

Antipodes albatross and petrel research 2022–2023

Kalinka Rexer-Huber, Graham Parker, Kath Walker, Graeme Elliott

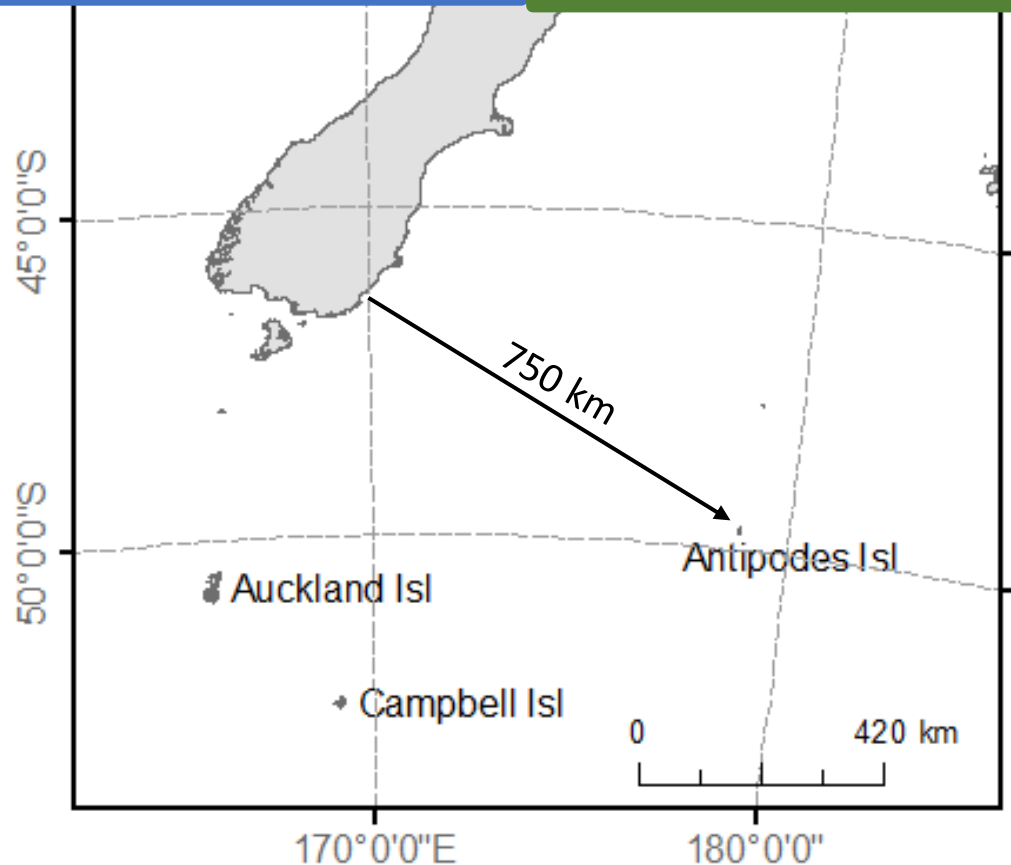


Antipodean wandering albatross →

White-chinned petrel →

June 2022

DOC CSP POP2022-10 Antipodes Island seabird research





Objectives

Antipodean wanderers

1. demographic parameters and island-wide population size (**mark-recapture**, study area **nest monitoring**, nest **counts** in census blocks)

Also – diet, mercury sampling

White-chinned petrels

1. island-wide **population size** (burrow density, occupancy)
 2. establish a **mark-recapture** study
- Also - dive-depth data, mercury sampling

Timeline: arrived 17 December

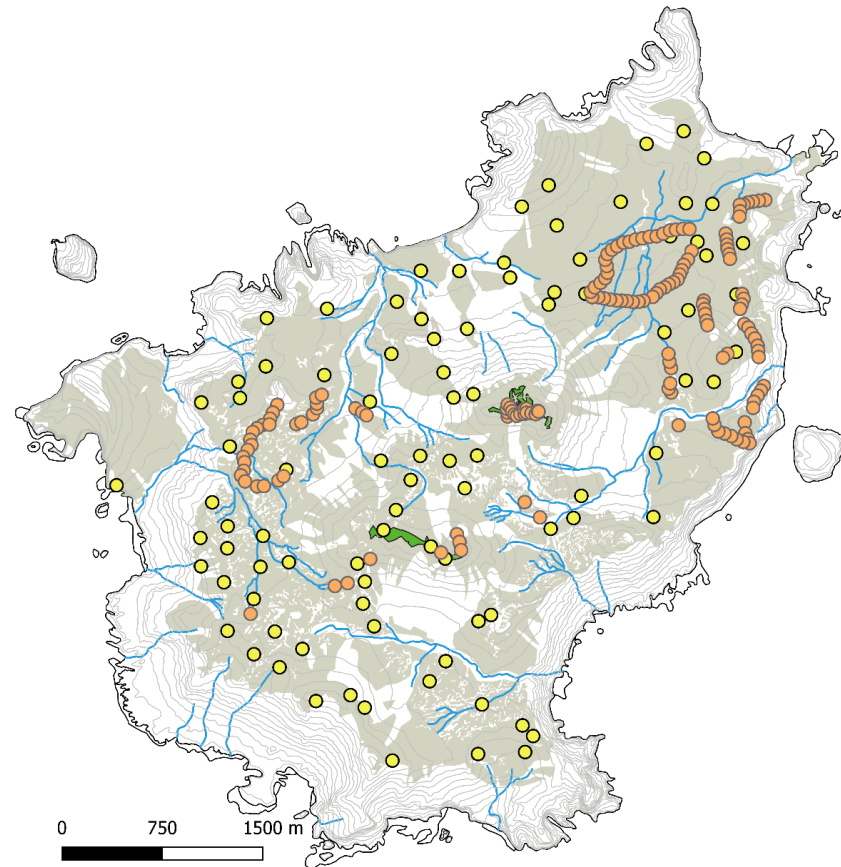
productivity, chick banding & sampling, dive recorders, burrow occupancy, mark study burrows, Hg sampling, study area nests, mark-recapture, sampling, census counts, distance sampling, other things



Breeding population estimate = burrow density x habitat area x burrow occupancy

2009-11
(Thompson 2019)

2021-22
(Elliott & Walker 2022)



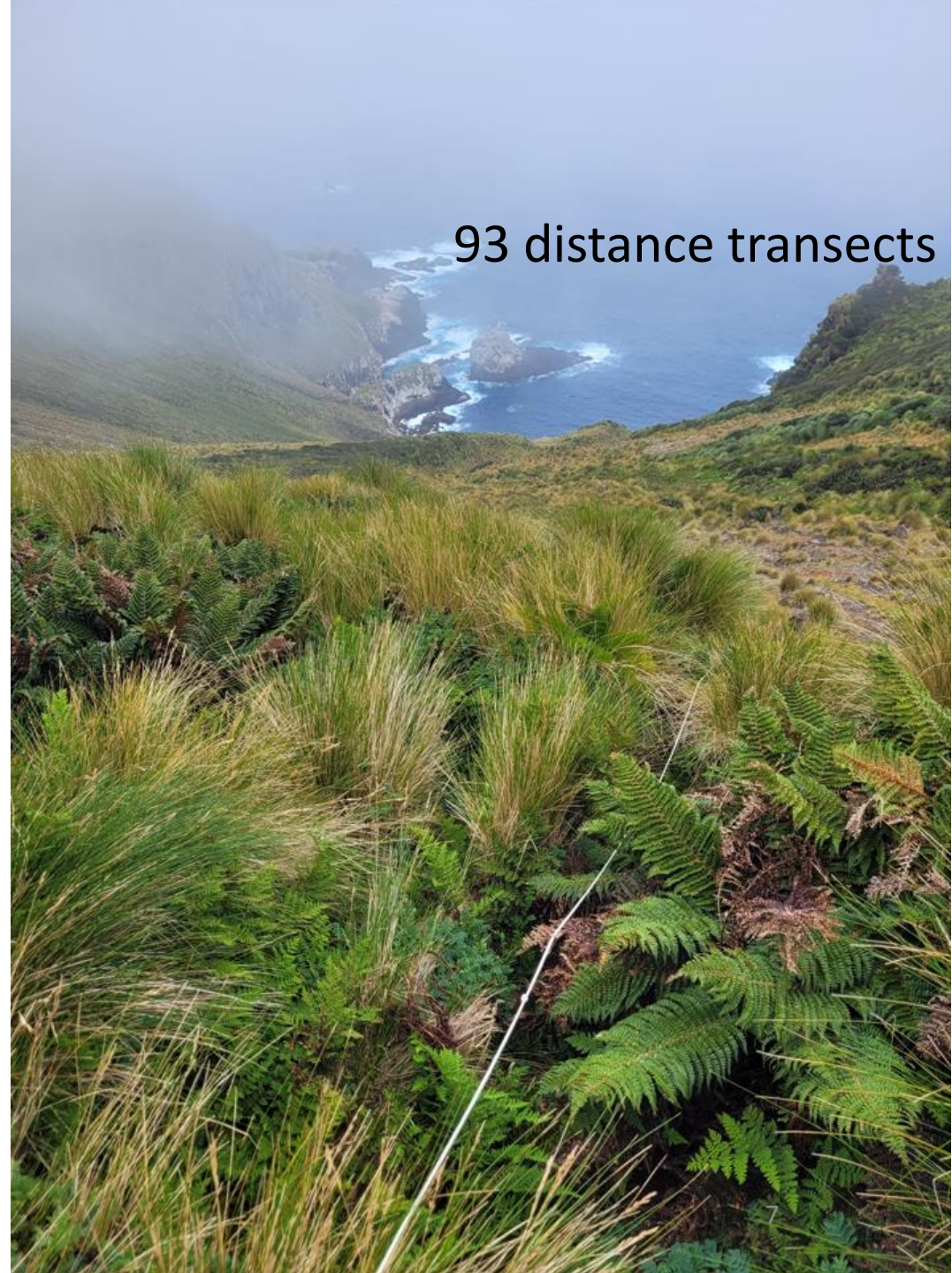
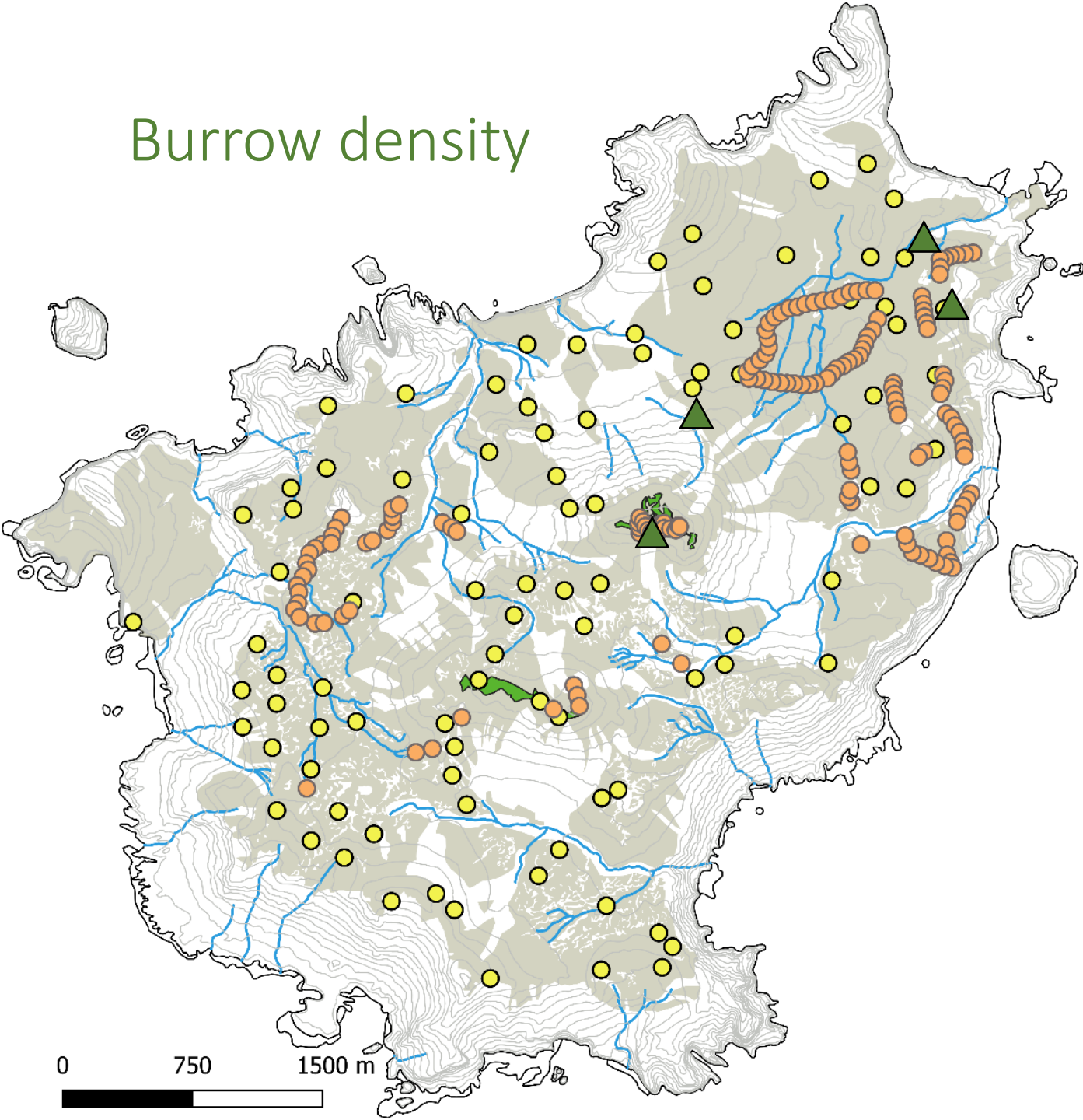
Burrow occupancy



