

The Aotea Bird Count, 2021 edition

George Perry

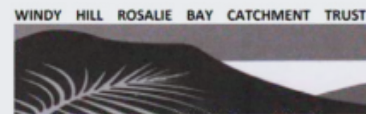
University of Auckland | Waipapa Taumata Rau



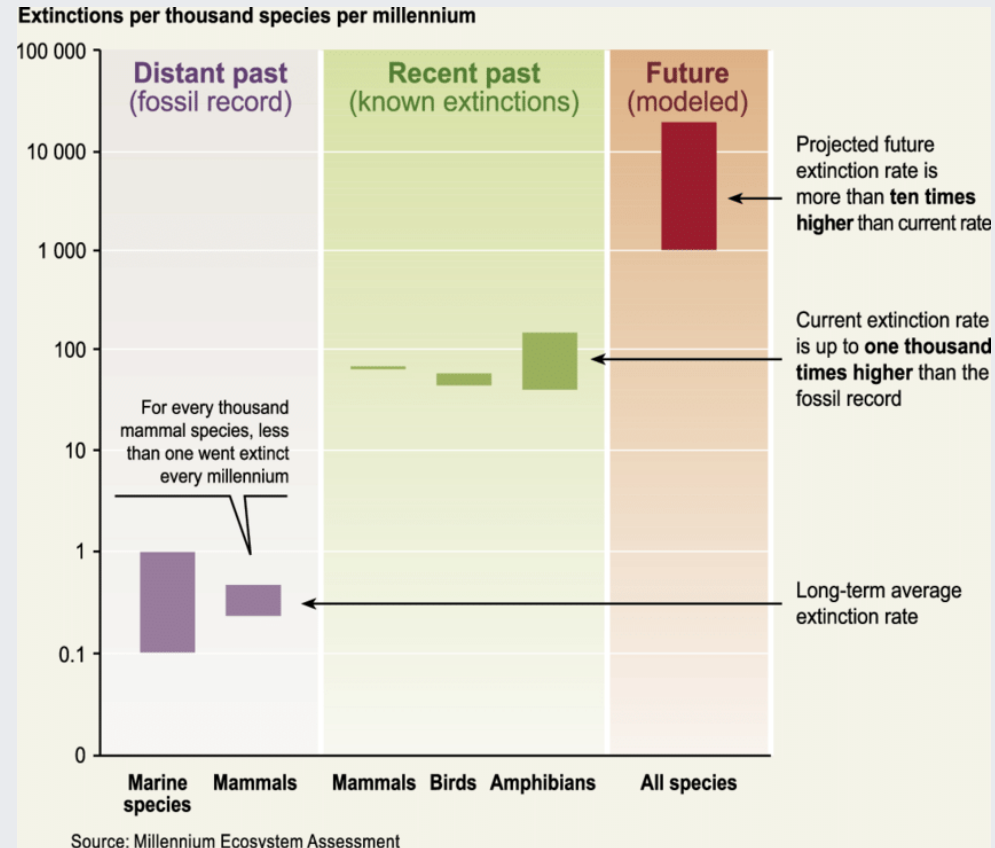
Acknowledgments



- Big thanks to all the volunteers!
- Support of members of Ngāti Rehua Ngātiwai ki Aotea, the Department of Conservation – Te Papa Atawhai, Windy Hill Sanctuary, Glenfern Sanctuary, OME, Ecology Vision, and the Okiwi Community Ecology Project
- Thanks also to the hard work from the 'technical team', Thomas Daly, Kate Waterhouse, Judy Gilbert, John Ogden, Jacqueline Beggs and Annamarie Clough for organising the Aotea Bird Count
- Funding of the report from the Auckland Council and support for their staff



Edge of a mass extinction?



10-30% of mammal, bird, and amphibian species threatened with extinction

750 years of decline in Aotearoa-NZ



Humans



130 species of 'land' birds prior to human arrival in NZ, of which nearly 50% are now extinct

