Braided river bird conservation: How far have we come over the last 40 years?

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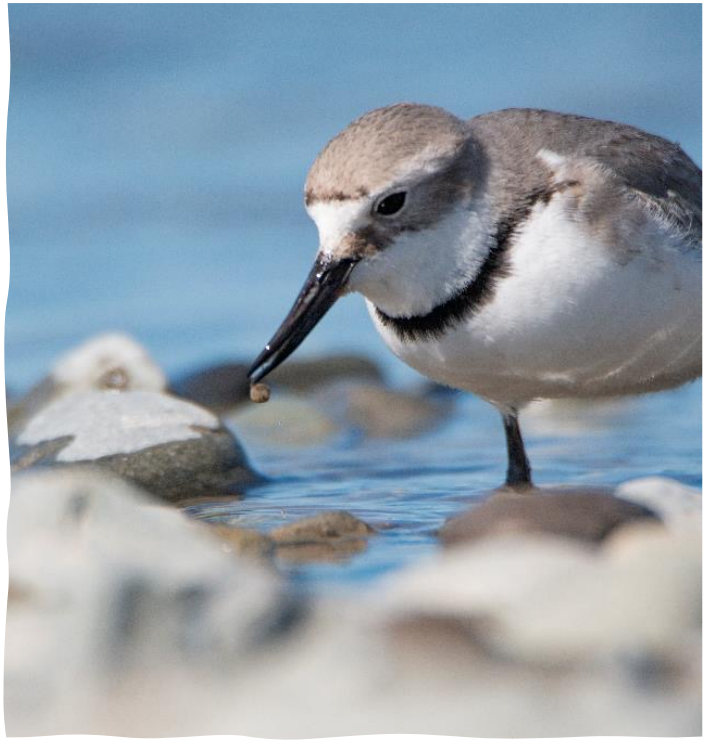
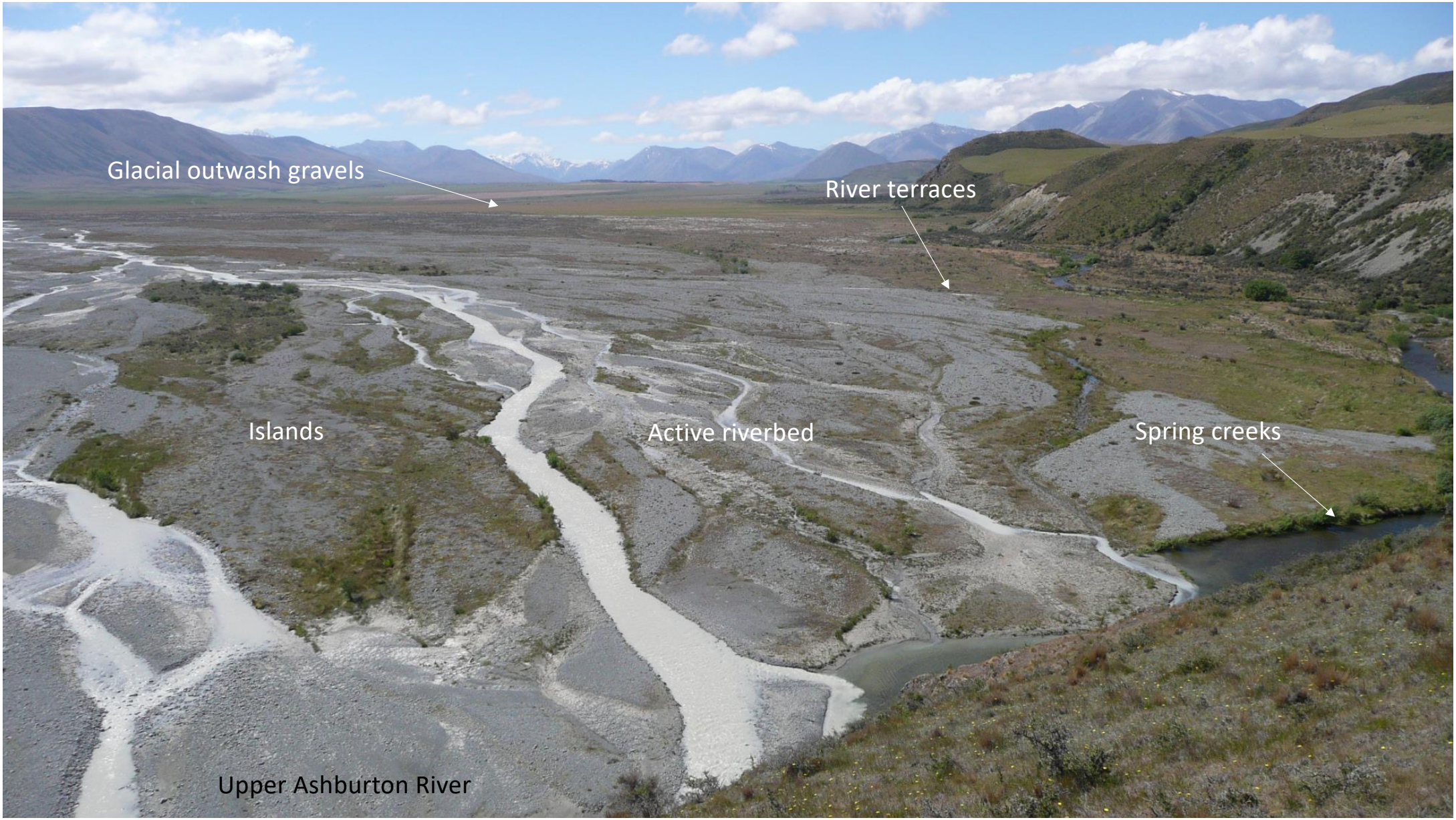
Rangitata River – Image: Peter Langlands

Outline

- A reflection on early days of braided river bird conservation
- The importance of the early bird counts
- Understanding habitat requirements and threats
- Advances in predator control – from trapping at nests to landscape scale control