293 burrows inspected



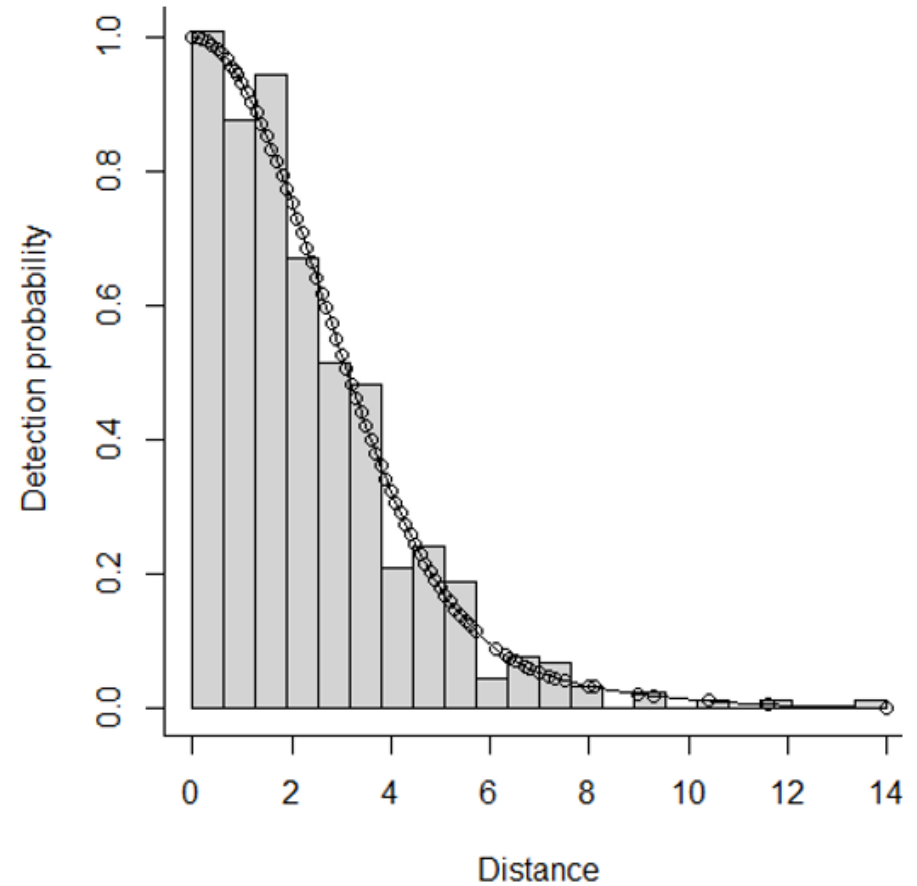
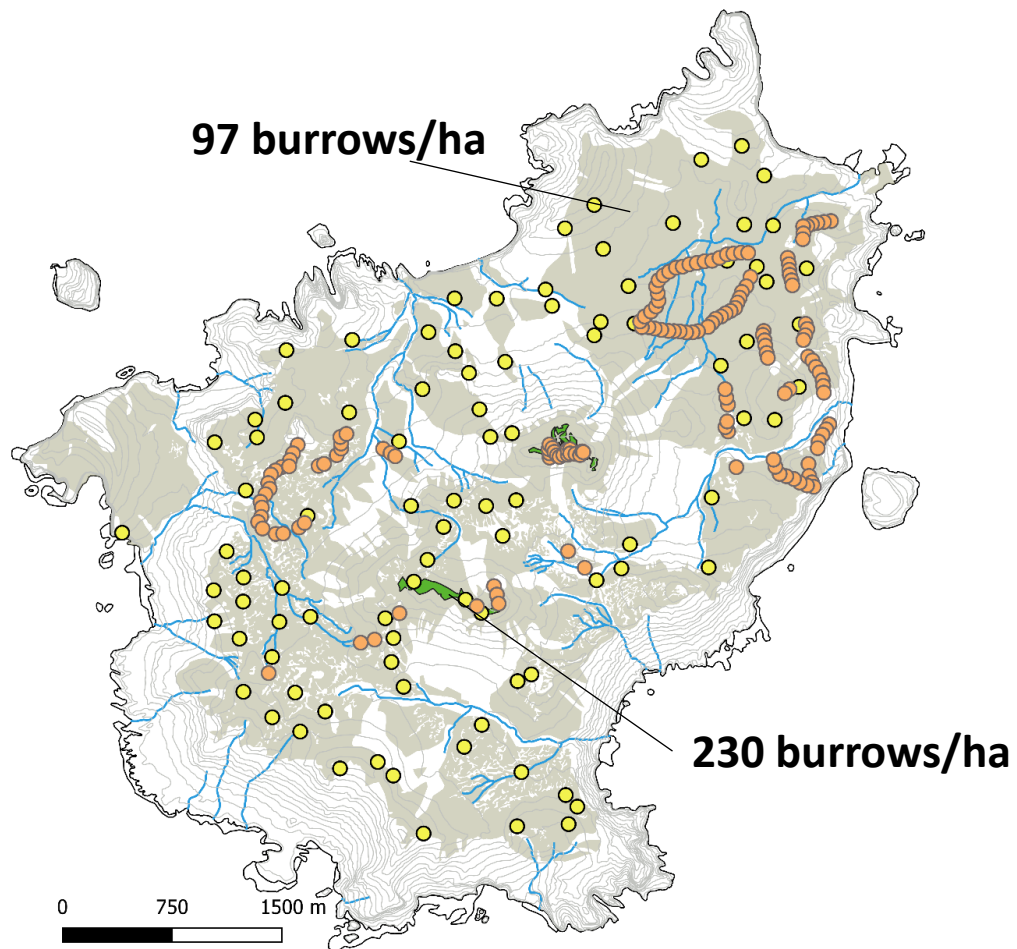
Burrow density



93 distance transects

Burrow density

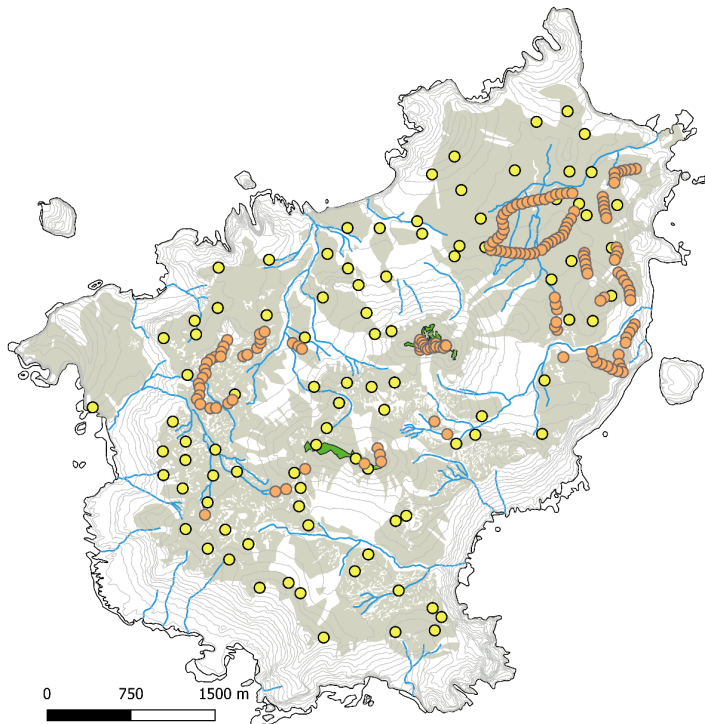
493 burrow detections along 248 distance transects