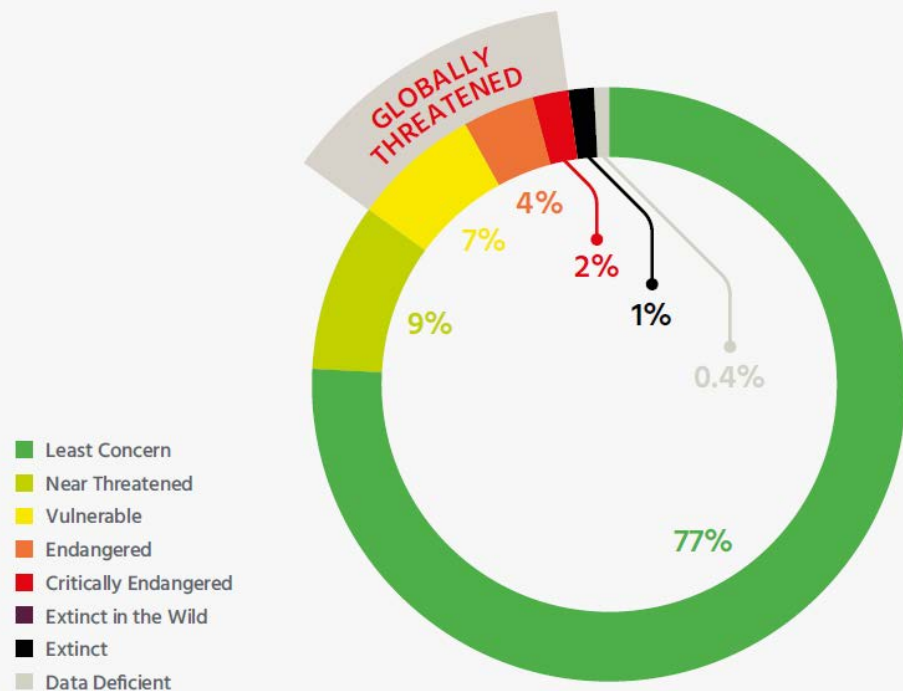


Possible contribution

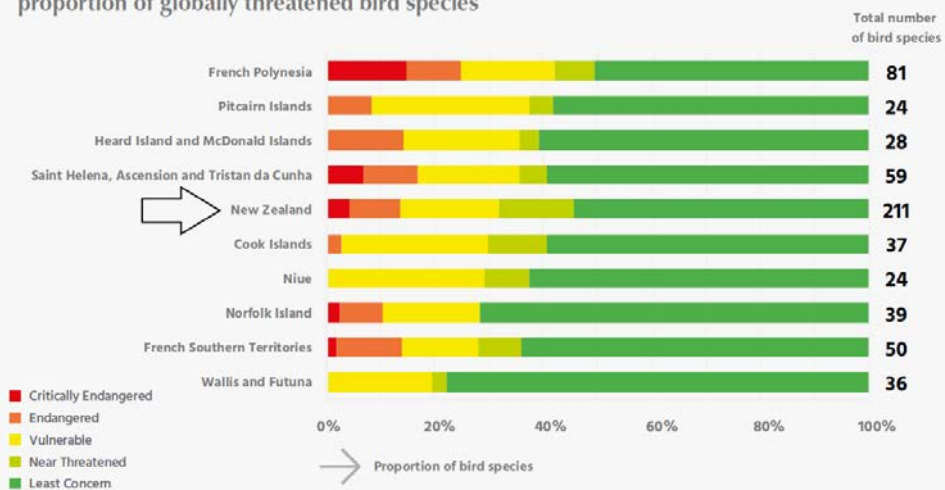
Certain contribution

From: Tennyson & Martin. 2006. *Extinct Birds of New Zealand*

IUCN Red List Categories for birds



Ten countries/territories with the greatest proportion of globally threatened bird species



Data from State of the World's Birds 2022

Aotea has not been immune



- Koreke/New Zealand quail
- Tūturuatu/shore plover
- Hihi / stitchbird
- NI Kōkako
- Saddleback / tiēke
- Pīpipi / brown creeper
- Pōpokatea / whitehead
- Titipounamu / rifleman
- Kākāriki / yellow-crowned parakeet
- Black-bellied storm petrel
- White-headed petrel
- Kārearea / NZ falcon
- Korimako / bellbird
- Miromiro / tomtit
- Pāteke / brown teal

ART. XII.—*Notes on the Birds of the Great Barrier Island.* By Captain F. W. HUTTON, F.G.S.

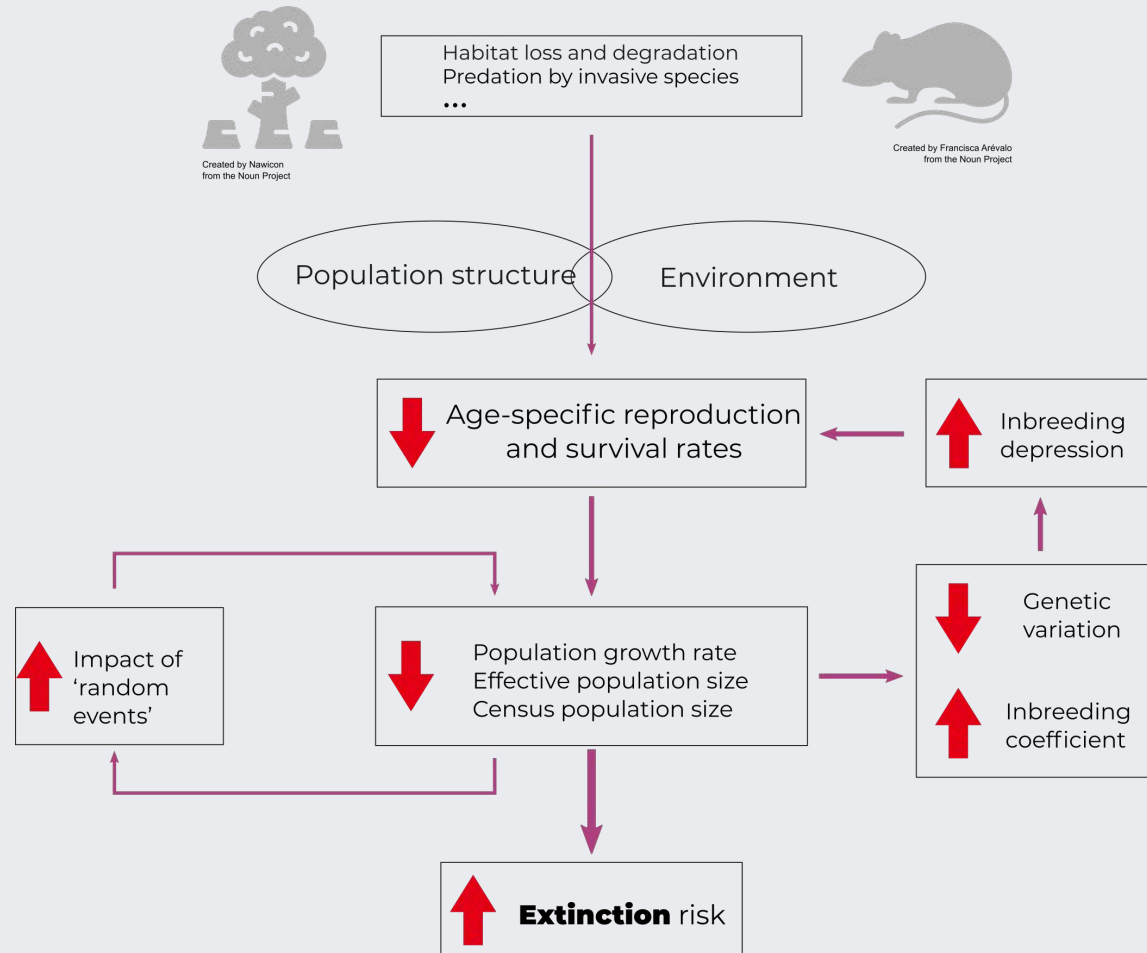
[Read before the Auckland Institute, July 6, 1868.]

HAVING spent two months, this summer, in exploring the Great Barrier Island, I am enabled to lay before the Society, what I consider to be a tolerably complete list of the birds found there.

I have given the English names of those birds that I know to possess one, but many, of course, are known by their scientific names only. The native names were obtained from Maories on the Island.

- * 1. *Hieracidea Novæ Zelandiæ.* Sparrow-Hawk.
- * 2. *Circus Gouldi.* Hawk. Common.
- * 3. *Athene Novæ Zelandiæ.* More-Pork. Heruru. Kou-kou.
4. *Halcyon vagans.* King-fisher.
- * 5. *Prothemadera Novæ Zelandiæ.* Tui. Very abundant.
- * 6. *Pogonornis cincta.* Ihi. Not uncommon.
- * 7. *Anthornis melanura.* Bell-bird. Korimoko. Abundant.
- * 8. *Acanthisitta chloris.* Miru-miru. At Harataonga.
- * 9. *Mohoua albicilla.* Popokotea. Very common.

The problems of being rare



Citizen science



scientific work undertaken by members of the general public, often in collaboration with or under the direction of professional scientists and scientific institutions. - OED (entered in 2014)



Citizen science - how 'good' is it?