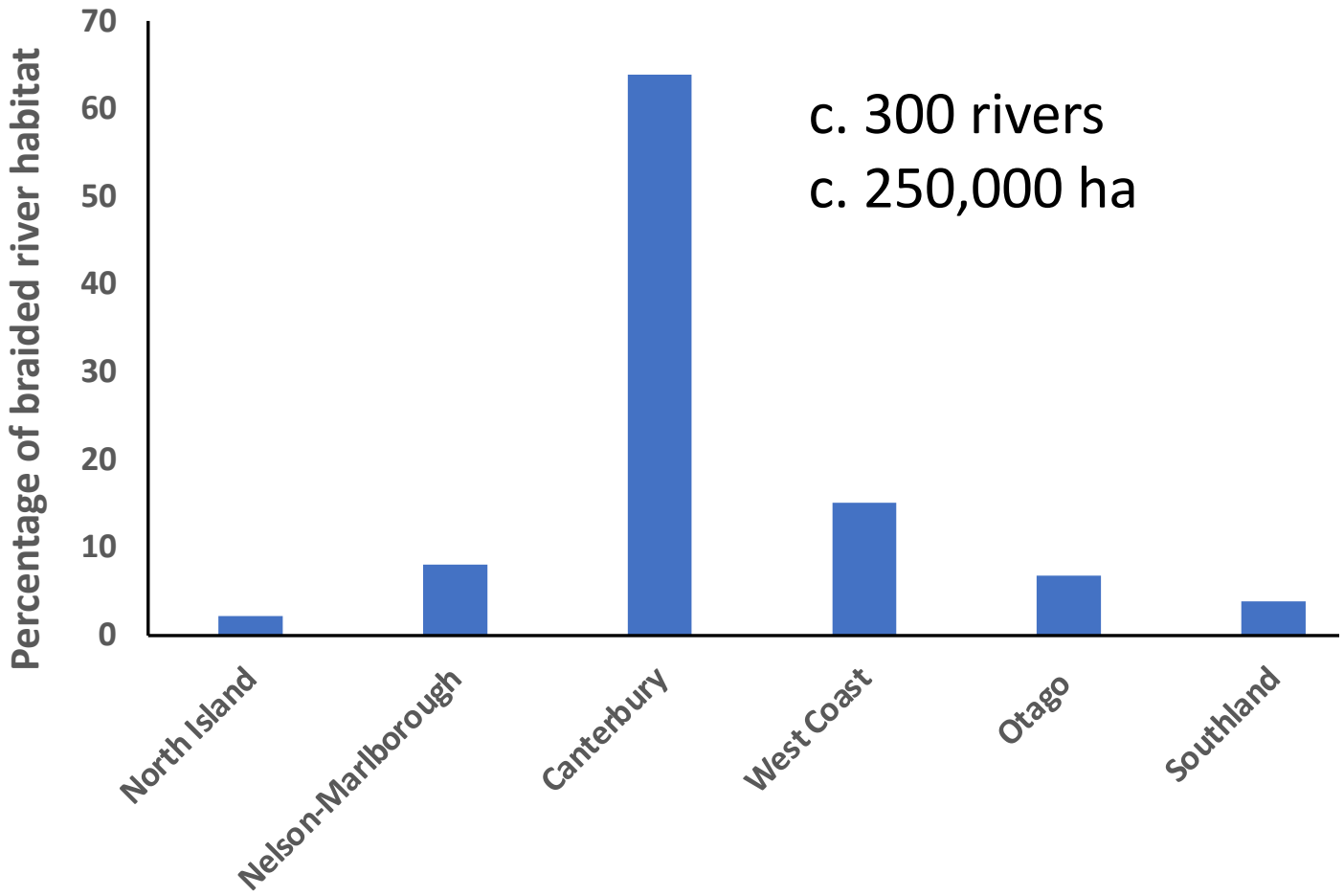

Glacial outwash gravels
River terraces
Islands
Active riverbed
Spring creeks
Upper Ashburton River







National distribution of braided rivers

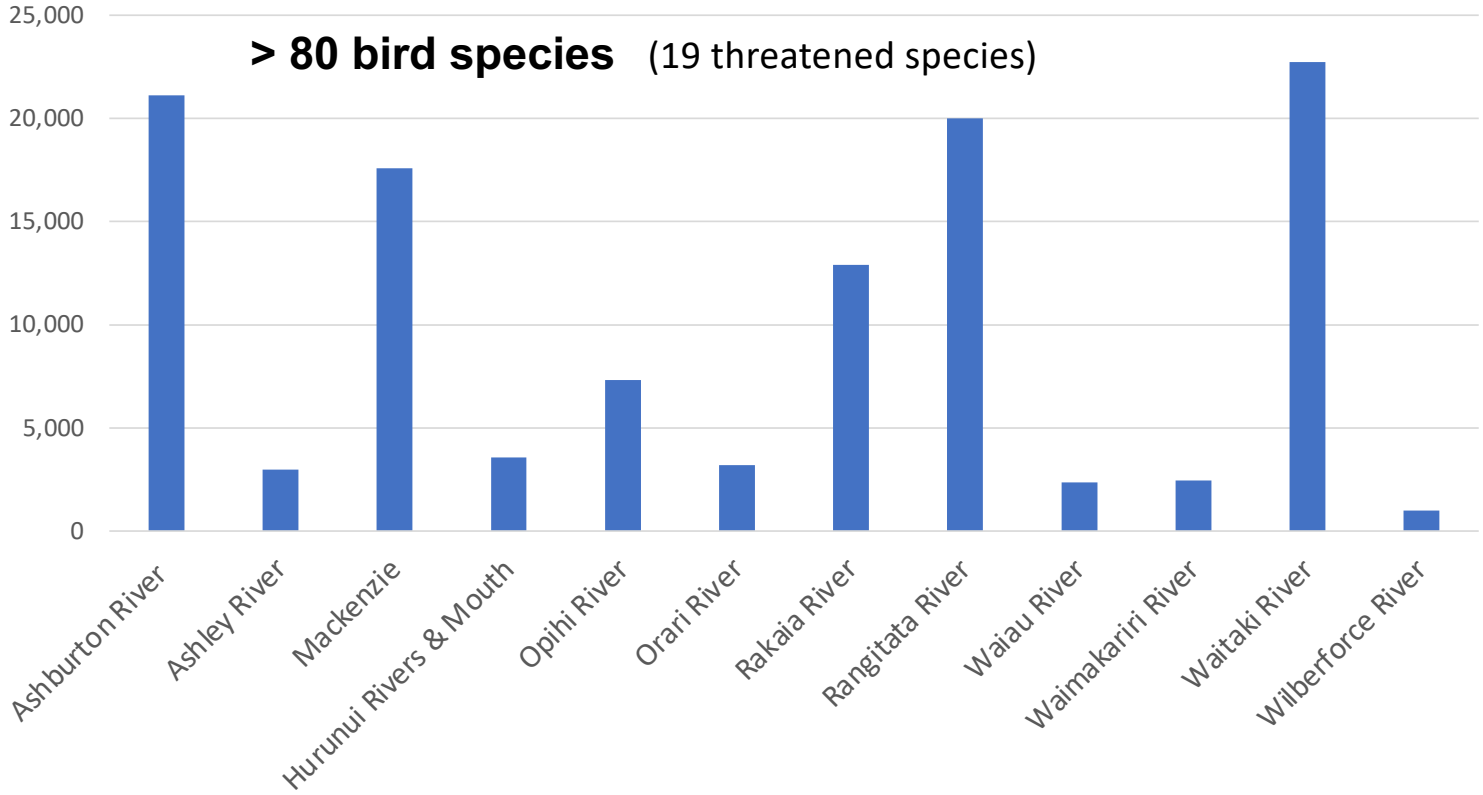


Braided river bird counts

New Zealand Wildlife Service

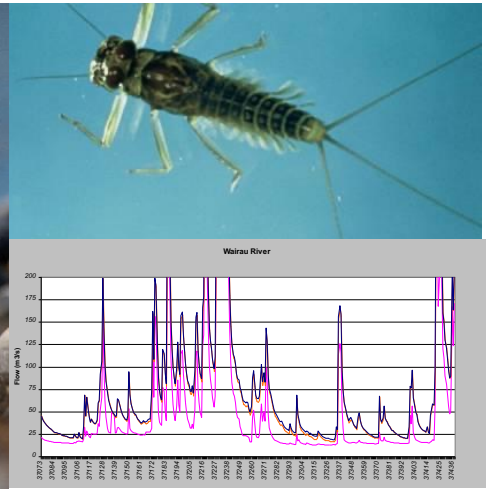
- Standardised walk-through surveys
- Started in 1960s by NZ Wildlife Service and continue today
- Provide the basis for understanding significance for wildlife and measuring response to management

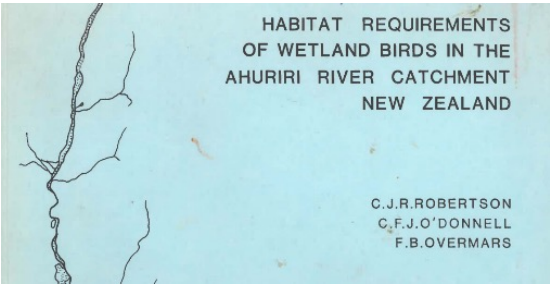
Number of wetland birds from index counts on rivers



O'Donnell & Moore (1983), Robertson et al. (1984), Maloney (1999)

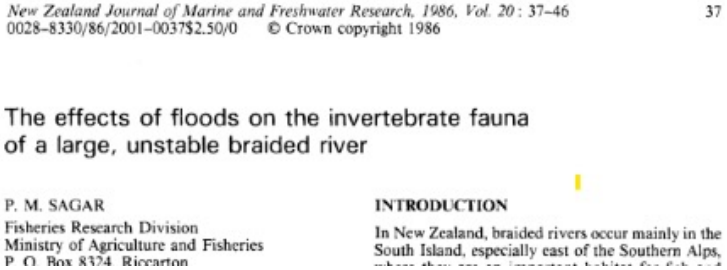
1980s - Habitat use studies





The diet of the Wrybill (*Anarhynchus frontalis*) and the Banded Dotterel (*Charadrius bicinctus*) on two braided rivers in Canterbury, New Zealand

By KENNETH F. D. HUGHEY
Department of Resource Management, P.O. Box 56, Lincoln University, New Zealand


New Zealand Journal of Marine and Freshwater Research, 1986, Vol. 20: 37–46 37
0028–8330/86/2001–0037$2.50/0

The effects of floods on the invertebrate fauna of a large, unstable braided river

P. M. SAGAR
Fisheries Research Division
Ministry of Agriculture and Fisheries
P. O. Box 8324, Riccarton

INTRODUCTION

In New Zealand, braided rivers occur mainly in the South Island, especially east of the Southern Alps,