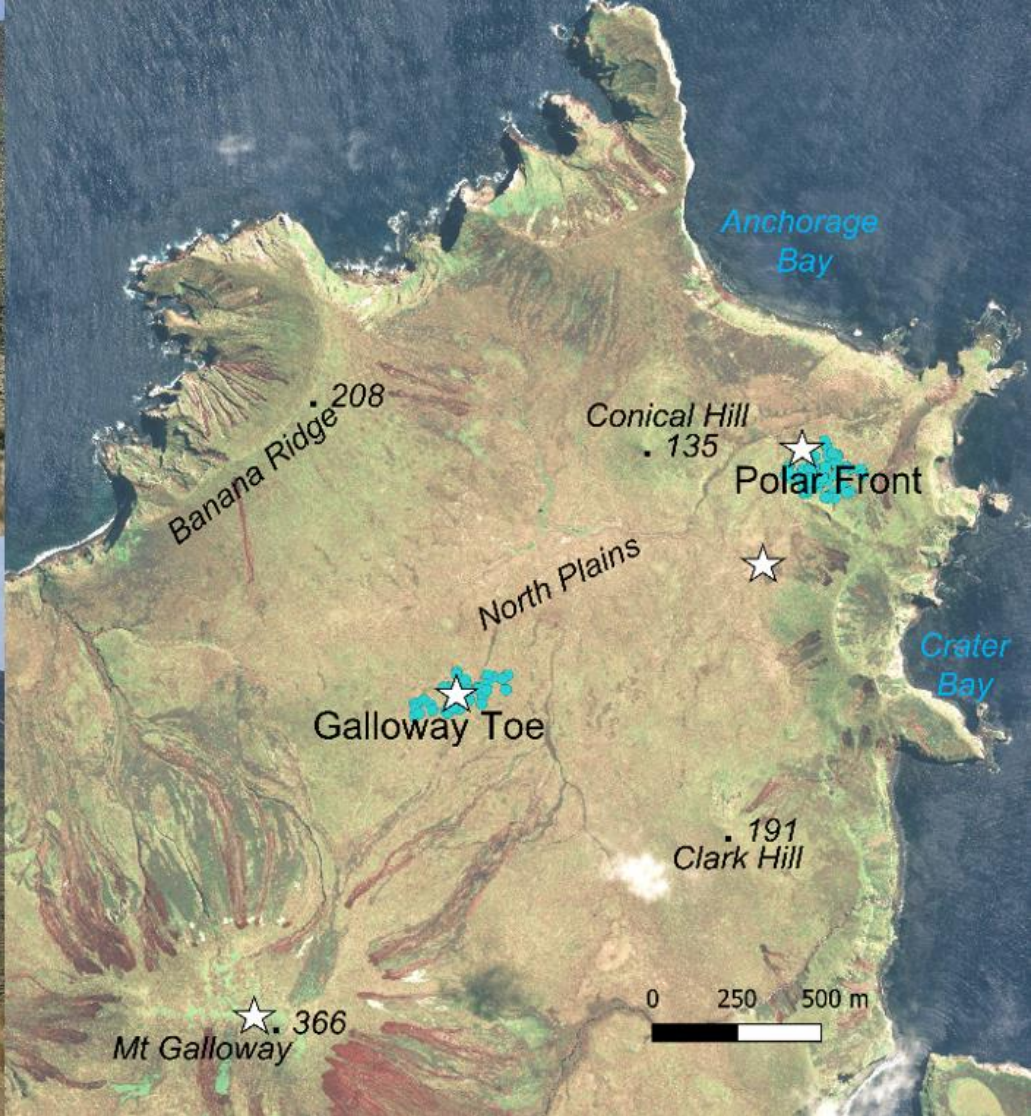
Breeding
population
estimate

$$= \text{burrow density} \times \text{habitat area} \times \text{burrow occupancy}$$

26,400 (22,200–31,600)
breeding pairs white-
chinned petrels

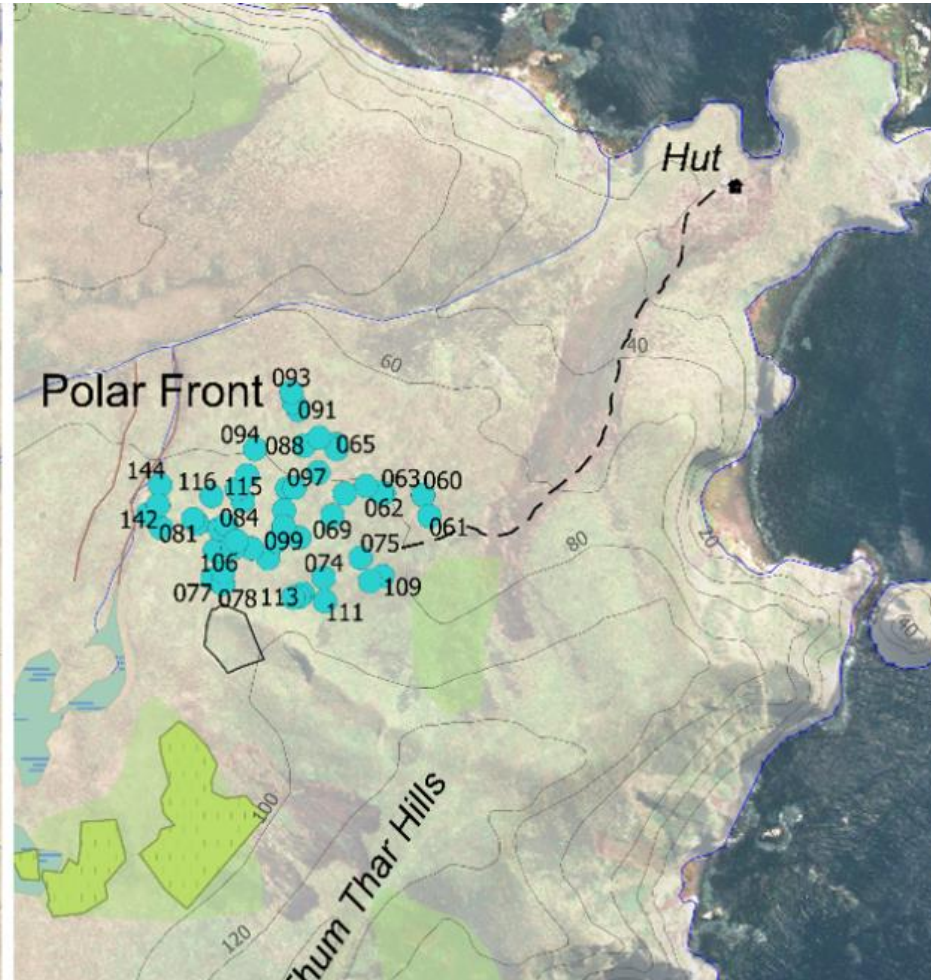
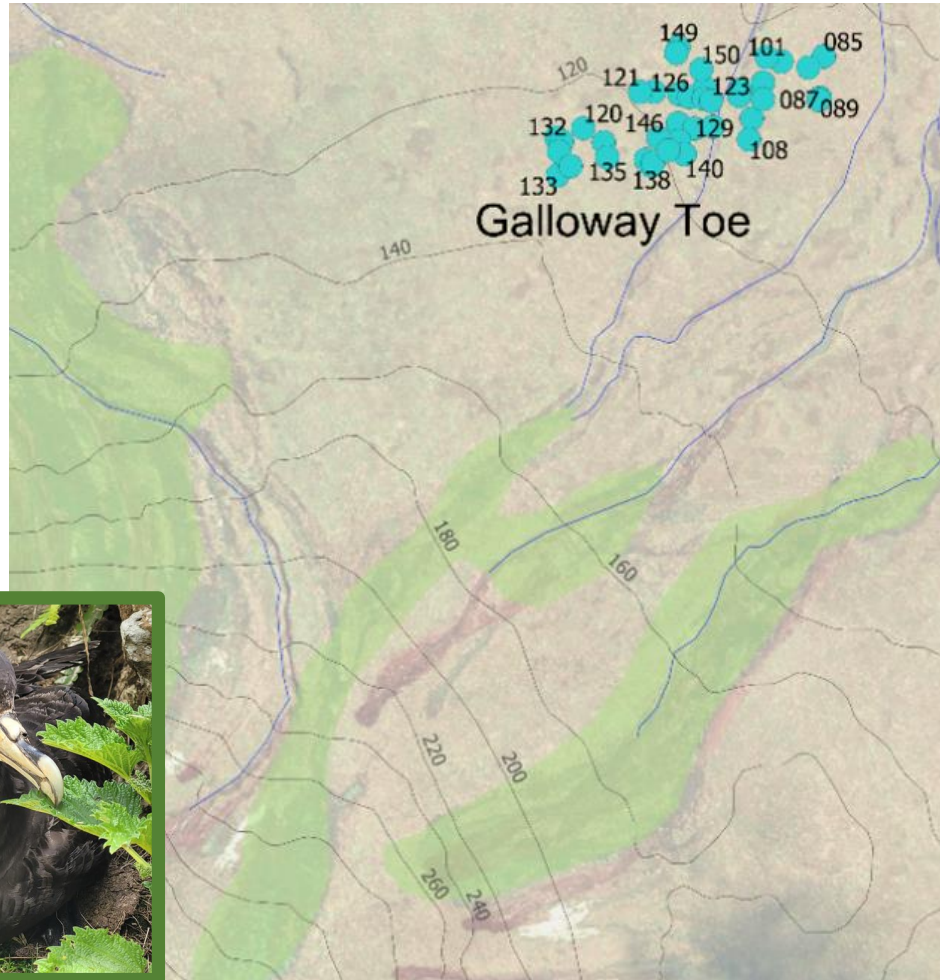


Establish mark-recapture study

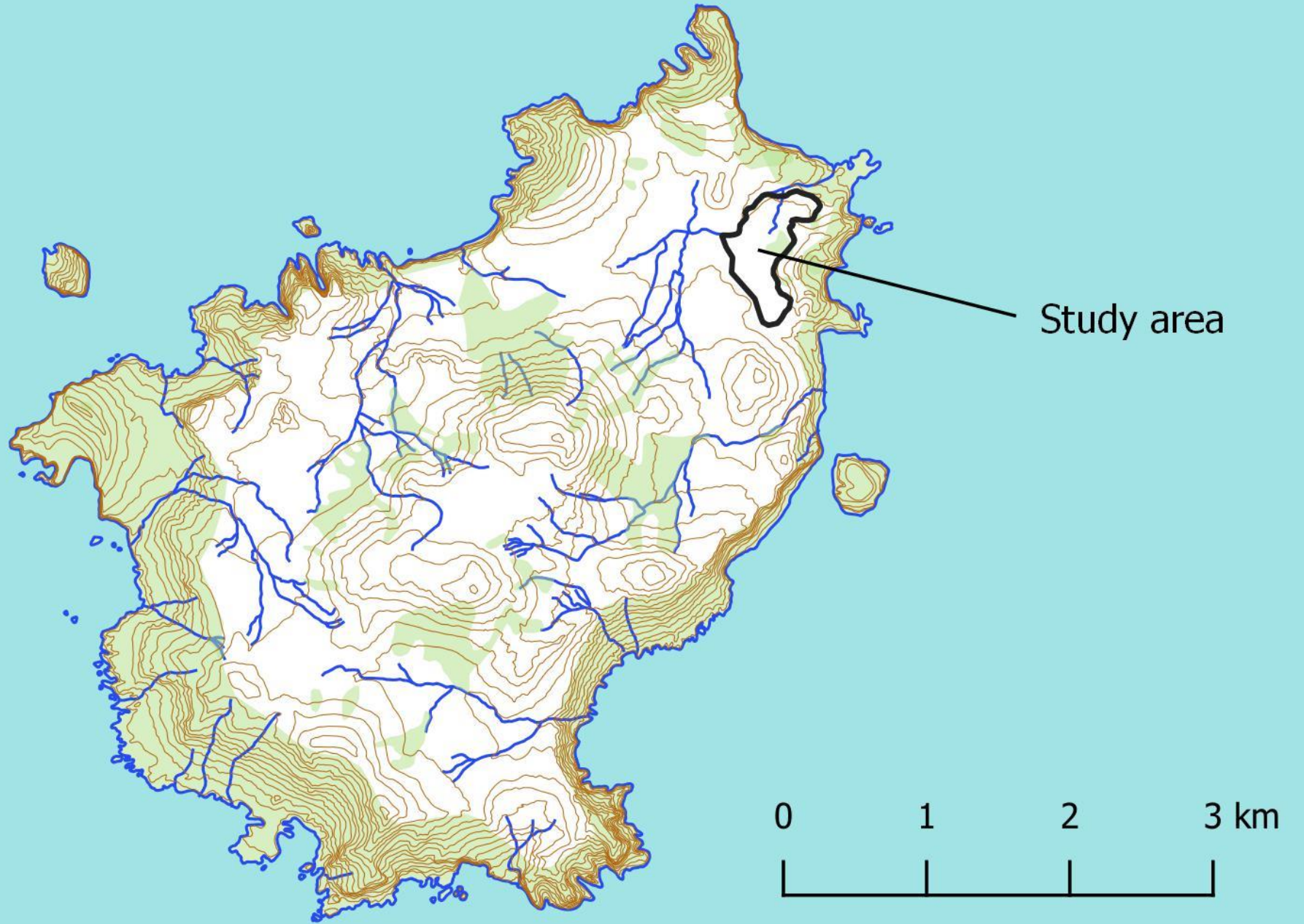




Mark-recapture study



Next: recaptures of banded birds for at least 3 years
More marked burrows, to 400 birds