While scientists are often skeptical of the ability of unpaid volunteers to produce accurate datasets, a growing body of publications clearly shows that diverse types of citizen-science projects can produce data with accuracy equal to or surpassing that of professionals.

[Kosmala et al. 2020. Ecosphere](#)



Supports broad-scale studies

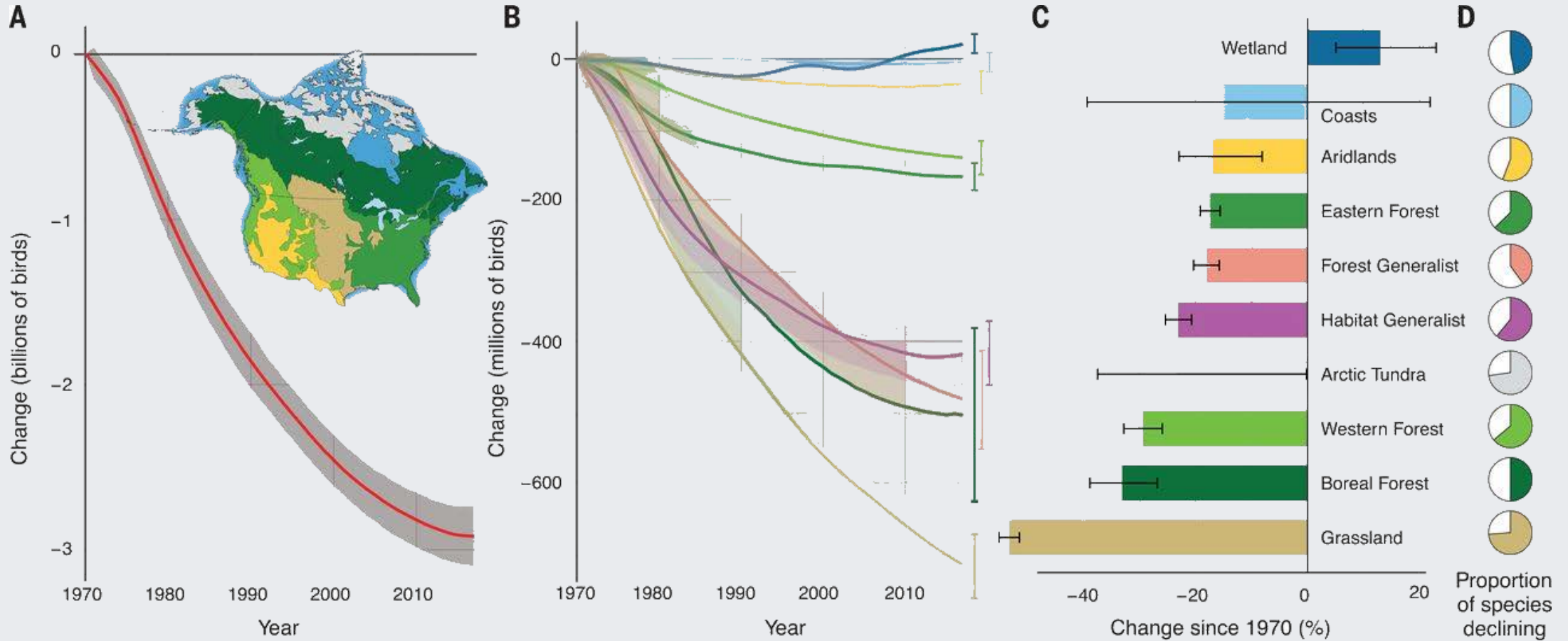
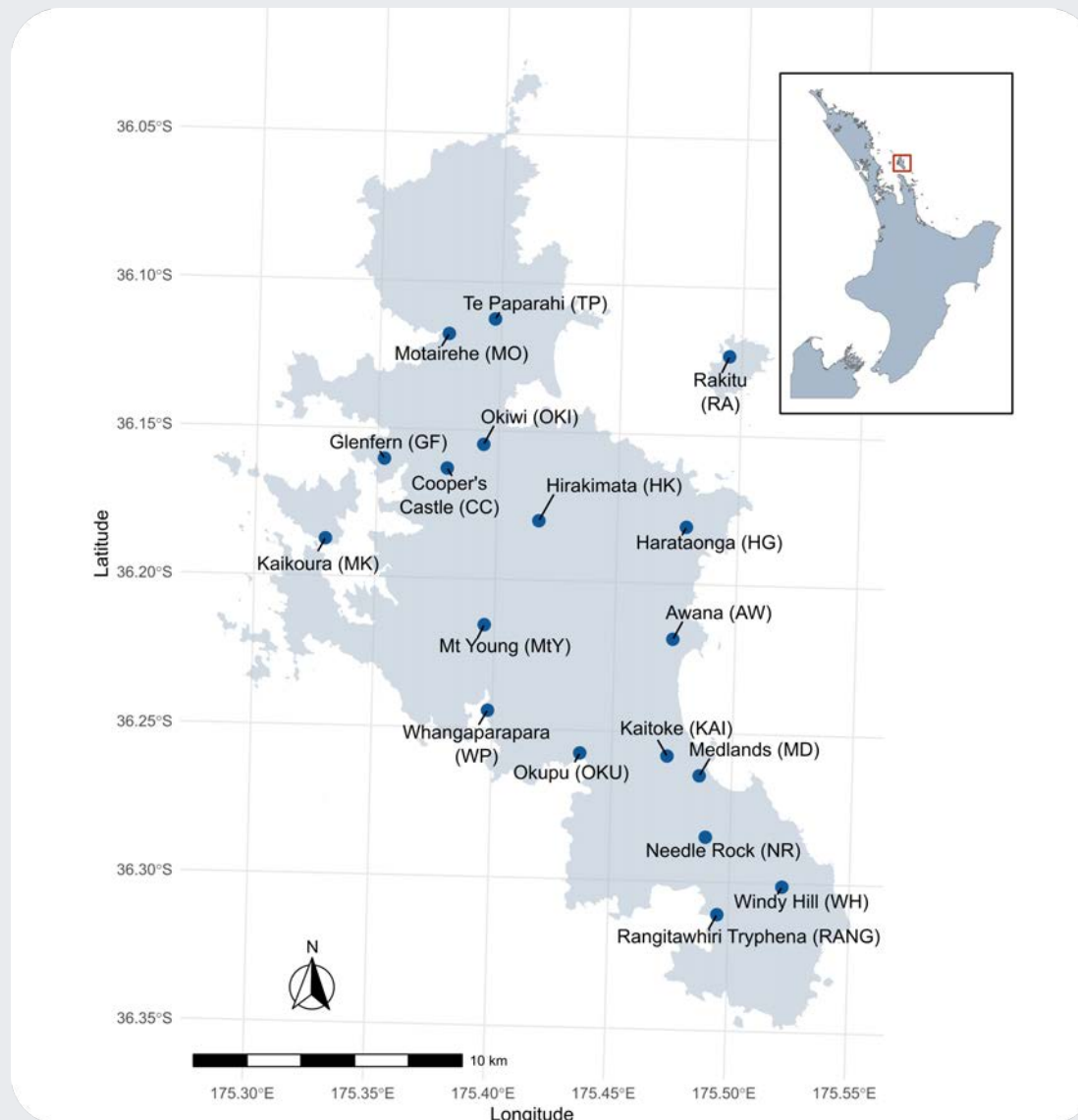