1980 & 1990s – Nest success studies

ELSEVIER

Biological Conservation

Volume 106, Issue 2, August 2002, Pages 225-236

Causes of mortality at nests of ground-nesting birds in the Upper Waitaki Basin, South Island, New Zealand: a 5-year video study

Mark D Sanders, Richard F Maloney

ALBERT REBERGEN[1,2,3], RACHEL KEEDWELL[1,4], HENRIK MOLLER[1] and RICHARD MALONEY[2] 33

[1]Zoology Department, University of Otago, P.O. Box 56, Dunedin, New Zealand
[2]Department of Conservation, Private Bag, Twizel, New Zealand
[3]Present address & author for correspondence: Department of Conservation, P.O. Box 191, Masterton, New Zealand
[4]Present address: Department of Conservation, Private Bag, Twizel, New Zealand

BREEDING SUCCESS AND PREDATION AT NESTS OF BANDED DOTTEREL (*CHARADRIUS BICINCTUS*) ON BRAIDED RIVERBEDS IN THE CENTRAL SOUTH ISLAND, NEW ZEALAND

Summary: Egg and chick loss at banded dotterel (*Charadrius bicinctus*) nests was studied over the season on the Tekapo, Ohau and Ahuriri Rivers in the Central South Island. Egg loss at nests was higher on

BREEDING OF THE BANDED DOTTEREL, *Charadrius bicinctus*, ON THE CASS RIVER DELTA, CANTERBURY

By MARY BOMFORD

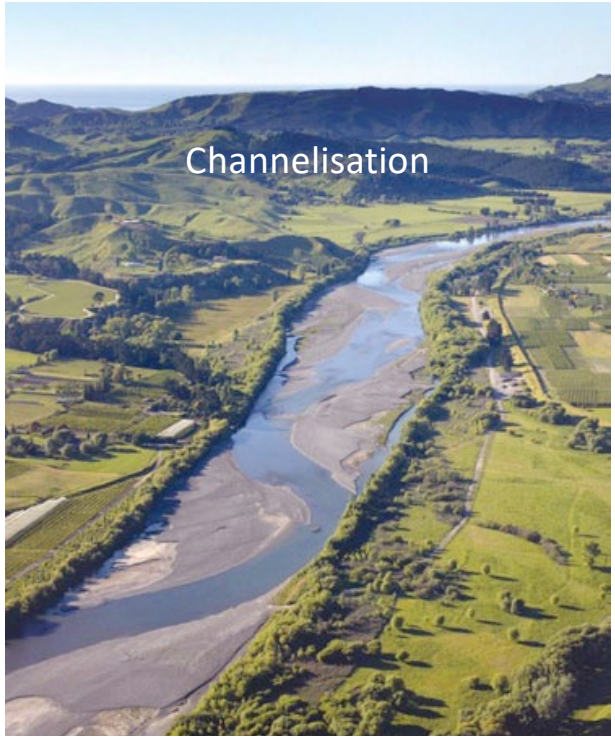
ABSTRACT

Laying began in August, peaked in late September to early October and finished in December. Eggs were laid at intervals of three days to a normal