Productivity







Mark-recapture

Survival

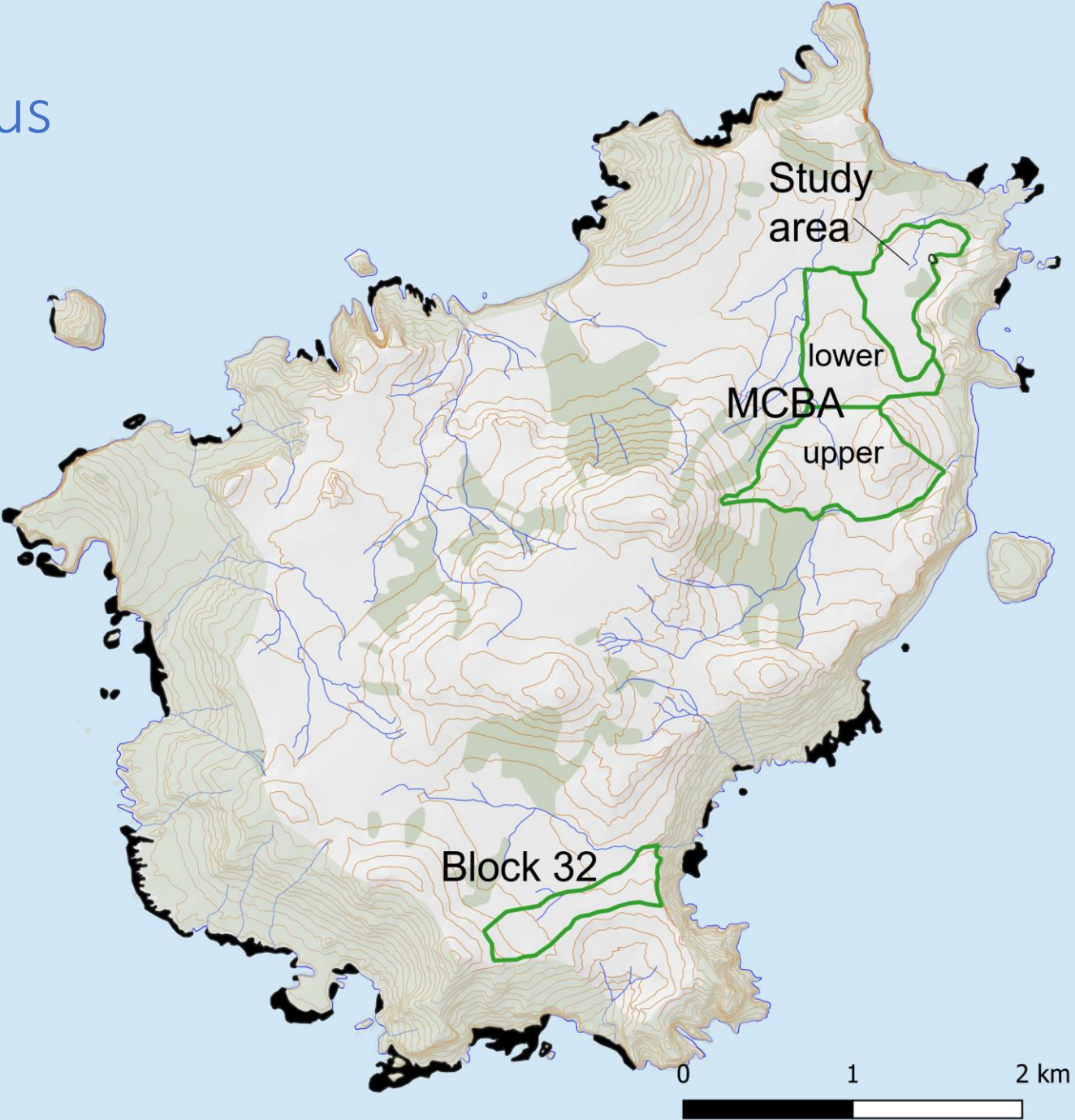
Productivity

Recruitment

Model population health

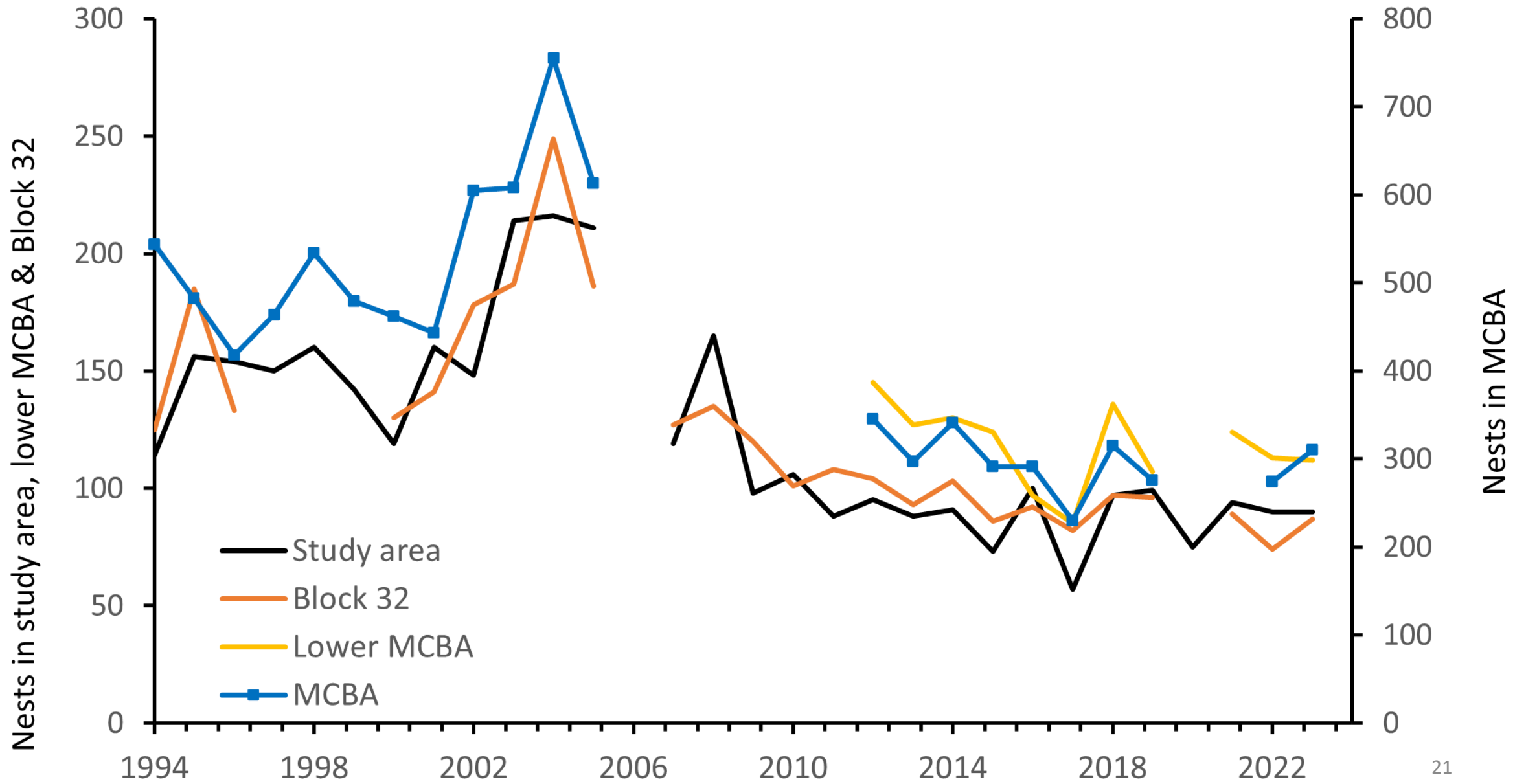


Repeat census

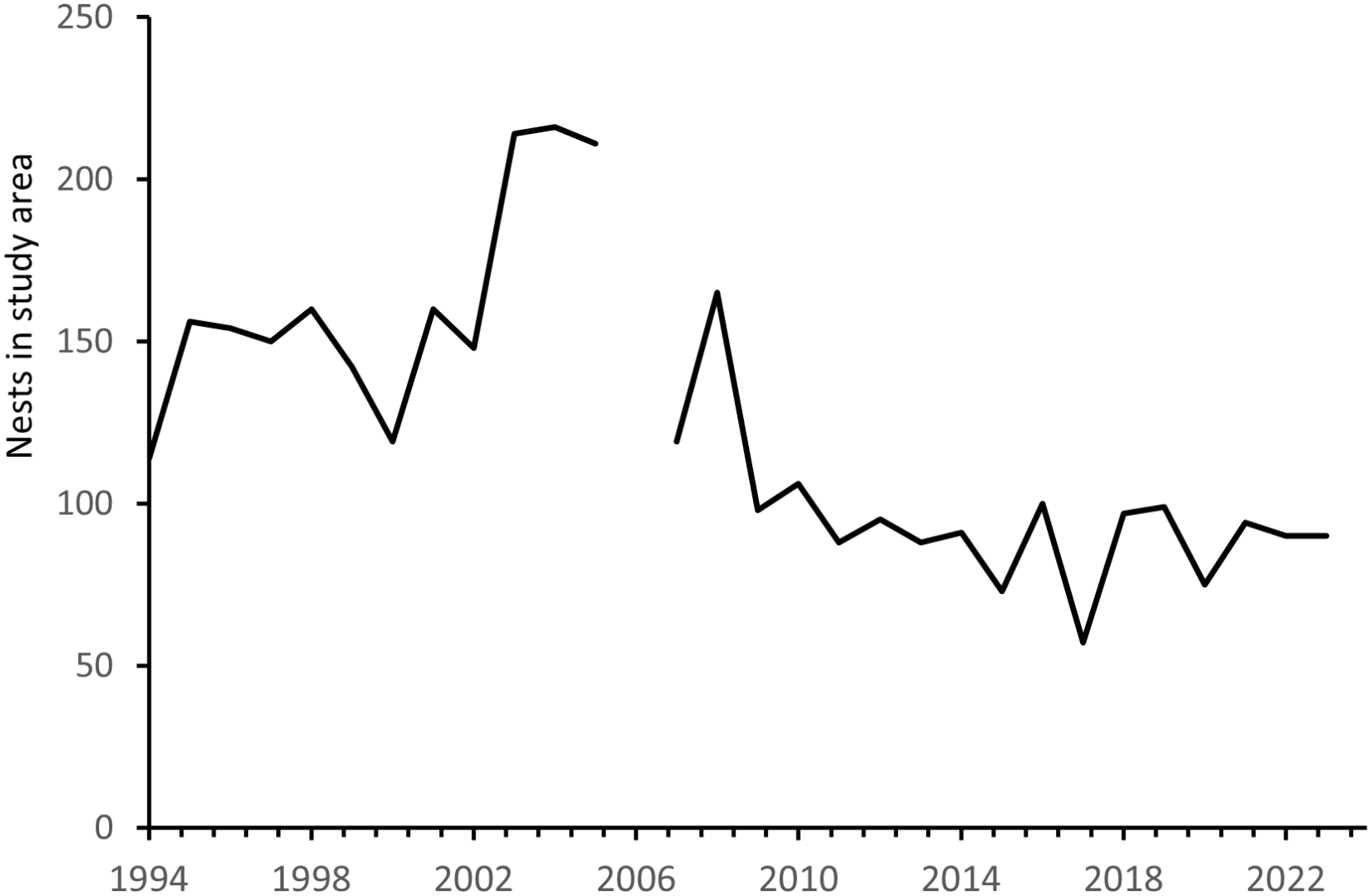