Image: Rosenberg et al. 2019. *Science*

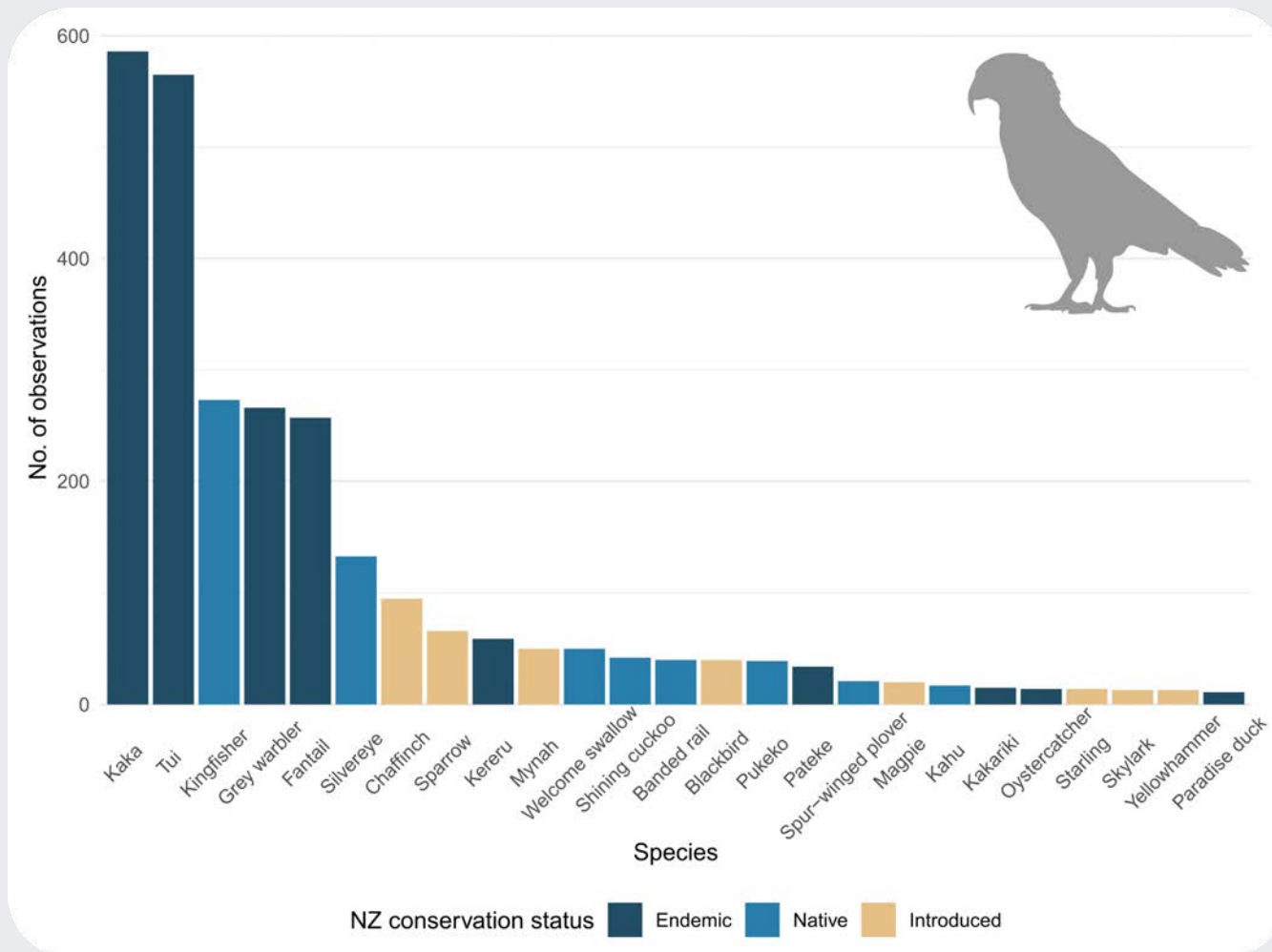
Where?

Surveyed 18 sites in 2021

Most the same as in previous years, but some additions (Hirakimata)



Top 25 species



What does this mean?



- Need to bear in mind that observation and abundance are not the same
- Some species are inherently more obvious ('detectable') than others!