Introduced predators


Loss of water


Weed invasion

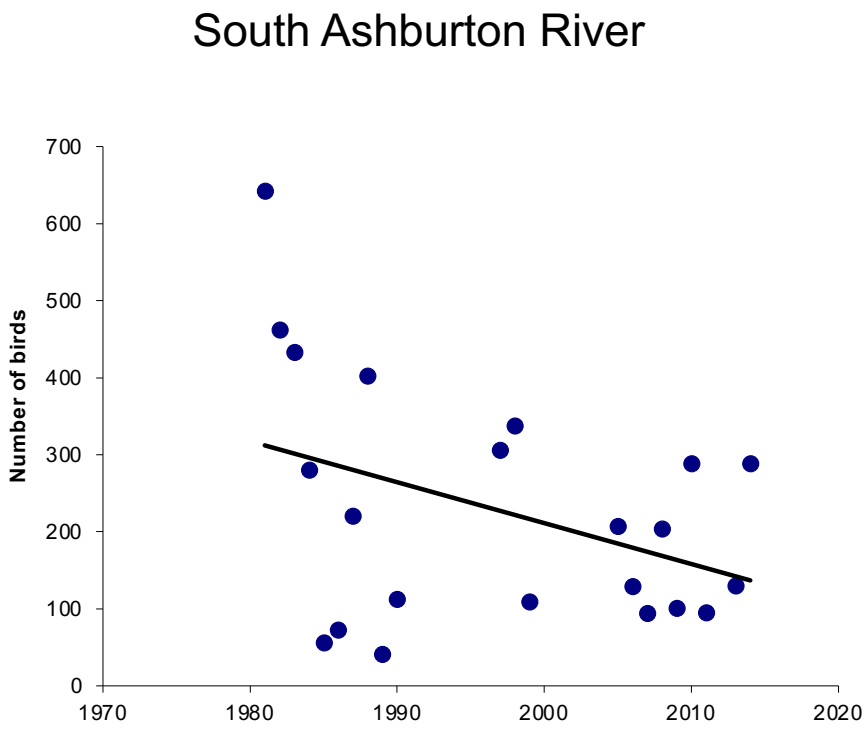

Channelisation


Threats


Disturbance/habitat modification

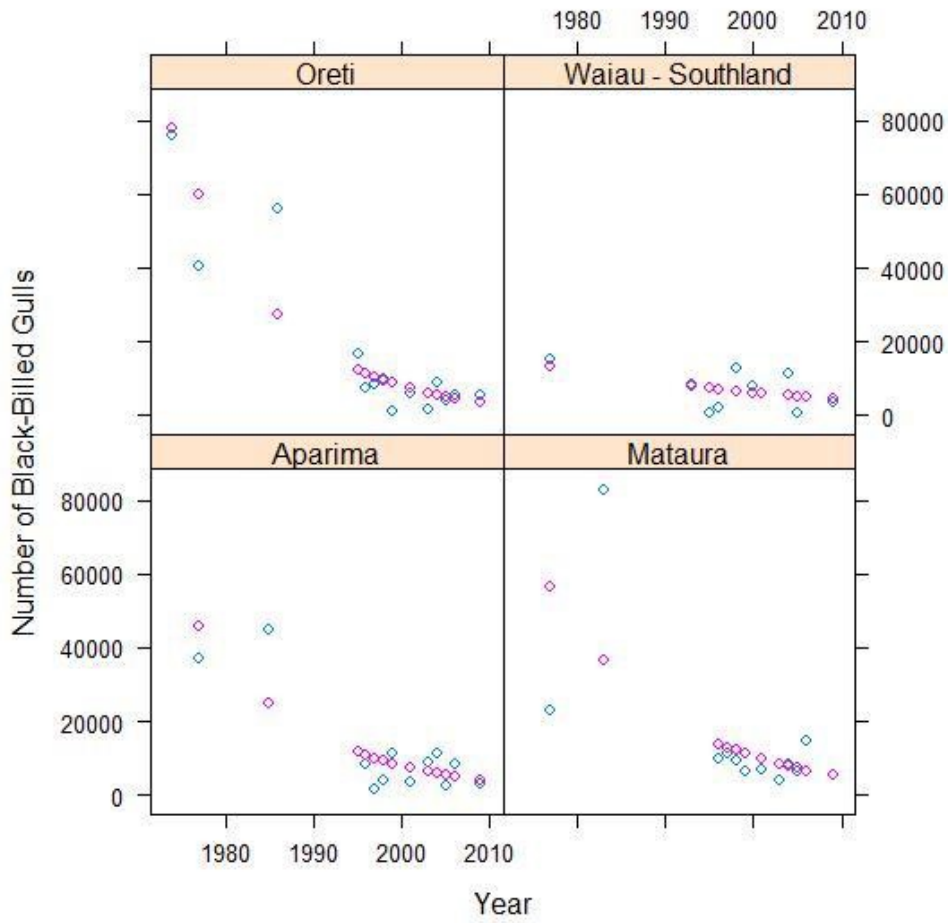

Recreation/vehicles

Black-fronted tern declines



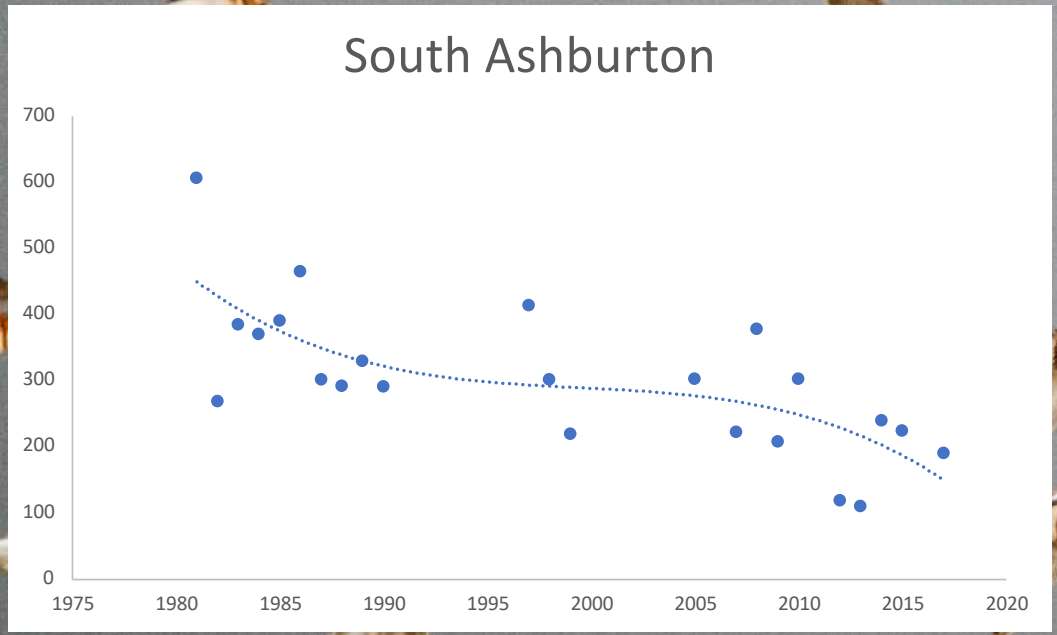
O'Donnell & Hoare 2011. NZ J Ecology 35:30–43.

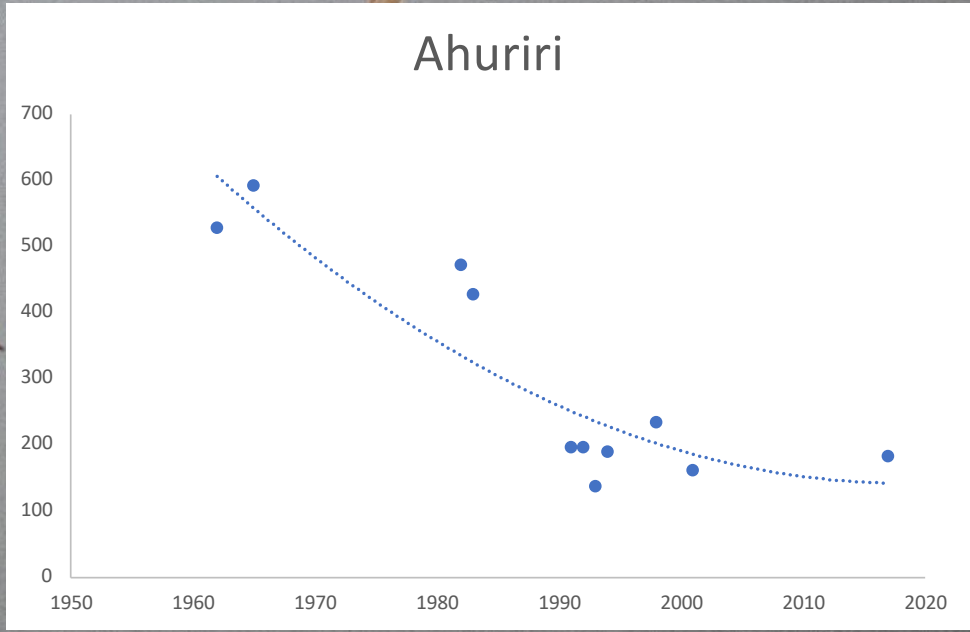
Black-billed gull declines



McClennan & Smith 2015. Wildlands Report

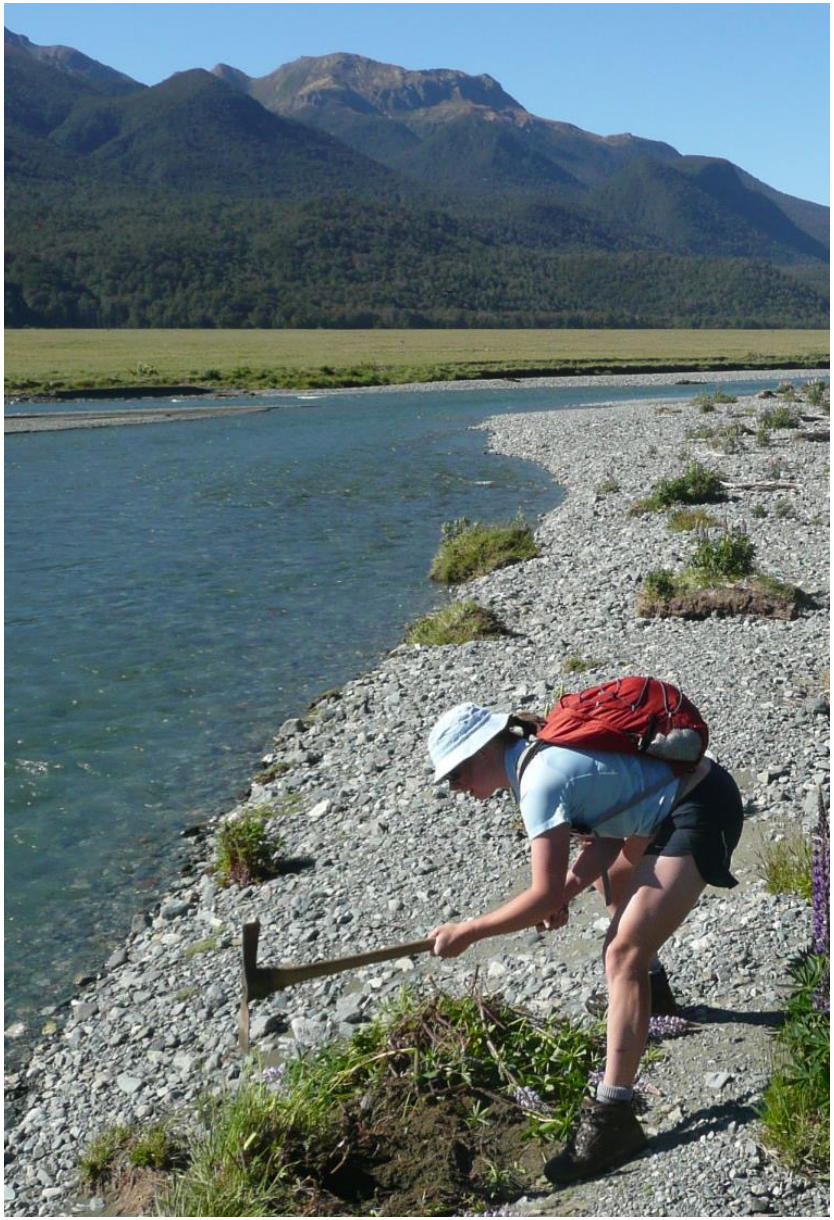
Banded dotterel – Examples of population decline



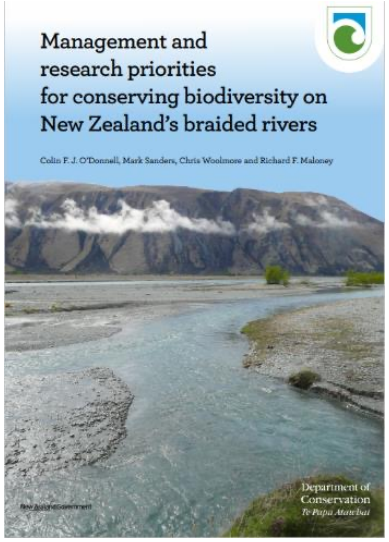


O'Donnell & Monks 2020 Notornis

Can we reverse the decline?