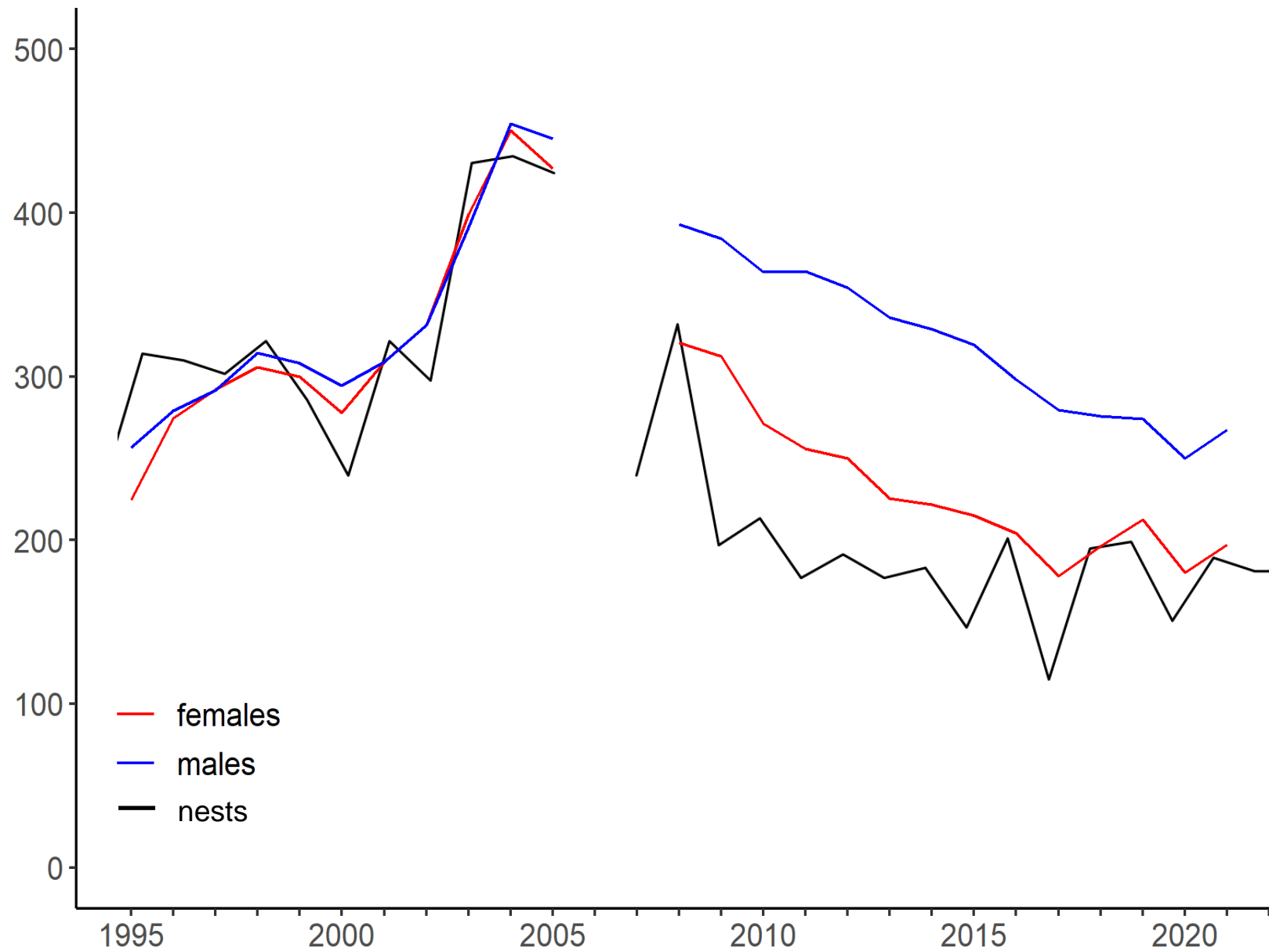
Study area nest numbers



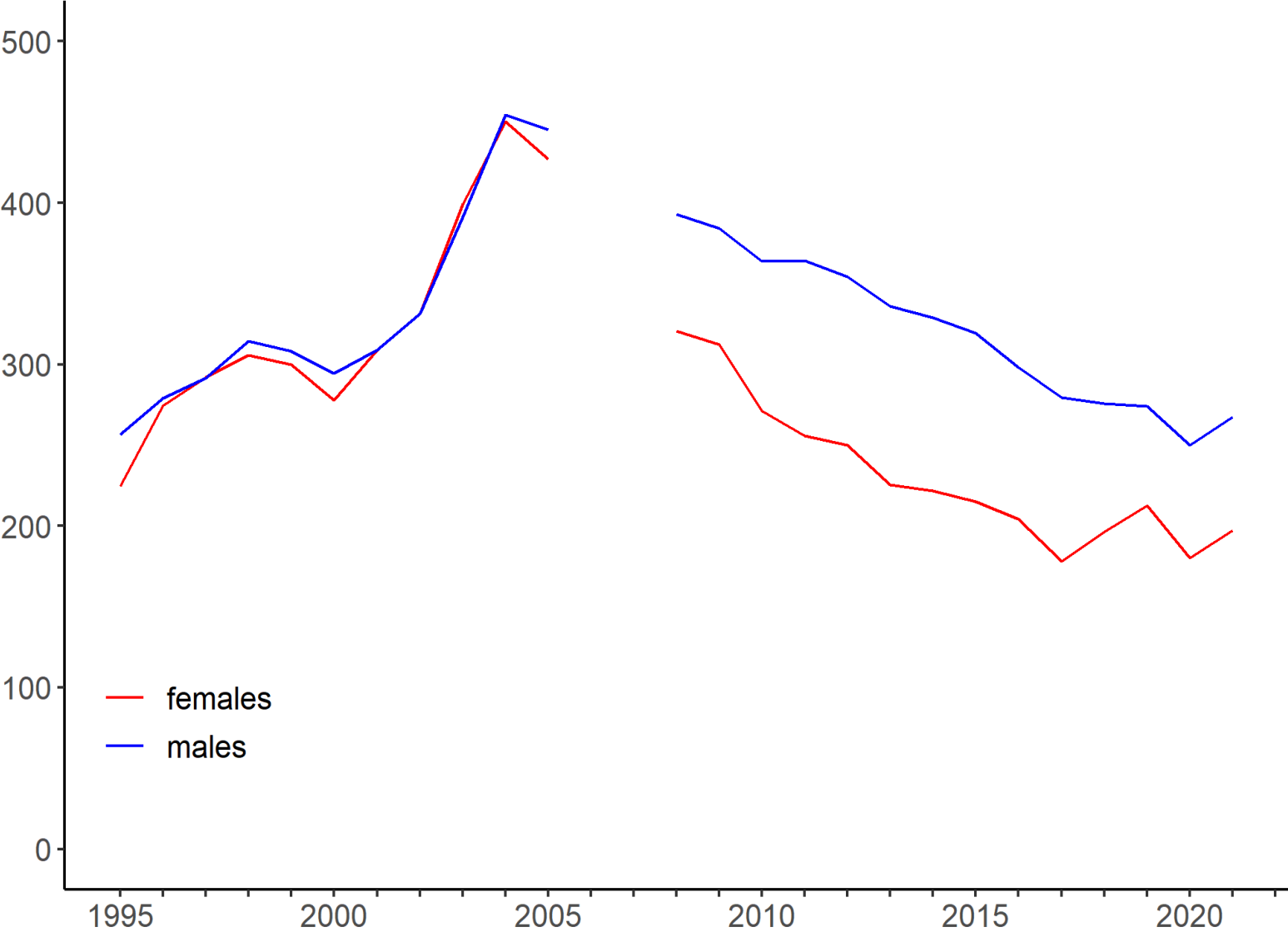


Study area nest numbers





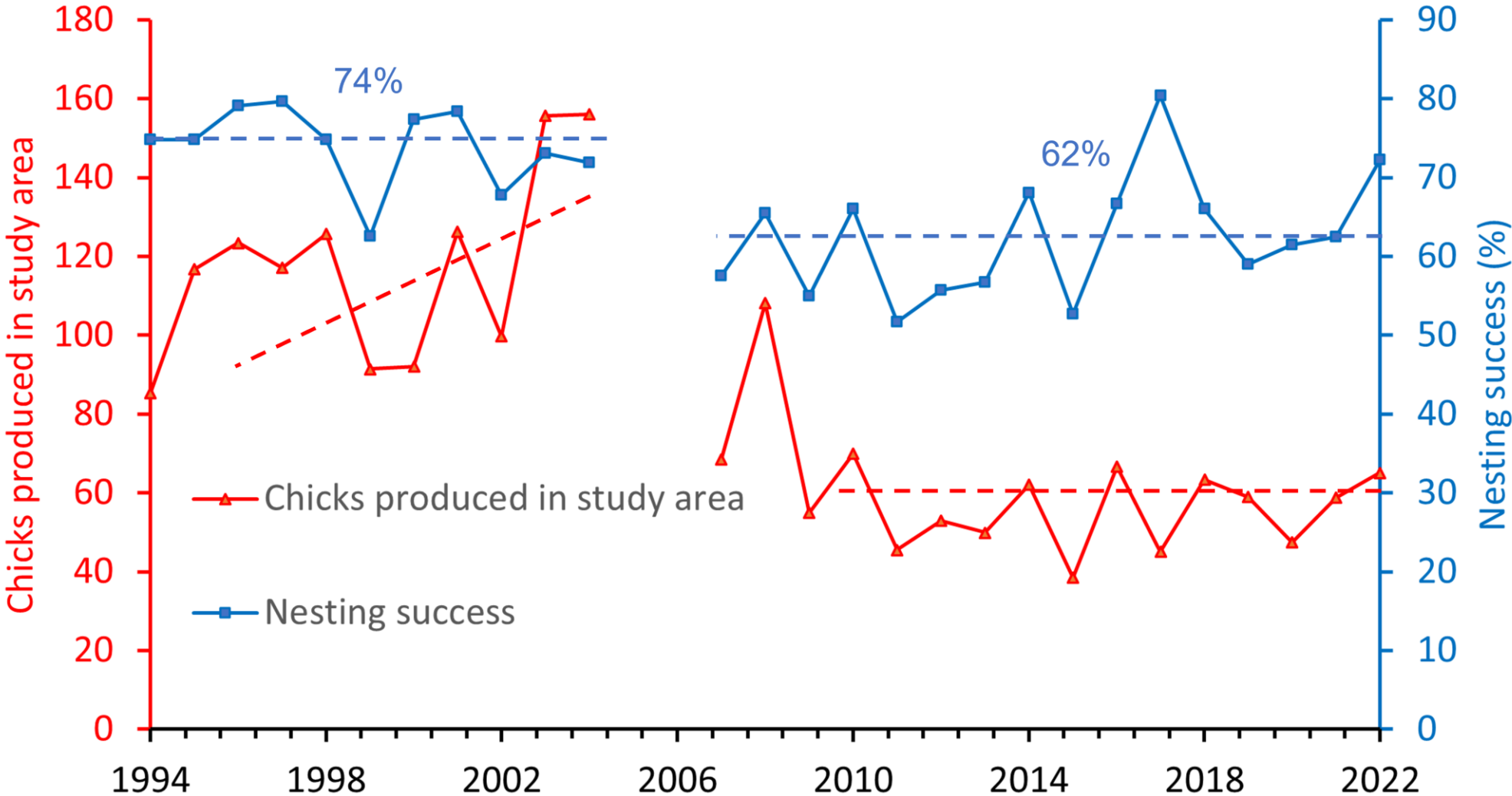
Mark-recapture: study area numbers