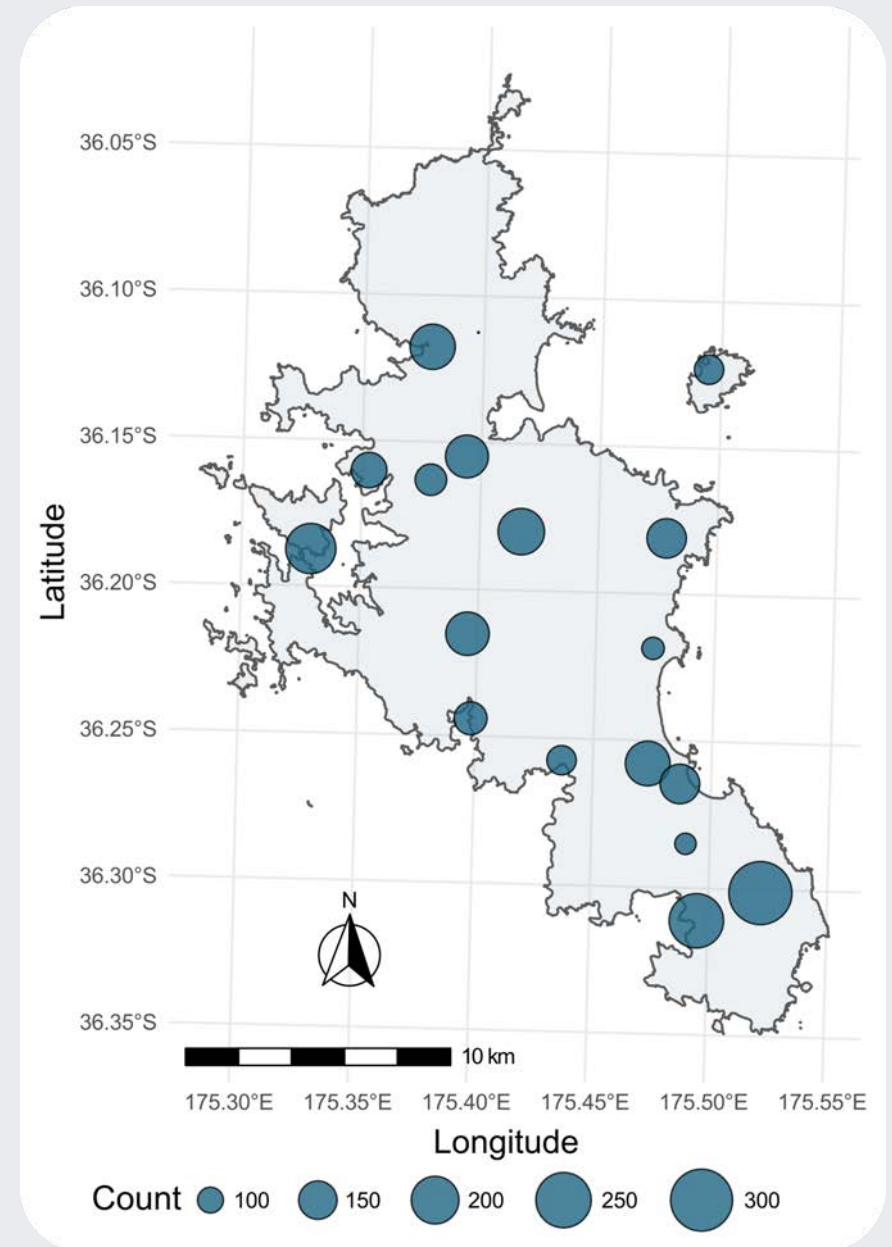


Image credits: Guy Macindoe

Patterns of abundance

Most observations at Windy Hill (n = 309), then Rangitawhiri Tryphena and Kaikoura (244 and 216)

Average no. of observations per site = 159 [62, 309]