Braided river management for birds



- Ongoing predator control
- Ongoing weed control
- Rabbit control
- Statutory advocacy
- Creation of safe islands
- Maintain flows and productivity
- Monitoring and adapting management responses
- Empowering others

Early predator around kakī/black stilt nests


Biological Conservation
Volume 105, Issue 3, June 2002, Pages 369-374

Predator control for protecting kaki (*Himantopus novaezelandiae*)—lessons from 20 years of management

Rachel J Keedwell [1], Richard F Maloney, Dave P Murray

- Trap lines and rings of traps around nests
- Variable effort 1980 – 2000
- No significant increase in hatching success

Image: Liz Brown

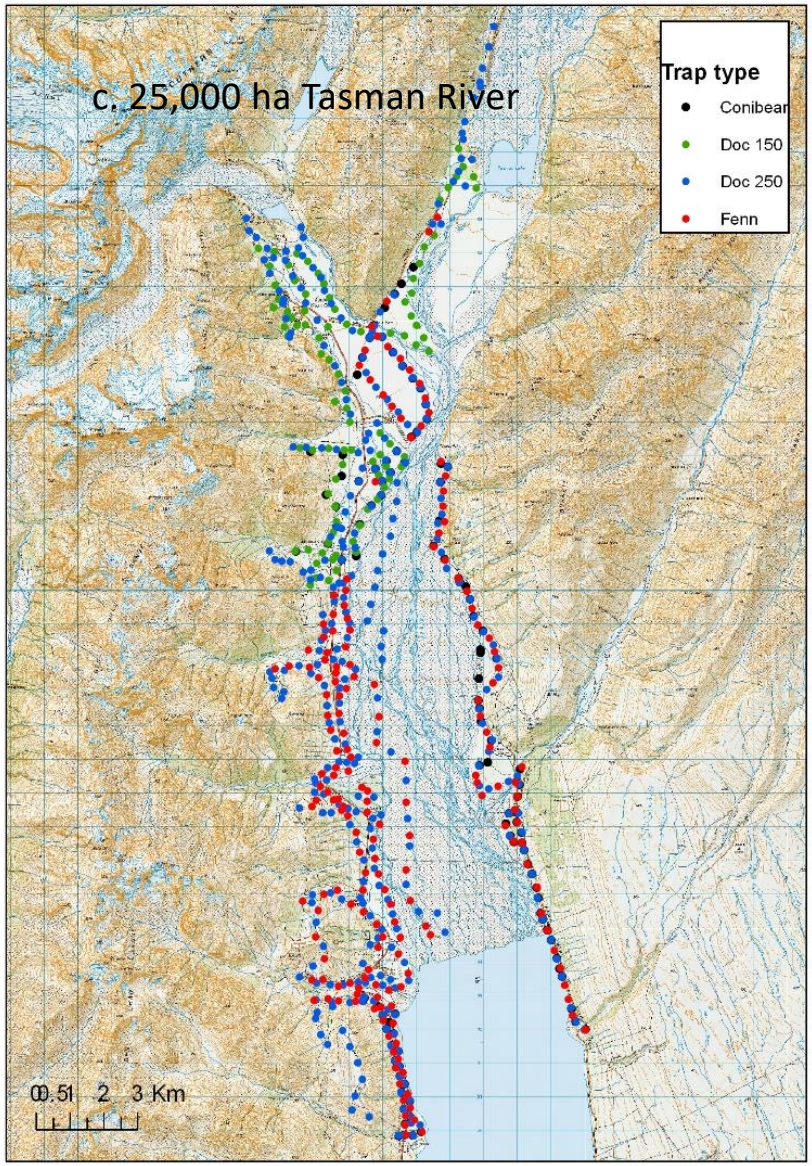
Move to ‘landscape scale’ trapping Tasman River catchment

Biological Conservation
Volume 167, November 2013, Pages 363-370

Species-specific responses by ground-nesting Charadriiformes to invasive predators and river flows in the braided Tasman River of New Zealand

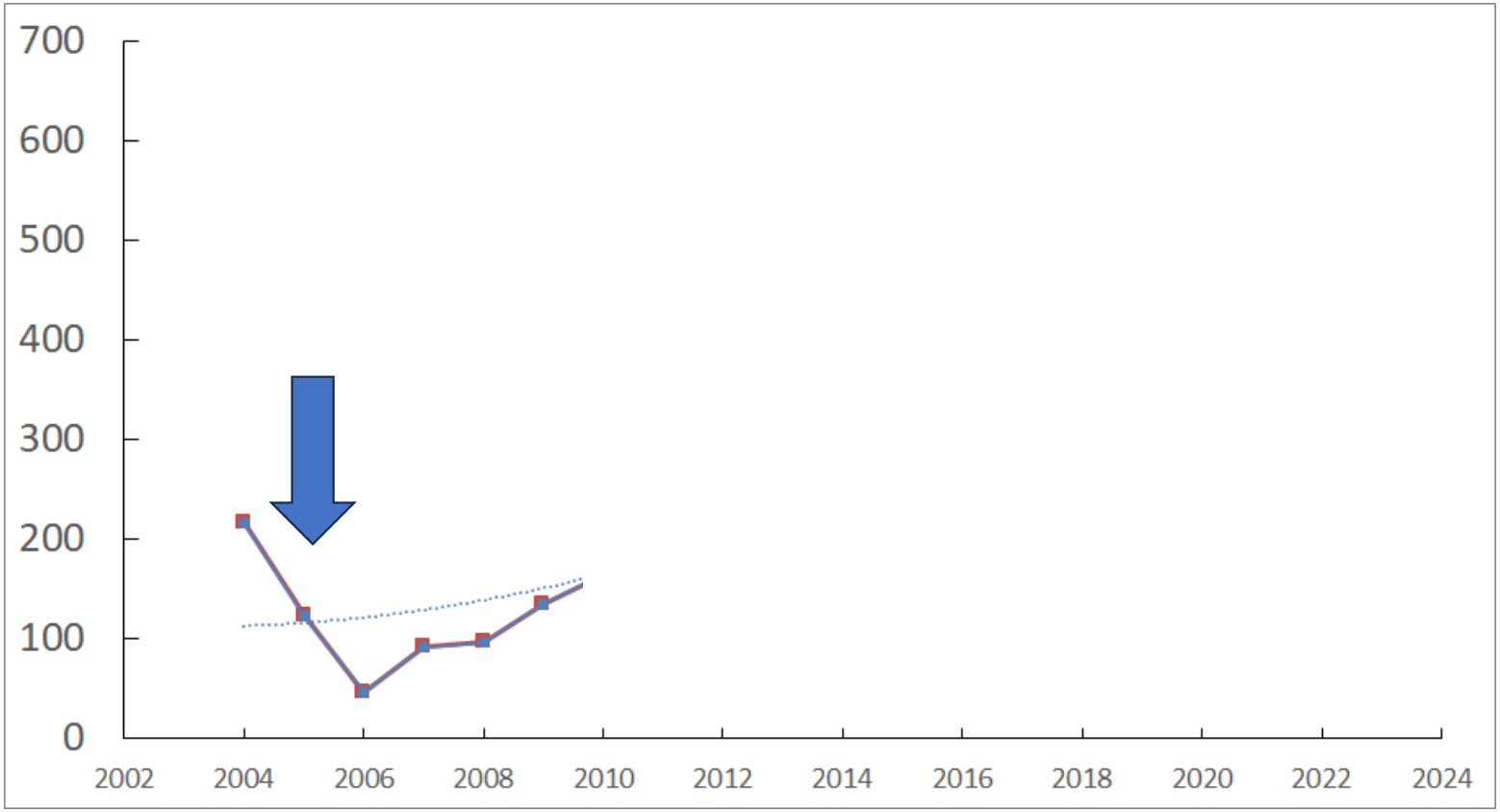
Jennyffer Cruz [a], Roger P. Pech [a b], Philip J. Seddon [c], Simone Cleland [d], Dean Nelson [d], Mark D. Sanders [a], Richard F. Maloney [d]

