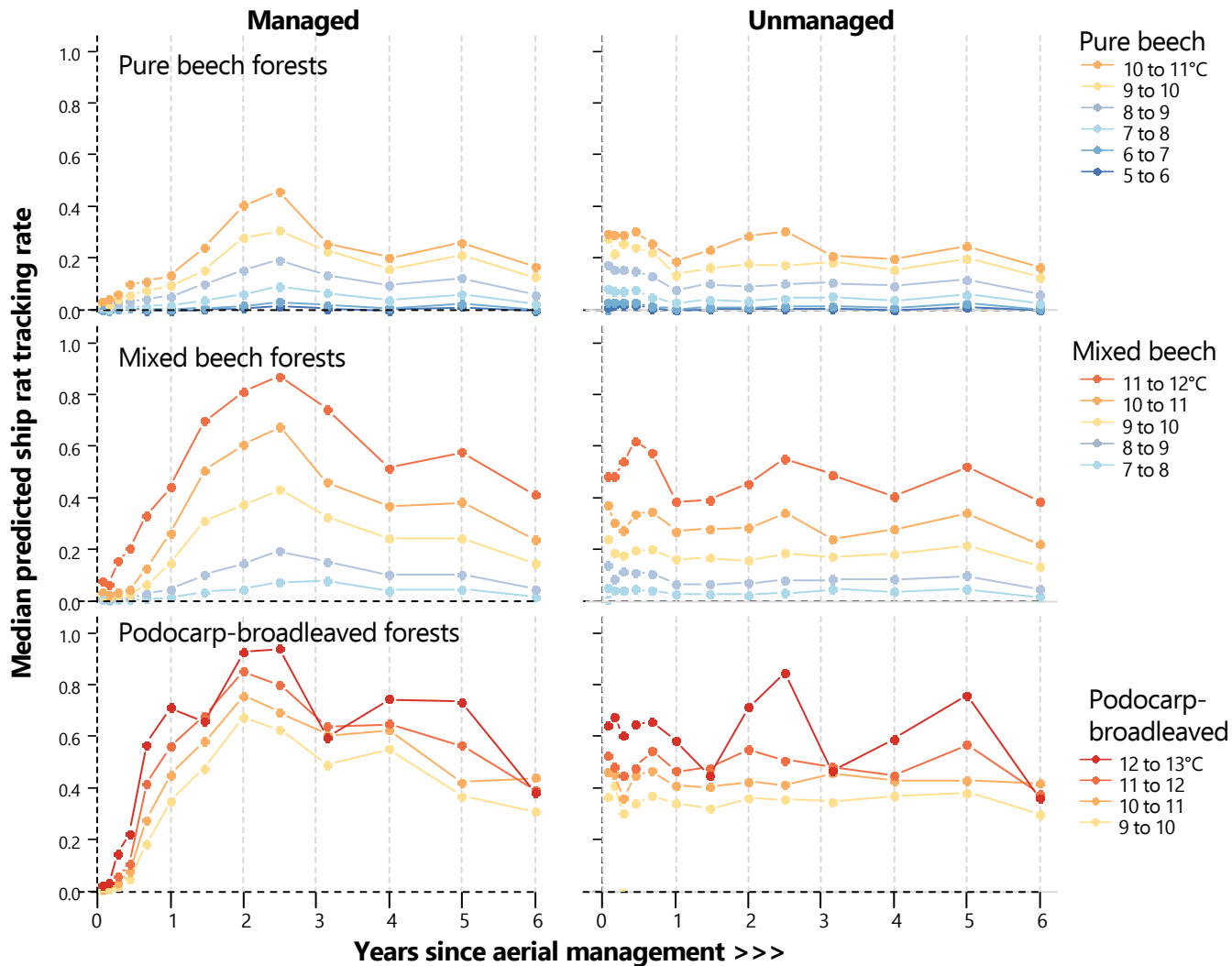
Managed ship rat tracking rates

medians of
predicted
2005–2020



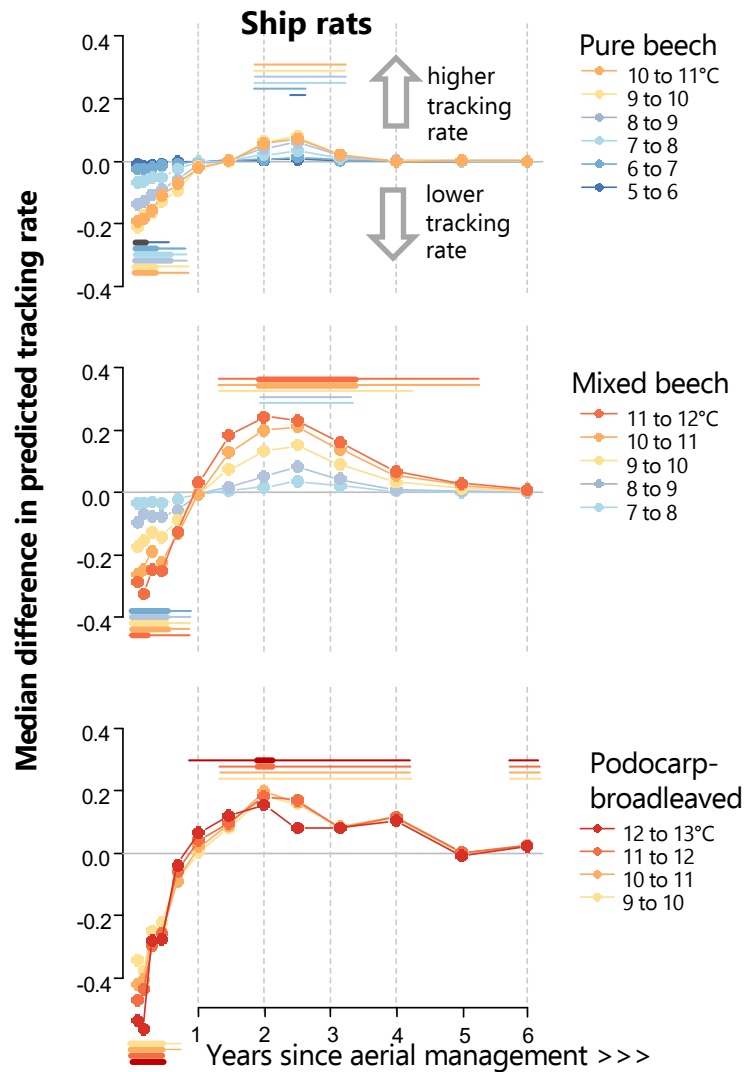
Managed vs unmanaged ship rat tracking rates