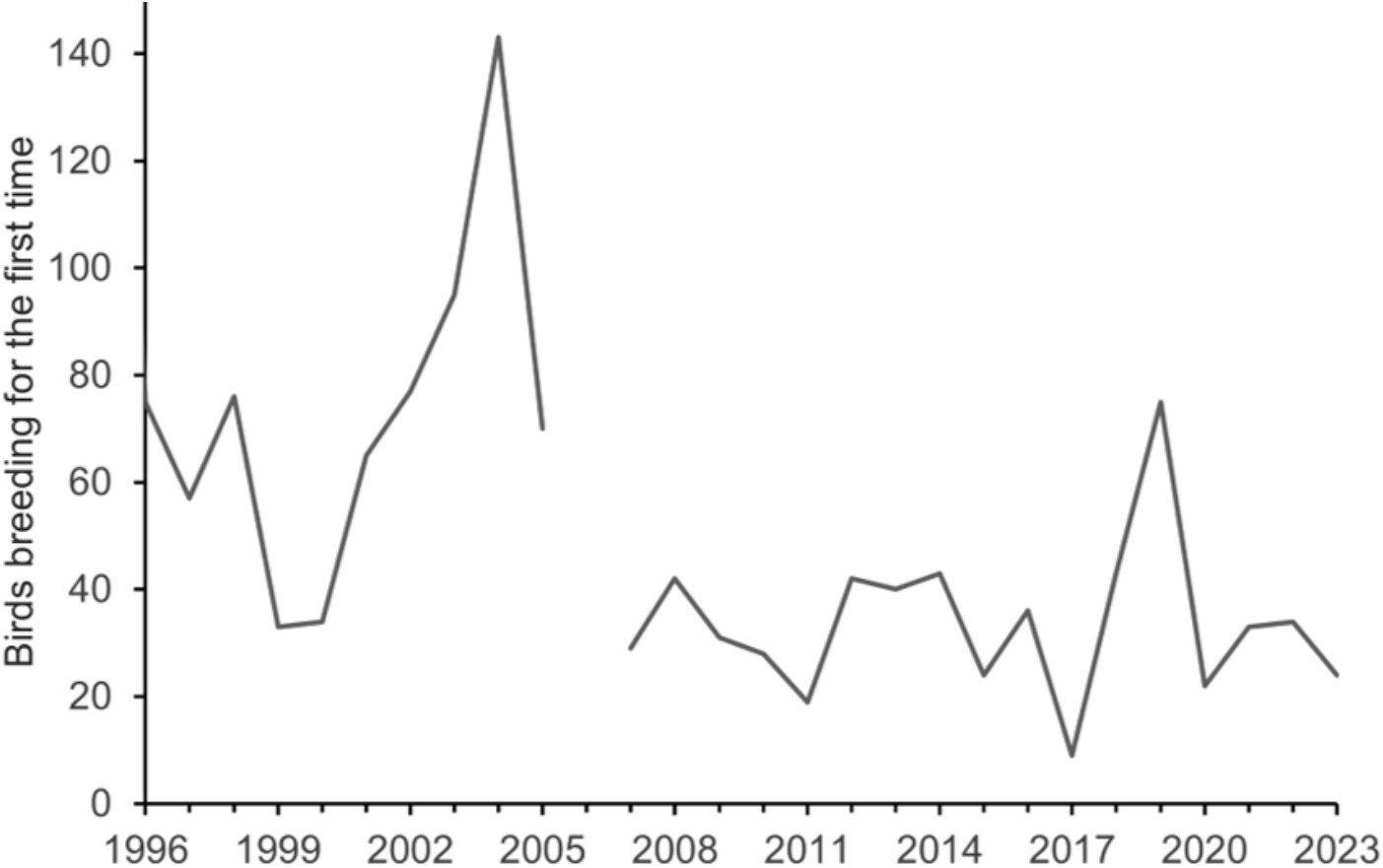
Mark-recapture: adult survival



Study area: productivity

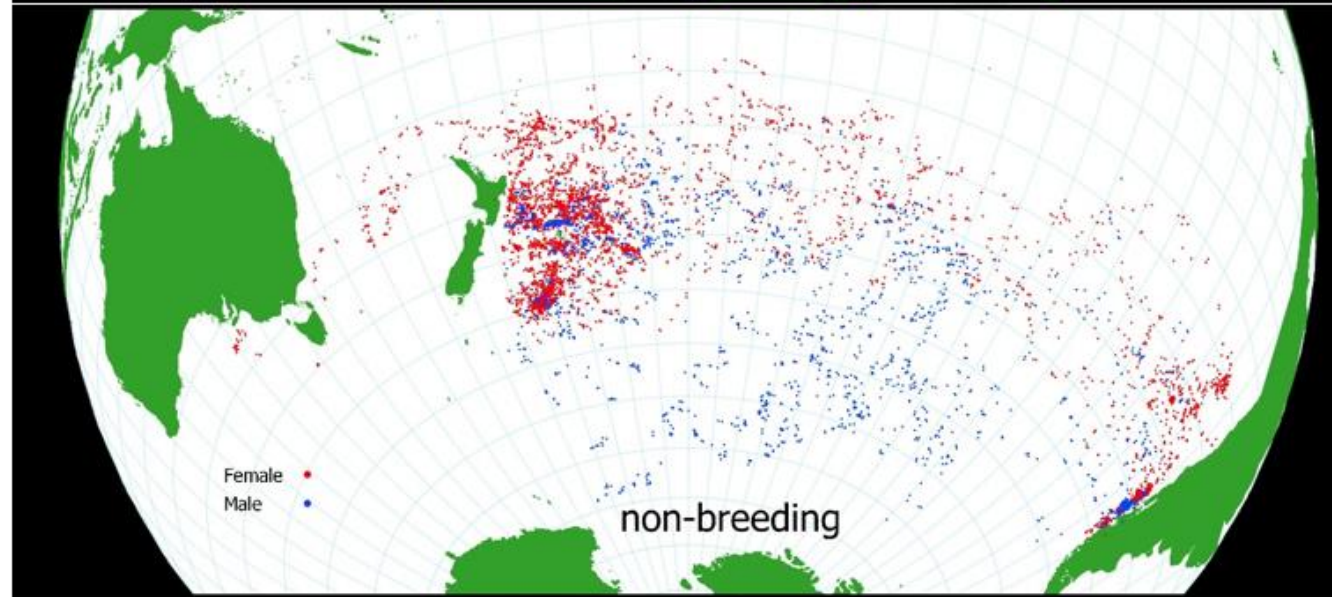
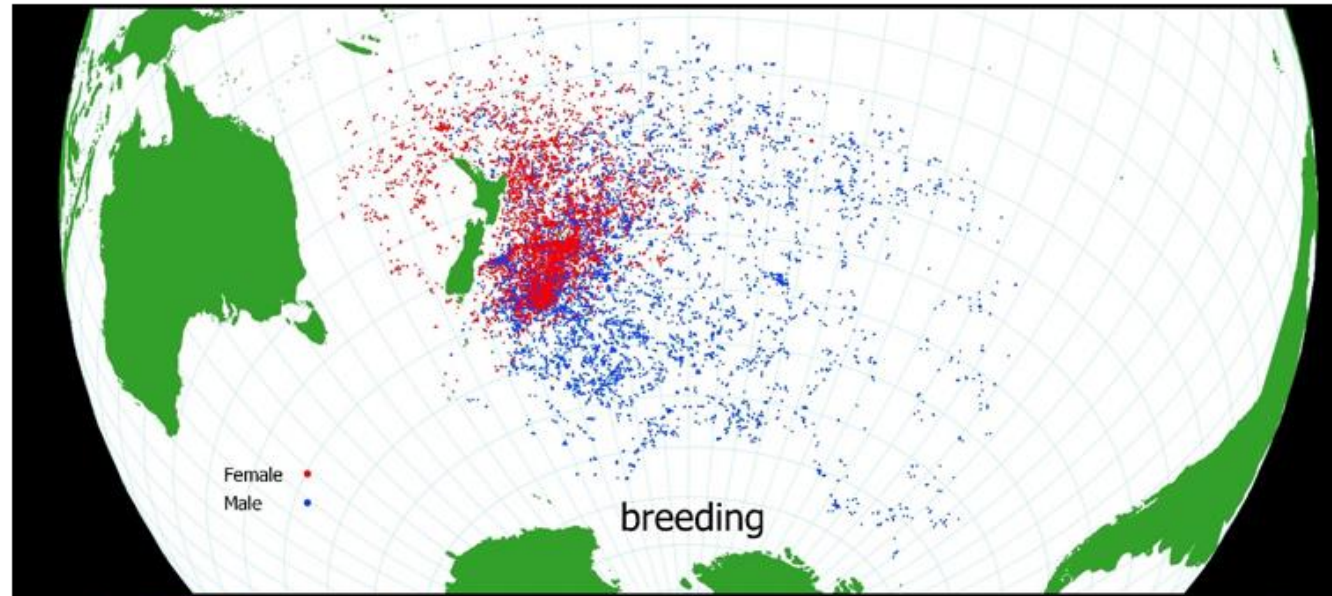
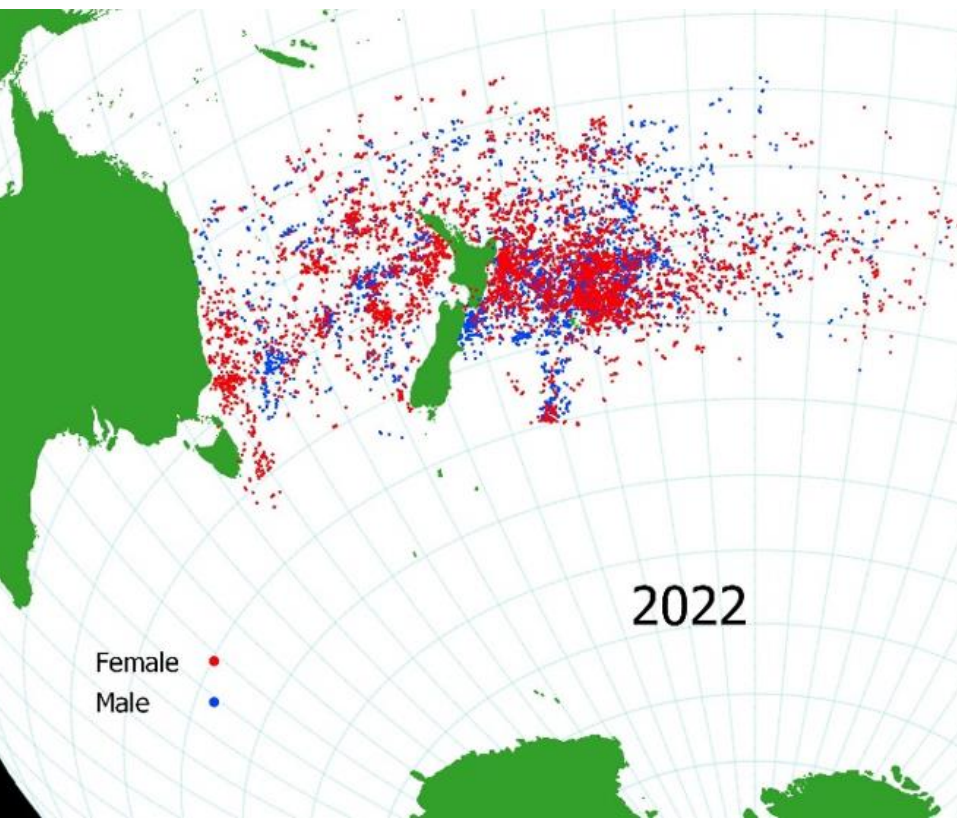