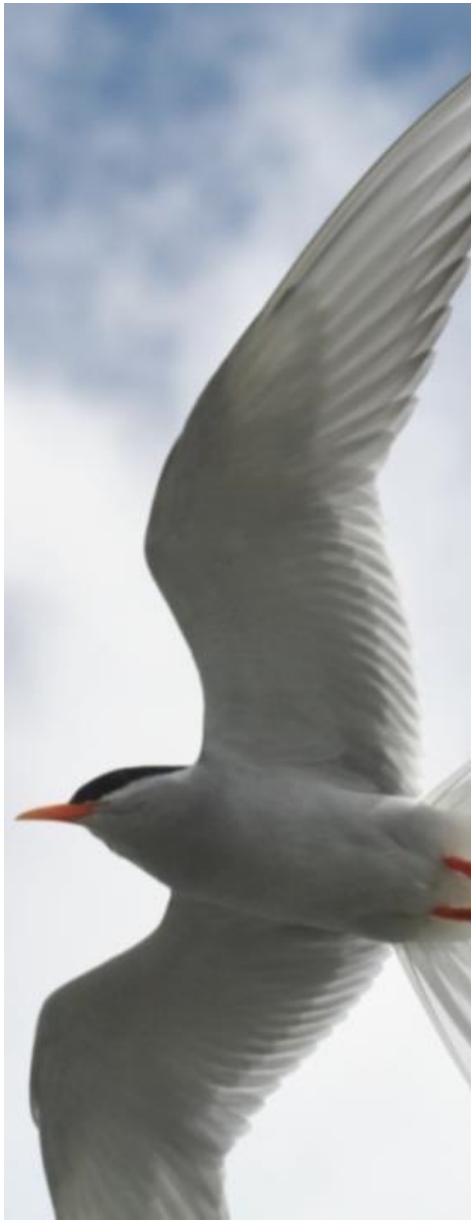
- 2005-2009 (5 yrs)
- 6761 predators caught
- c.1,200 traps
- Only kakī increased



Counts of black fronted terns -Tasman River

Predator control began in 2005





Counts of black fronted terns -Tasman River

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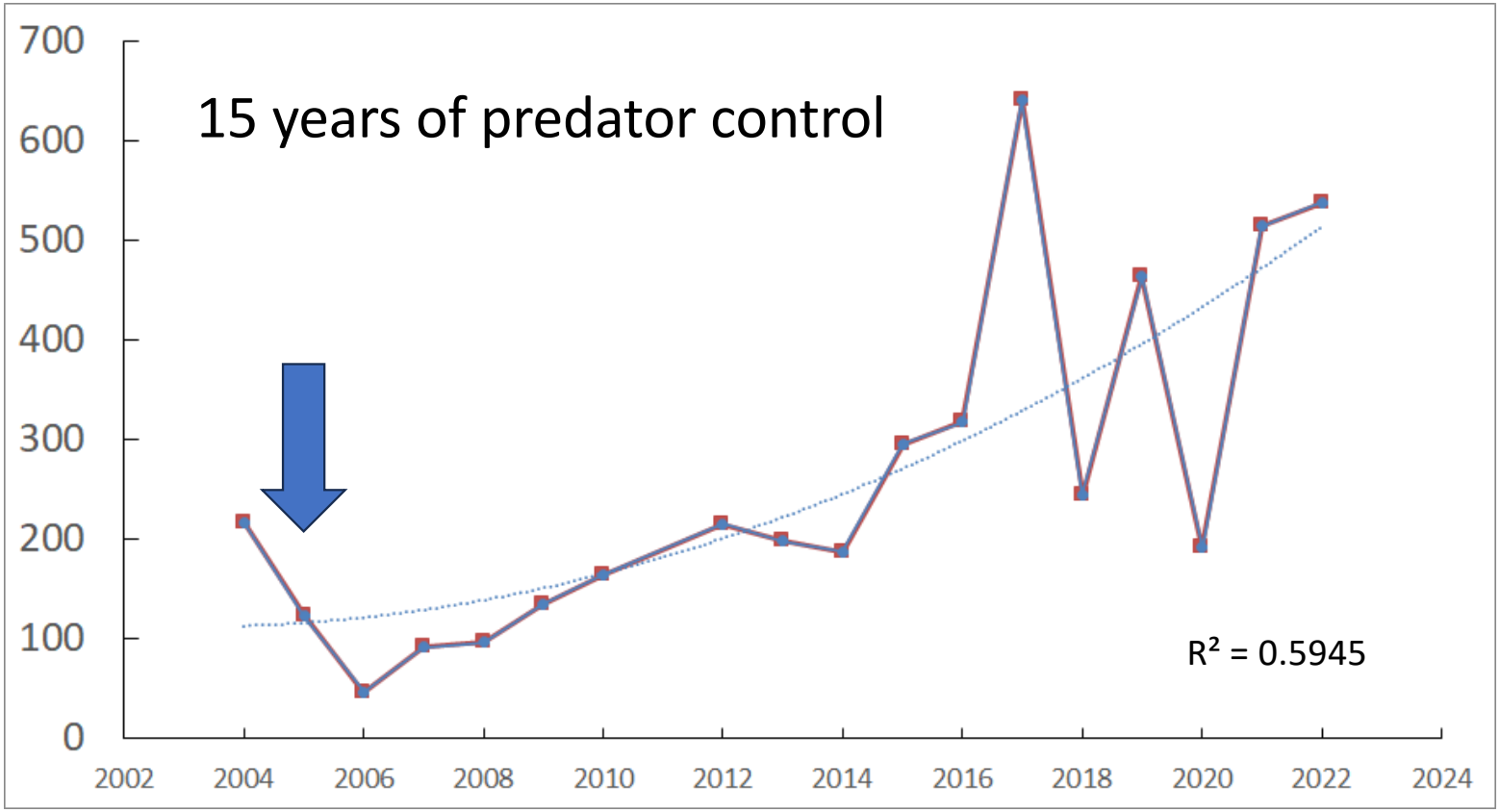
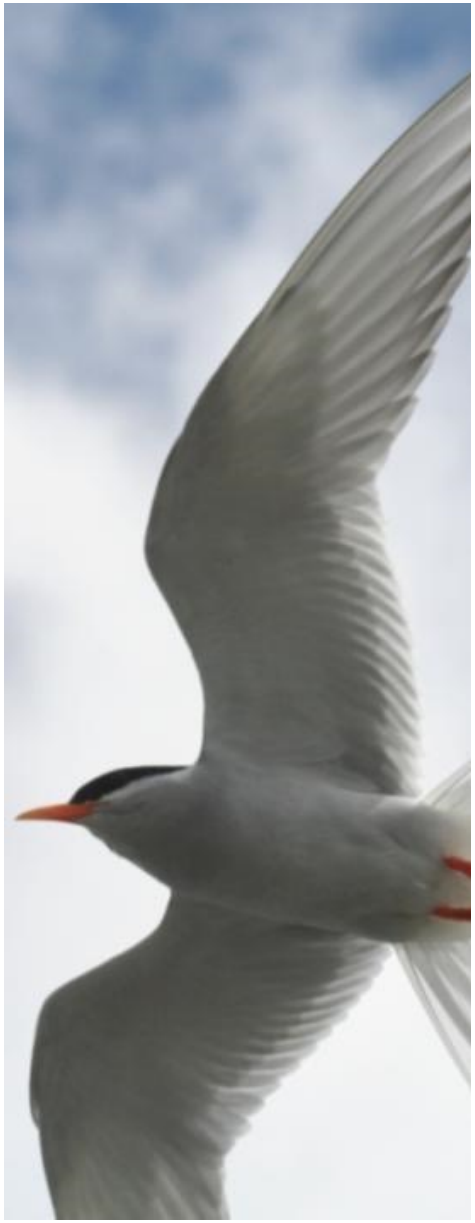
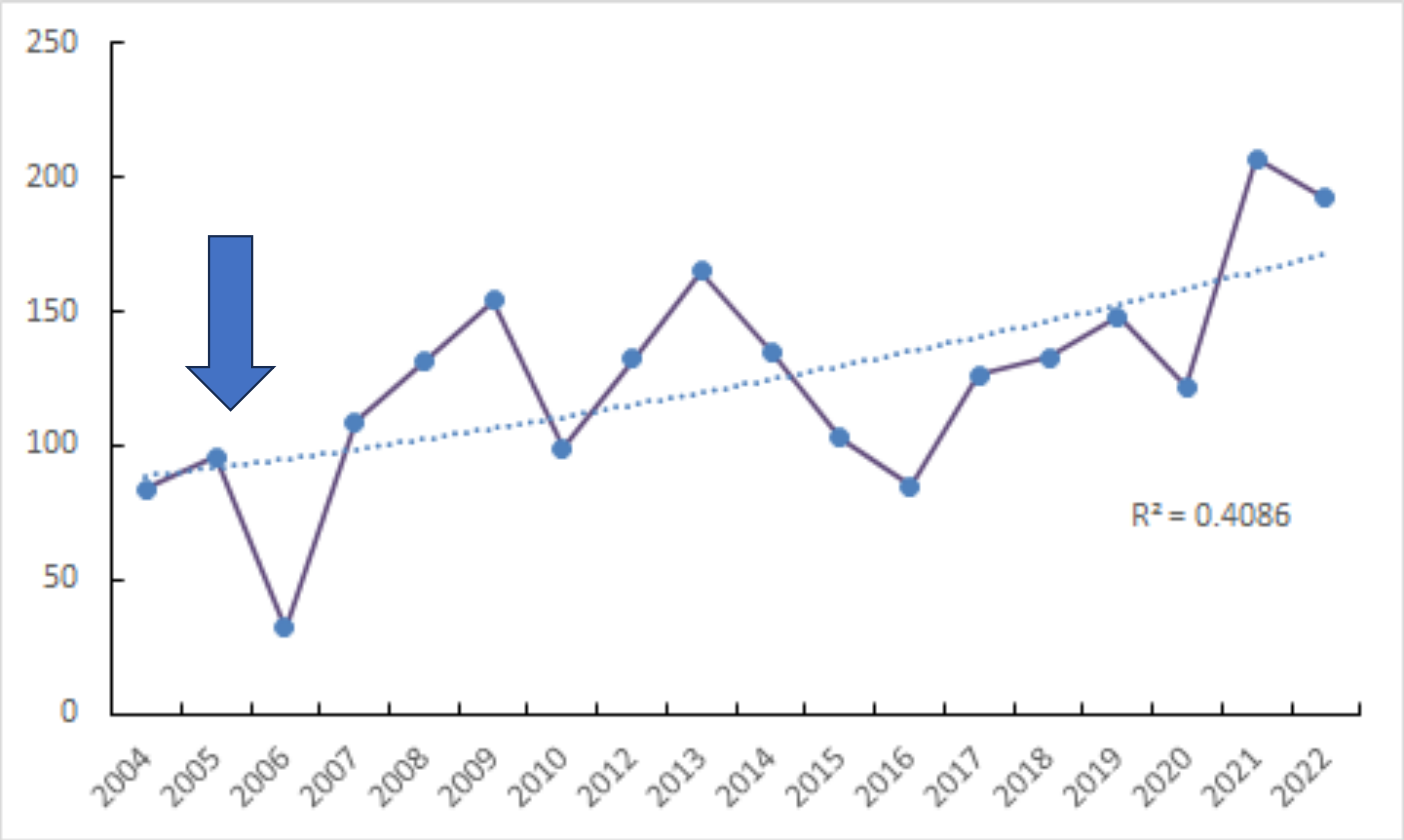