medians of
predicted
2005–2020



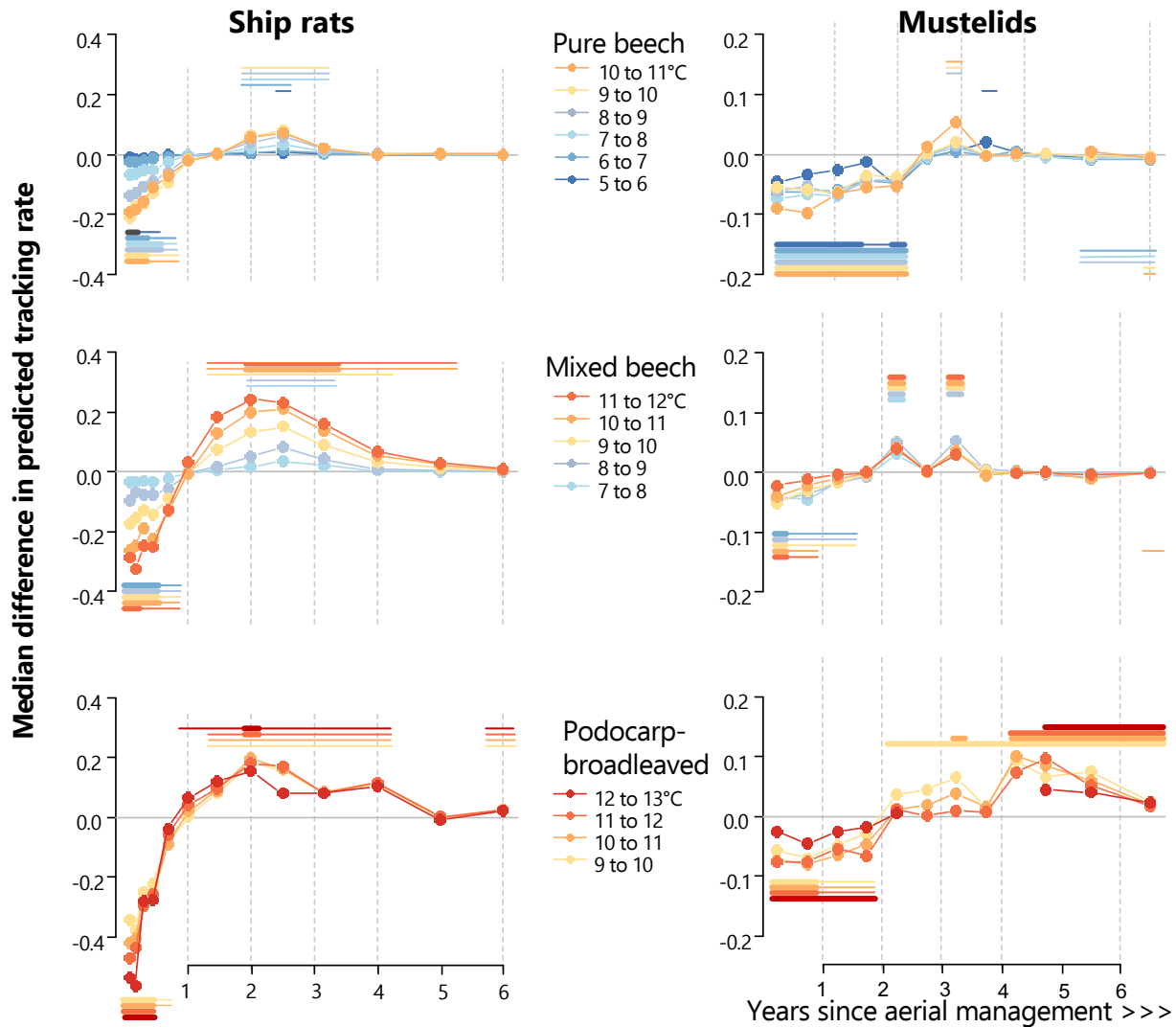
Difference made by aerial management

medians of predicted 2005–2020



Difference made to mustelid tracking rates

medians of predicted 2005–2020





Where is this
all heading?

Future directions – spatially-explicit management prescriptions for bird outcomes

- Pest management
 - When, where and how?
- Management under current and future climates.
- Outcomes of harvest
 - Translocation
 - Cultural



When
best to
intervene
?



How? The broad-scale model



Management



Food
productivity



Survival
Fecundity



Rat
dynamics



More
birds in
the bush





More detail available from:

- <https://www.landcareresearch.co.nz/discover-our-research/biodiversity/species-and-ecosystem-conservation/more-birds-in-the-bush/mid-programme-update/>
- Multiple presentations about:
 - Roles of predation and resources in forest bird declines and limitation
 - Causes and consequences for ship rats of variation in food resources
 - Effectiveness and outcomes of aerial pest management
 - Factors affecting forest bird translocation success
 - Practitioner perspectives on research needs.