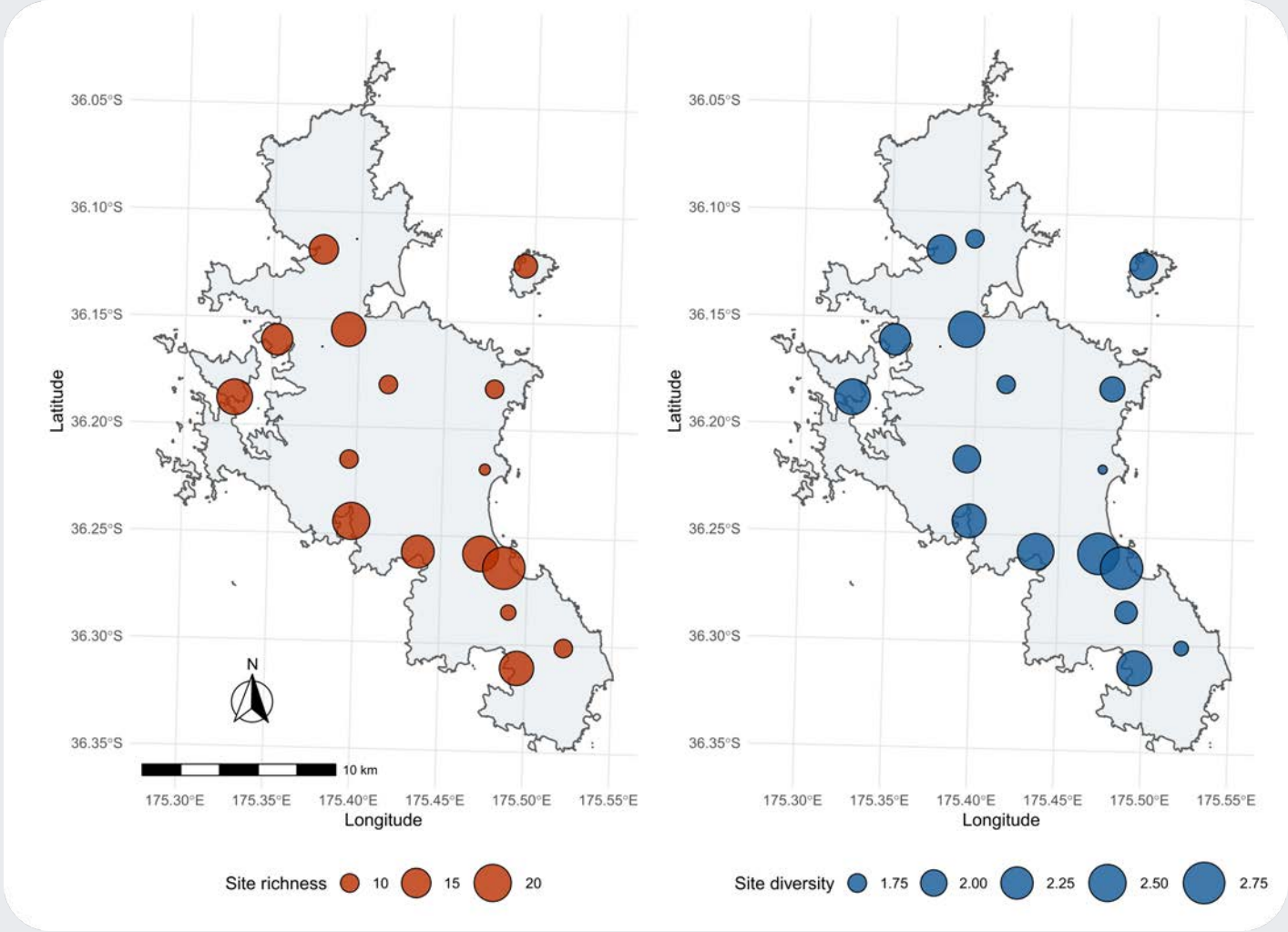


Richness & diversity

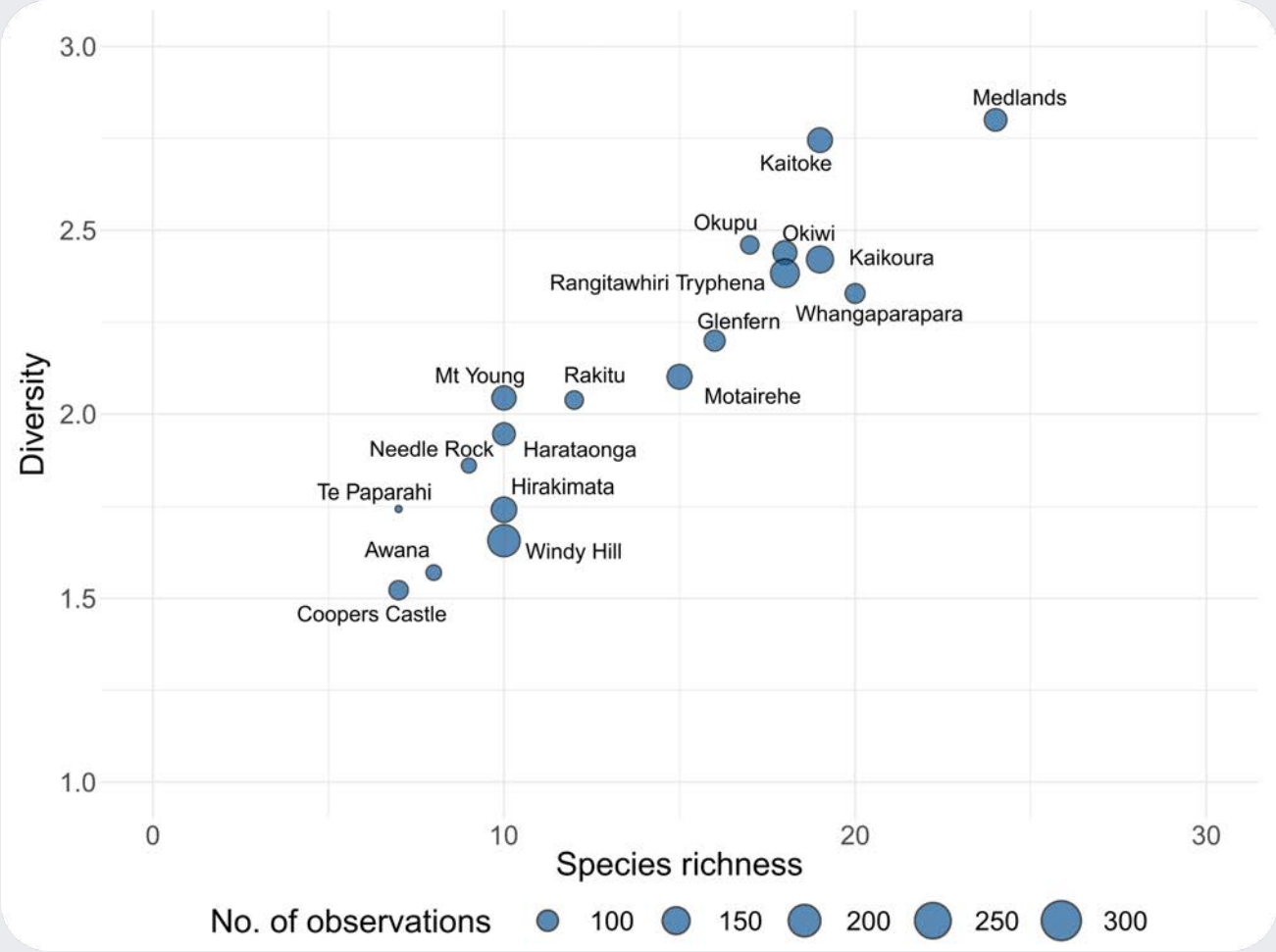


- **Richness** is the total number of species (how many sorts of beetle?)
- **Diversity** is the distribution of species across individuals (if you pick a beetle at random, can you guess the species?)