Counts of wrybills - Tasman River

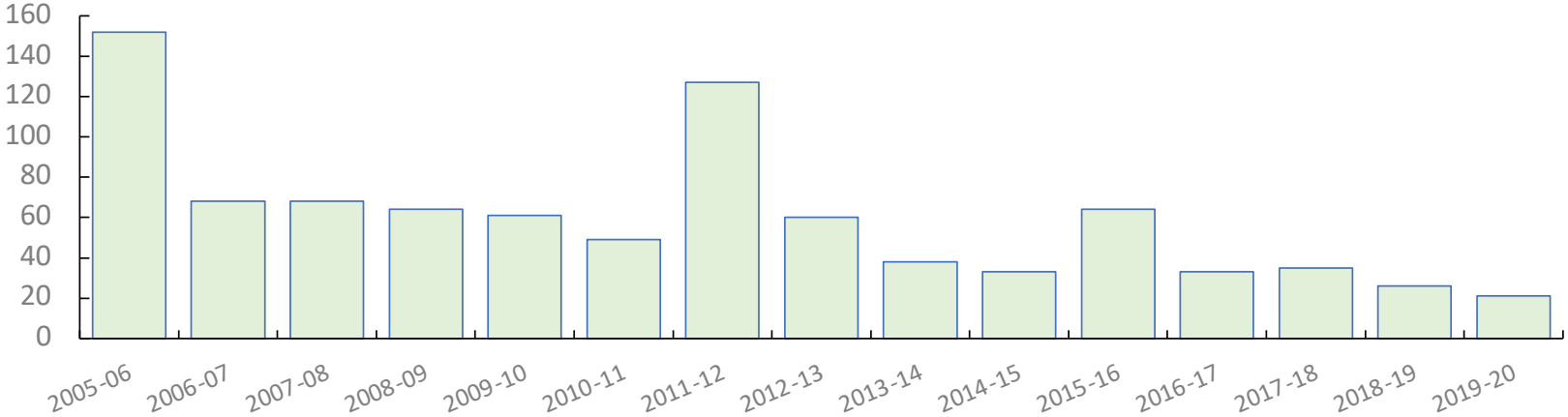
Predator control began in 2005



Tasman River – Predator captures 2005-2020

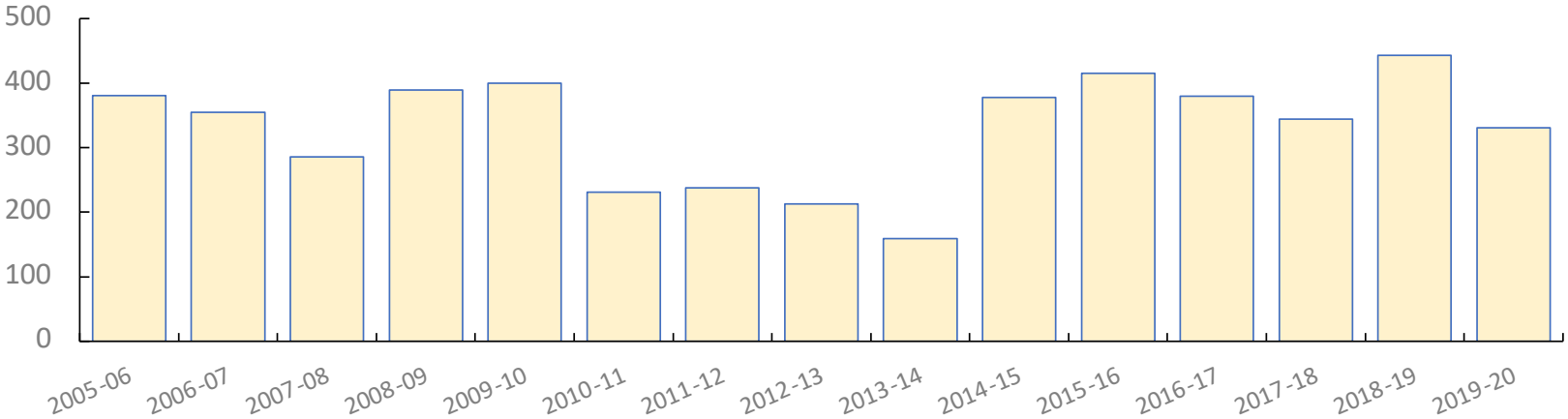
Ferret

Total = 899



Stoat

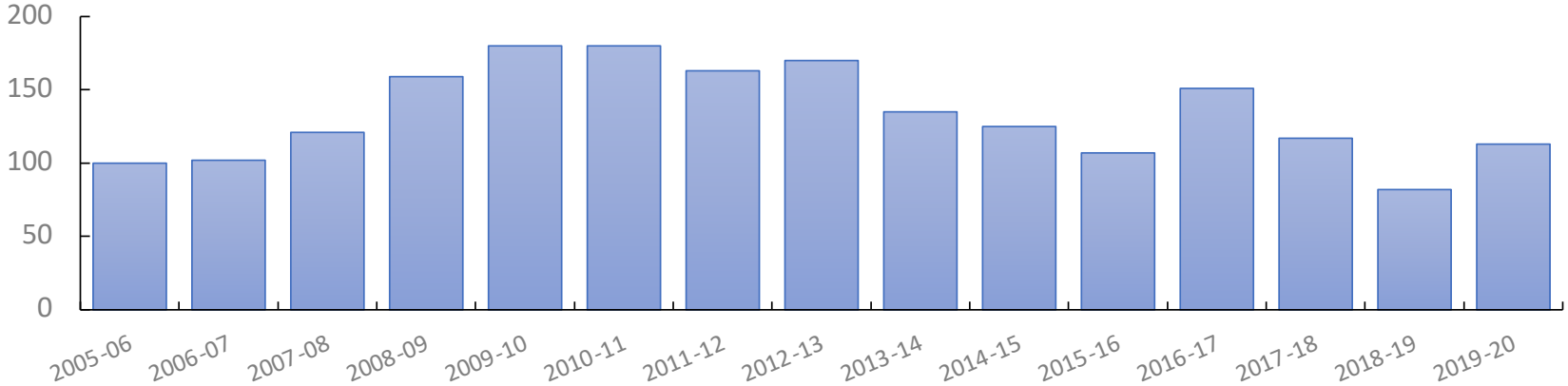
Total = 4943



Tasman River – Predator captures 2005-2020

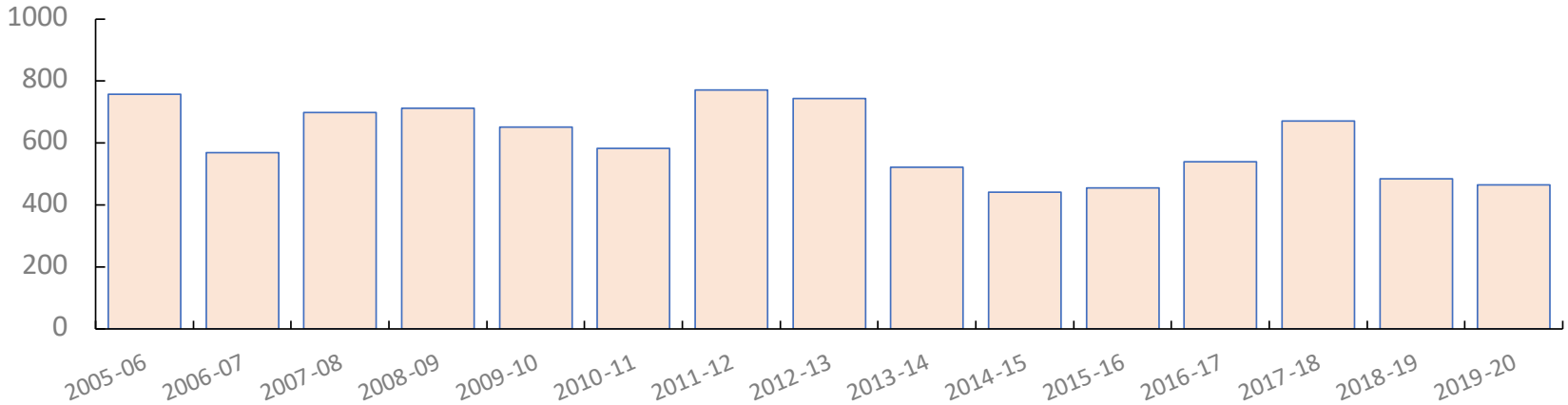