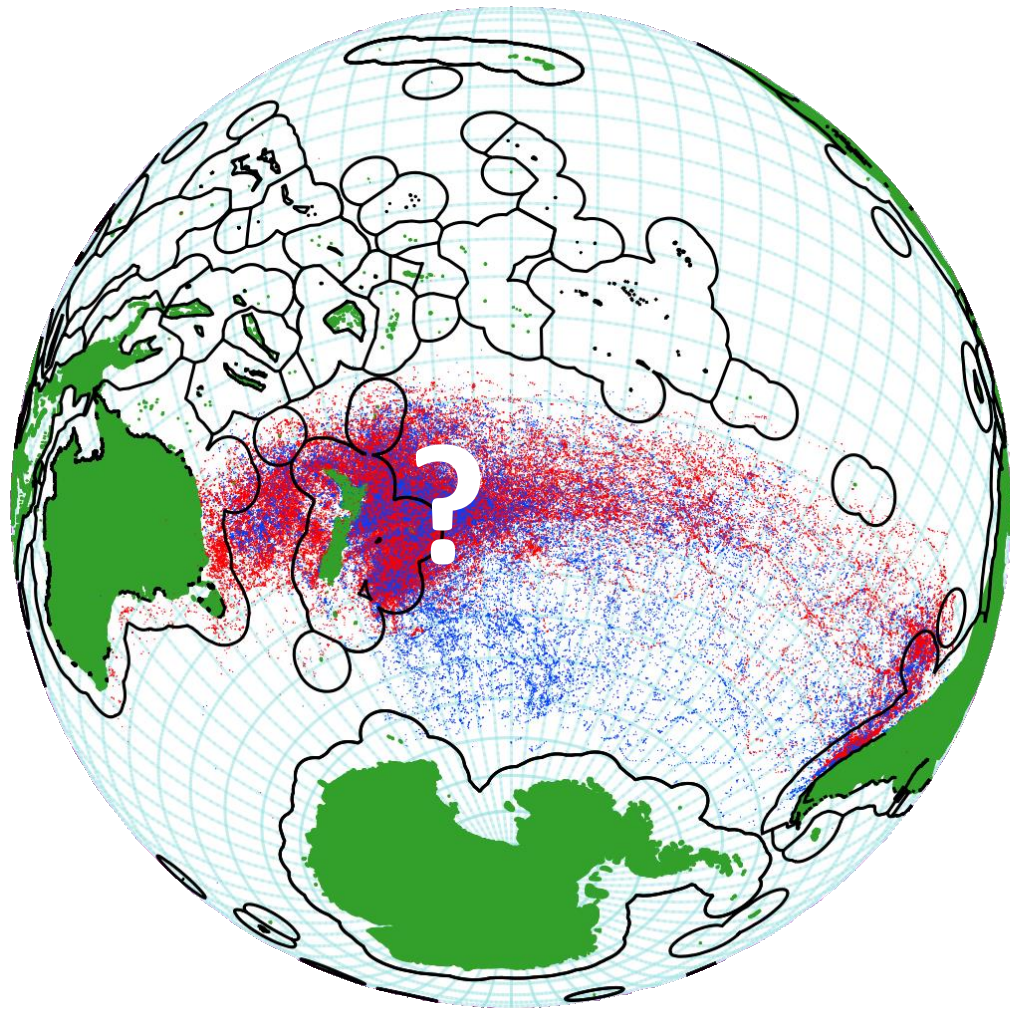
Mark-recapture: recruitment

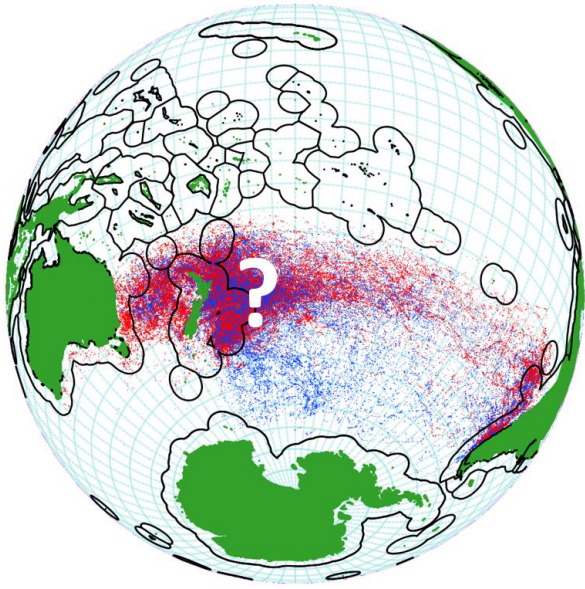


This summer

- Rate of decline has slowed
- No improvement in breeding success – the same new low – 62%
- Pairs breeding across our 3 count blocks – stable around the new low – $\sim \frac{1}{2}$ of 2000-05 average