Patterns of richness & diversity



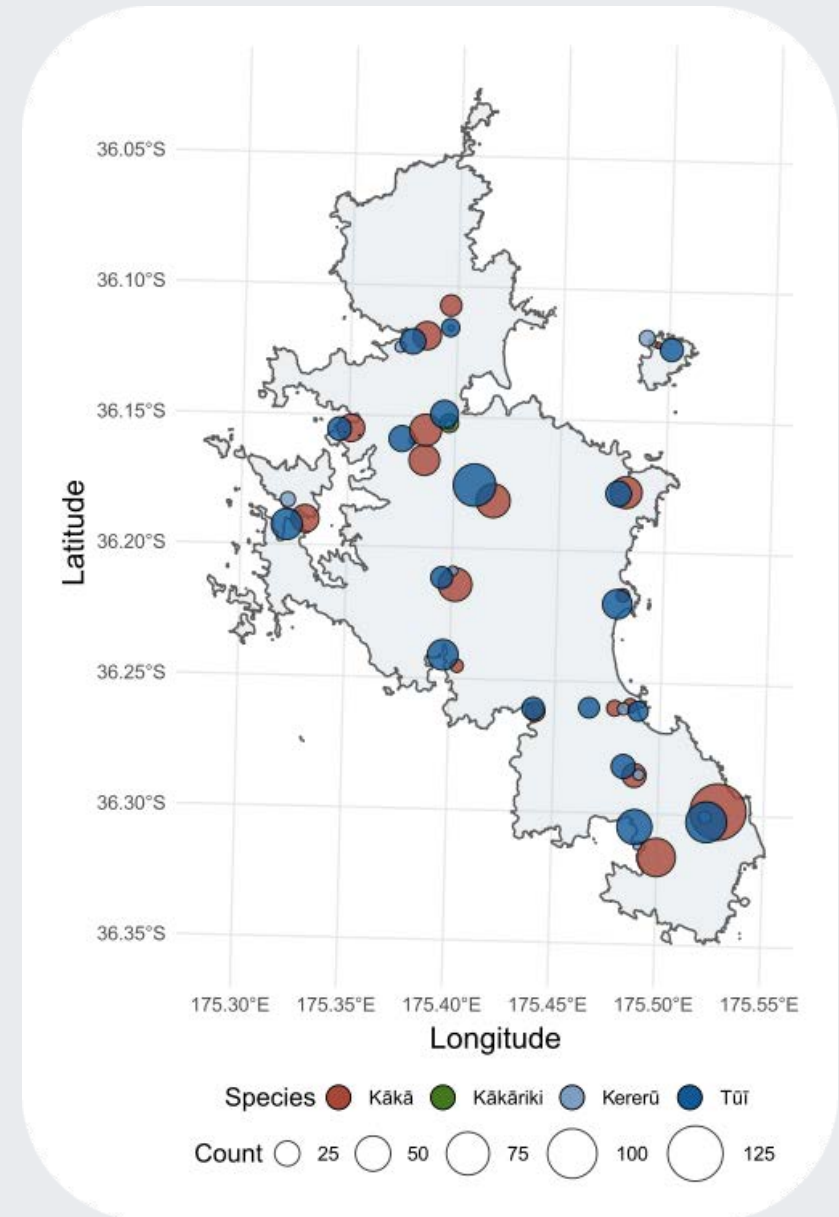
Richness & diversity are related



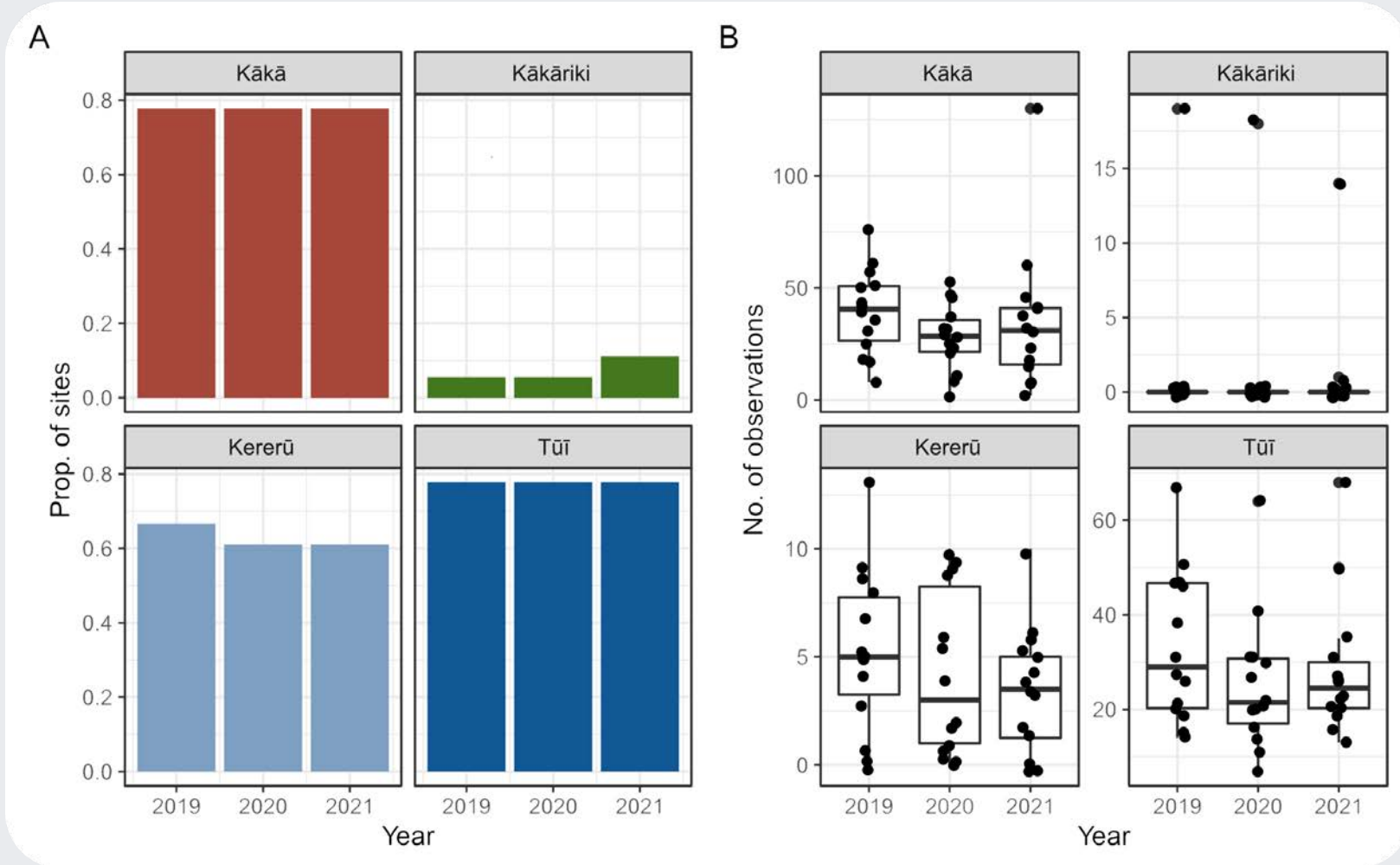
Kākāriki, kākā, tūī and kererū

Most observations:

- tūī at Hirakimata (n = 74)
- kākā at Windy Hill (n = 130)
- kererū at Rakitu (n = 10)
- kākāriki at Okiwi (n = 14)



Kākāriki, kākā, tūi and kererū



Kākāriki heartening!



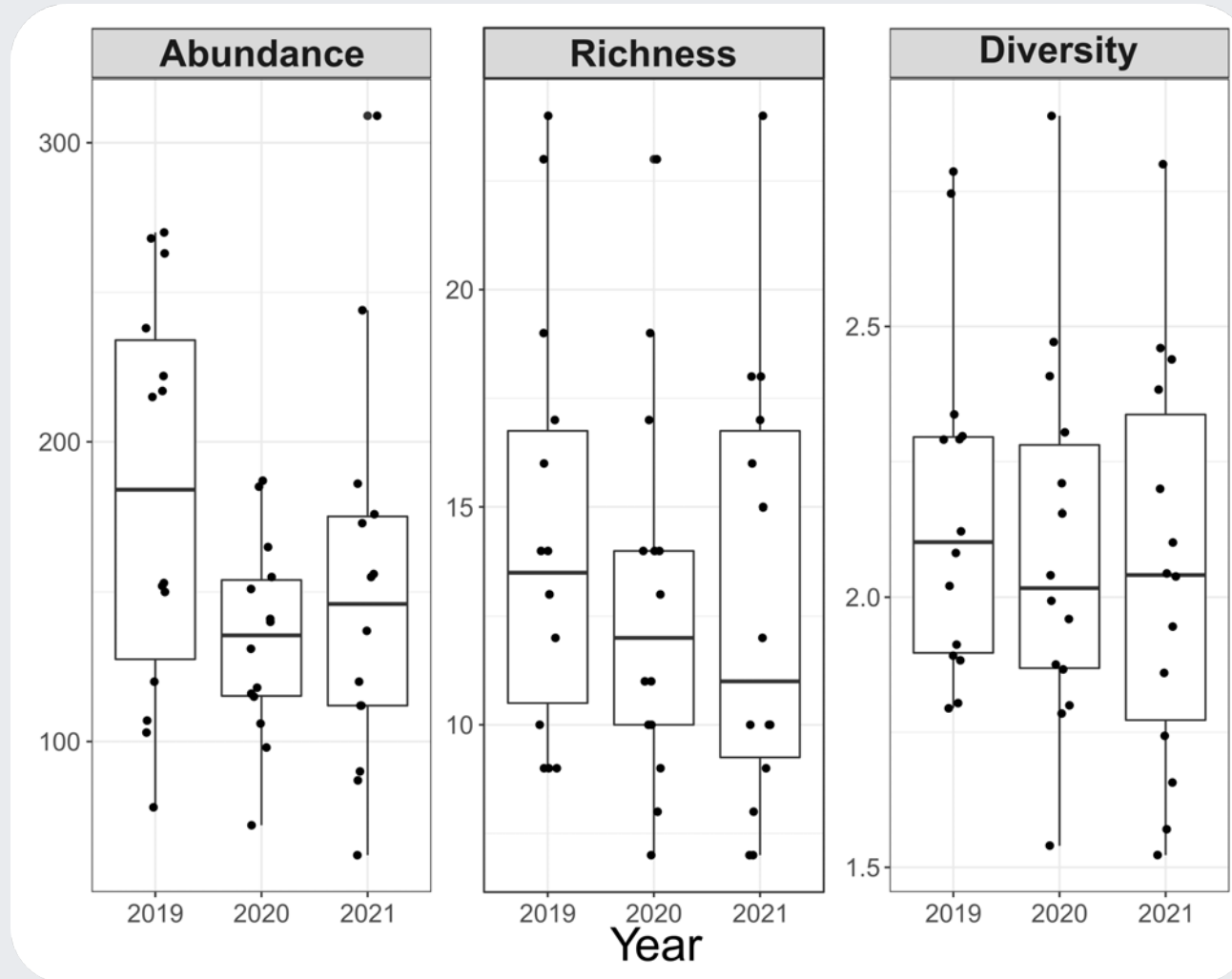
Intensive community monitoring and trapping at Okiwi bearing fruit!

This continues the trend seen in the 2019 and 2020 ABC

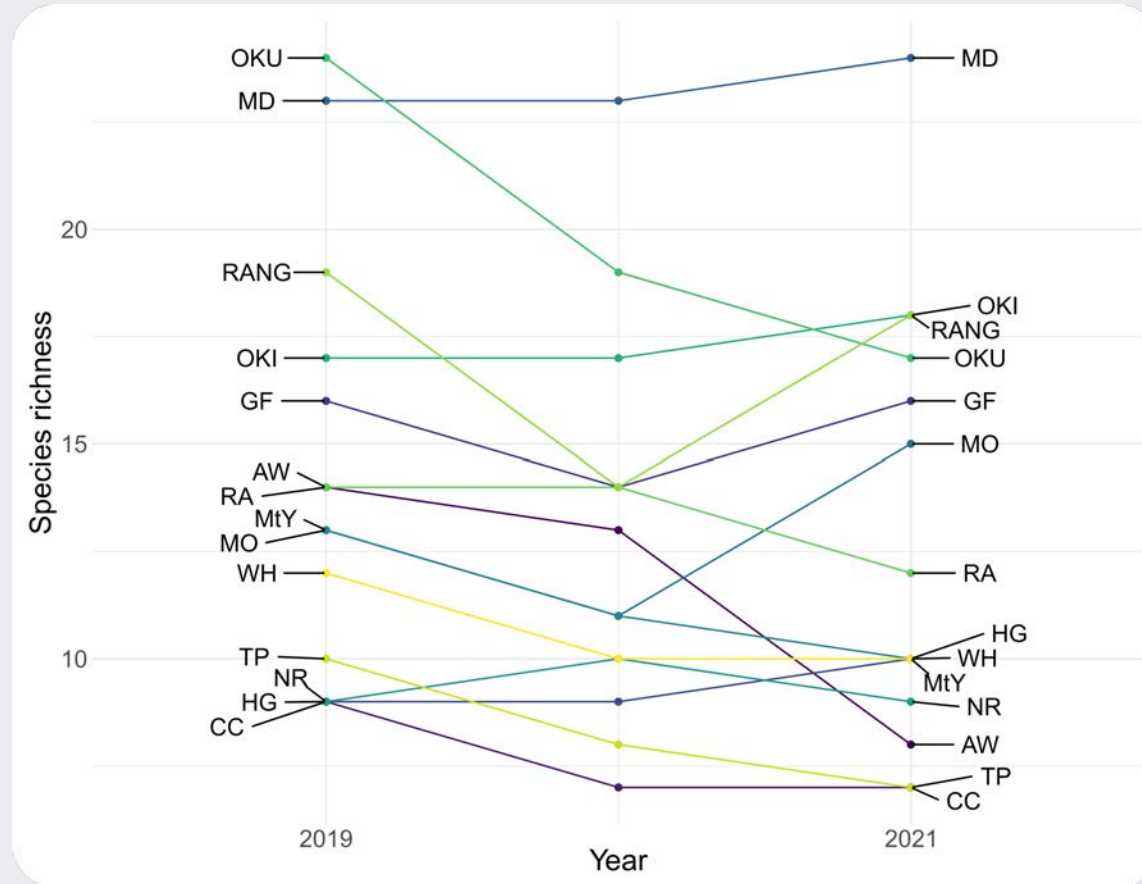


Image: Judi Lapsley Miller

'Change' over time



'Change' in richness by site



Need to be cautious interpreting such short-term data

A few caveats...



All surveys suffer from biases; in this case

1. **Location** bias: trade-offs between accessibility and habitat
2. **Detection** bias: birds species are not all equally likely to be observed due to size, sound and behavioural differences
3. **Identification** bias: not all bird species are equally identifiable visually or audibly



Future ABCs



- The value of these datasets will only grow with time!
 - both the data and the scripts are archived in an online repository (future proofing)
- Can contribute the data to larger citizen science projects such as NZ [eBird](#) or the [NZ Bird Atlas](#)?



In a nutshell



- The **most frequently observed** species on the island during the survey were kākā, tūī, riroriro, kōtare, and piwakawaka
- The number of individuals observed among sites ranged between [62, 309]. **Species richness** had a range of [7, 24], and **species diversity** ranged between [1.52, 2.80]
- The highest species richness and diversity were found at **Medlands**, while the lowest values were at **Cooper's Castle**

Questions? Comments?