Prey over time

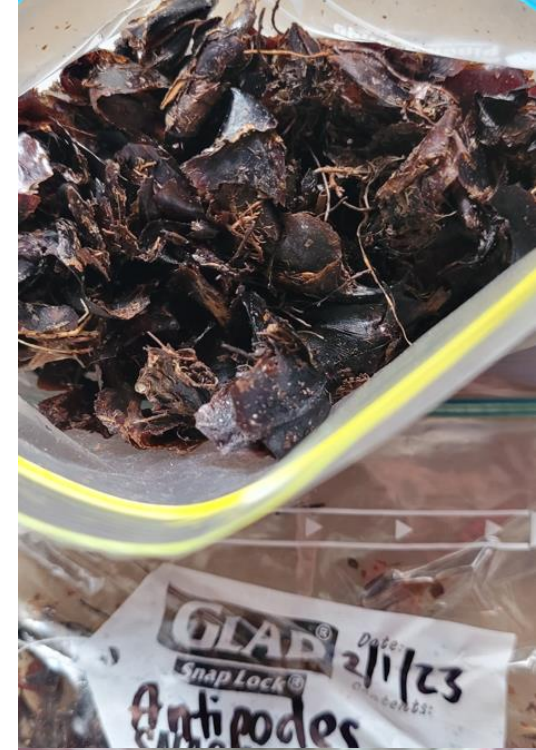
Feathers

Poo

Squid boluses

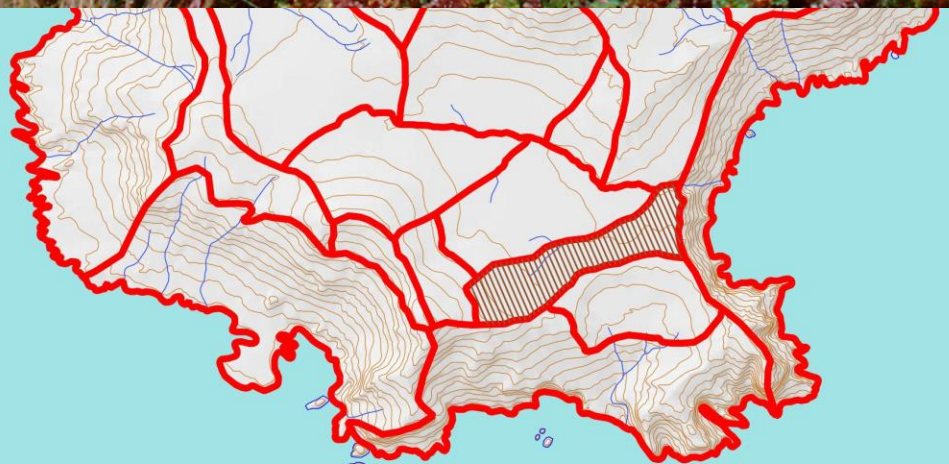
Mercury contamination

Blood, feathers

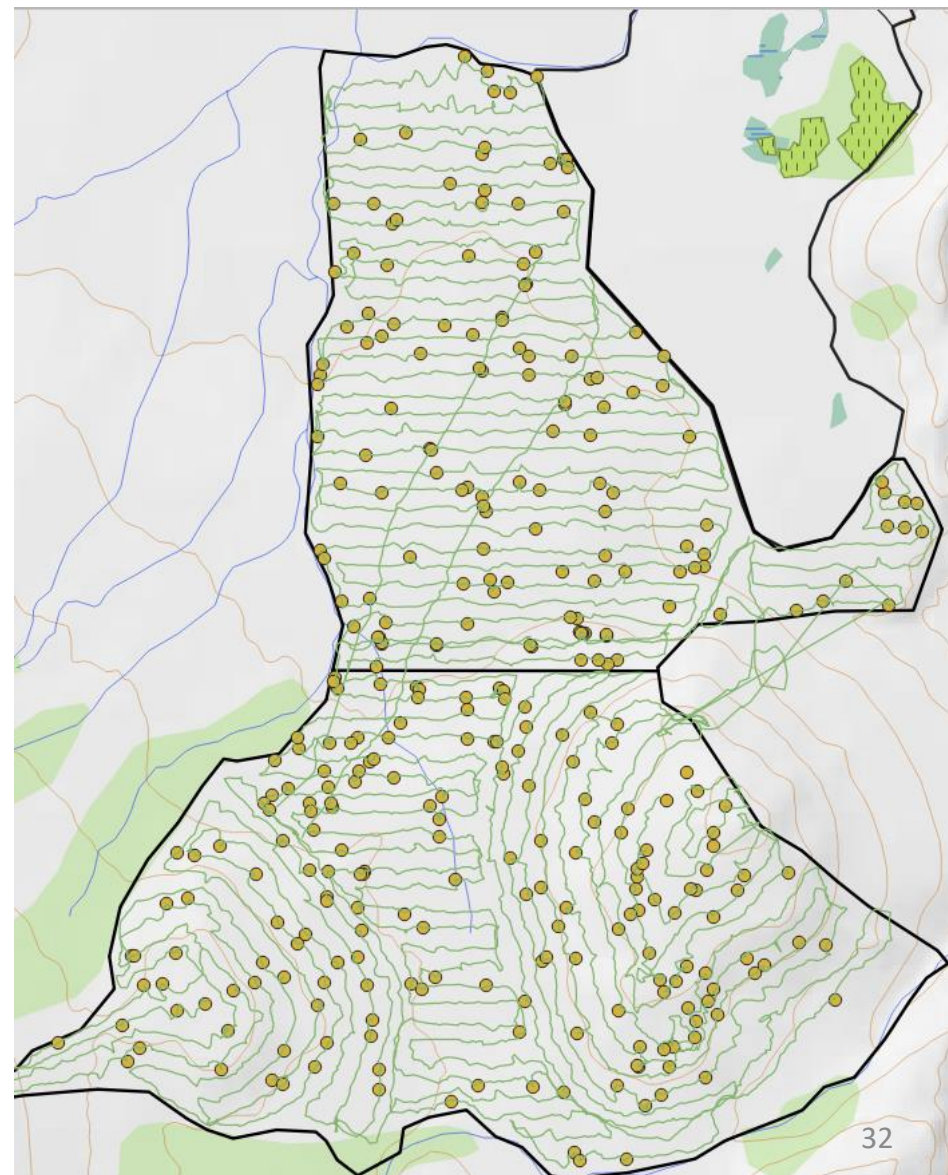




Walker & Elliott

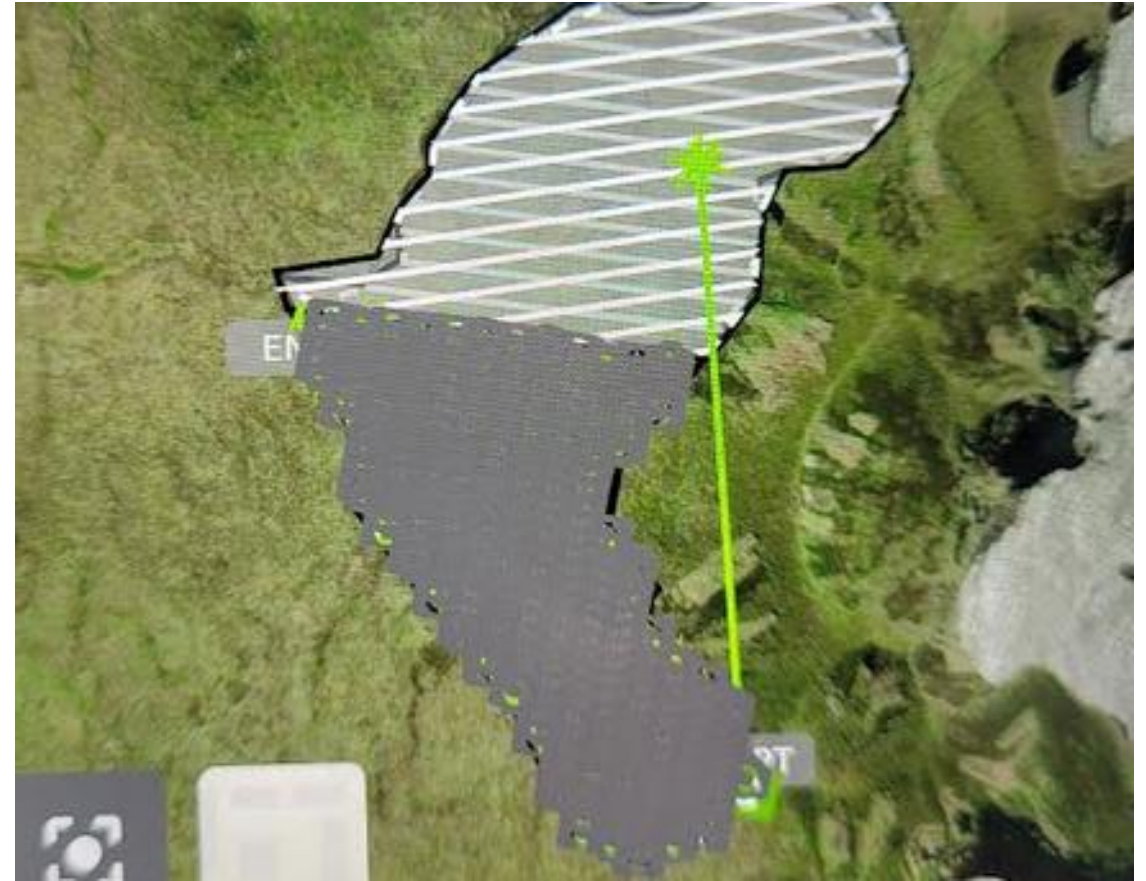
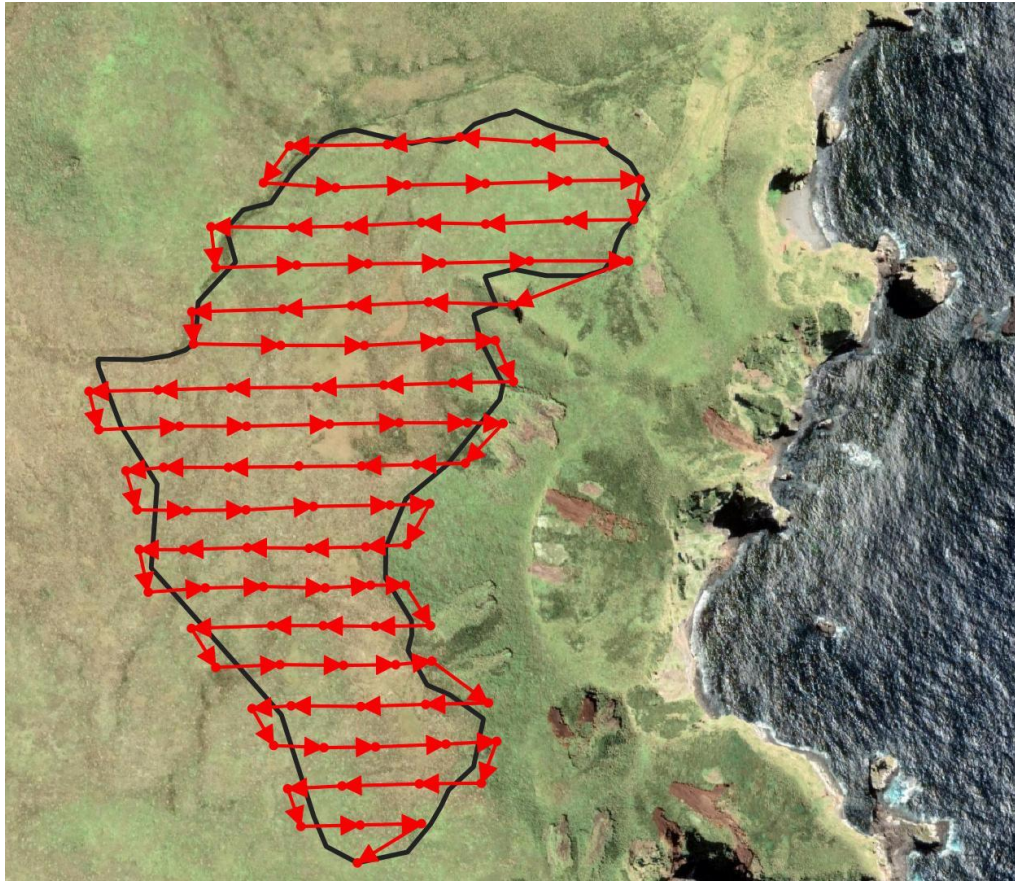


Tests for whole-island estimate





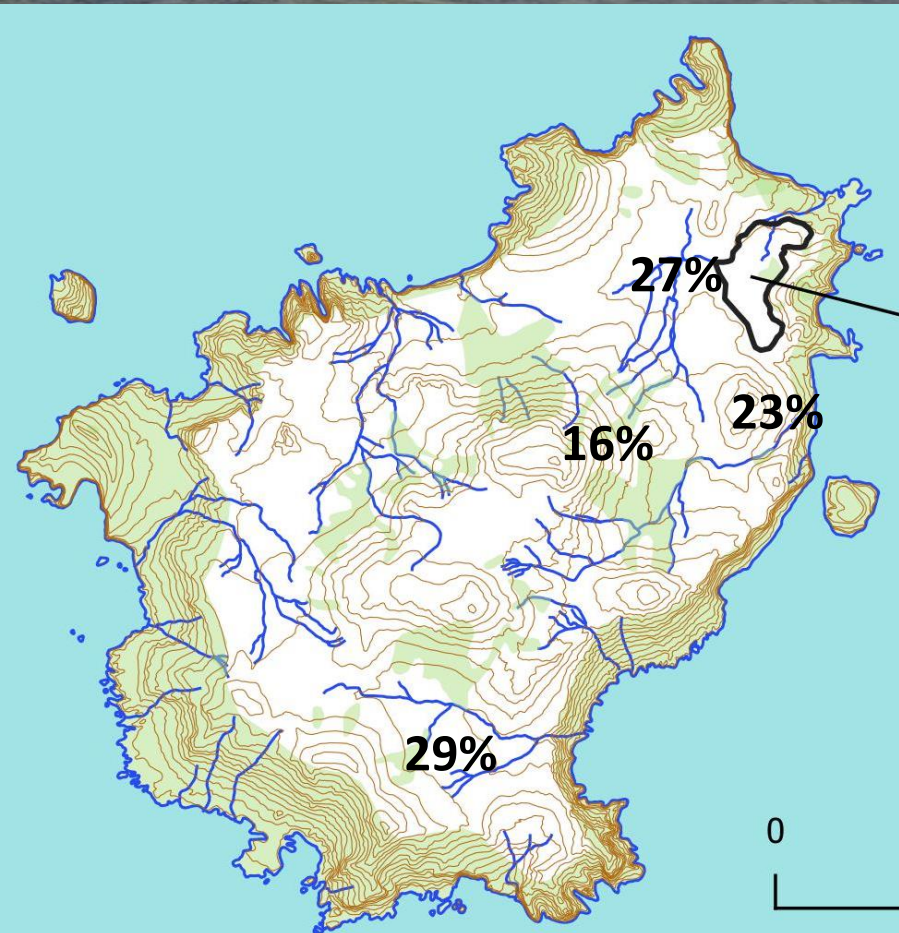
Drone method transferability



Walker & Elliott 2022



Nest-contents correction for drone counts



Outreach