Feral cat

Total = 2005



Hedgehog

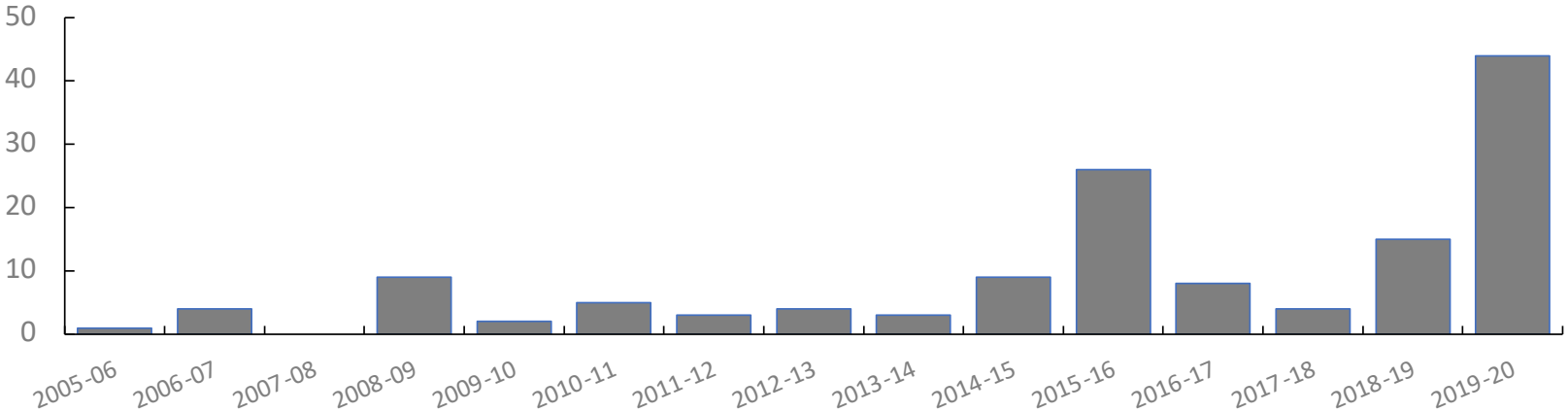
Total = 9068



Tasman River – Predator captures 2005-2020

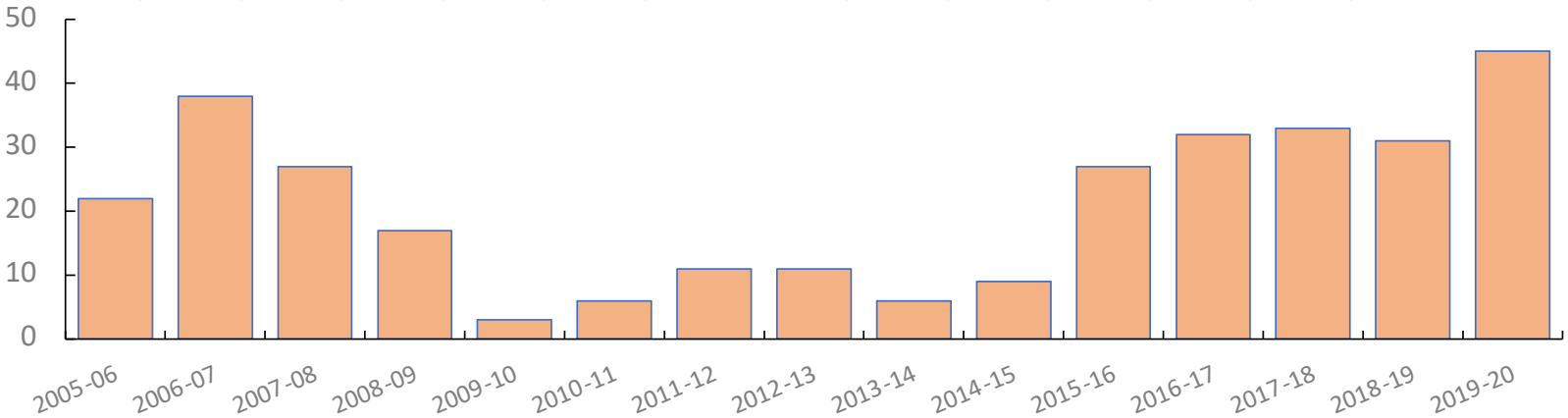
Rat species

Total = 135



Weasel

Total = 318

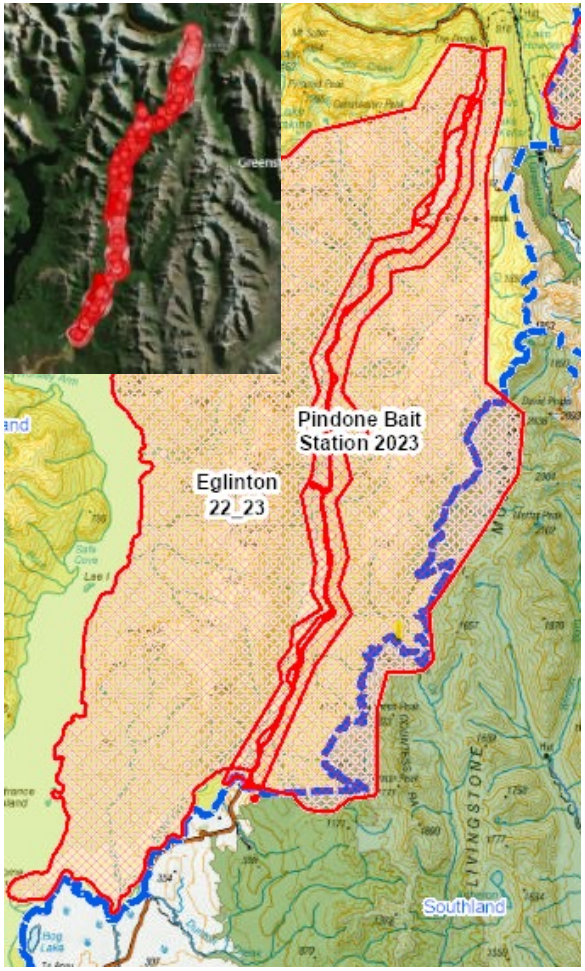


Can predator control in adjacent habitats benefit braided river birds?

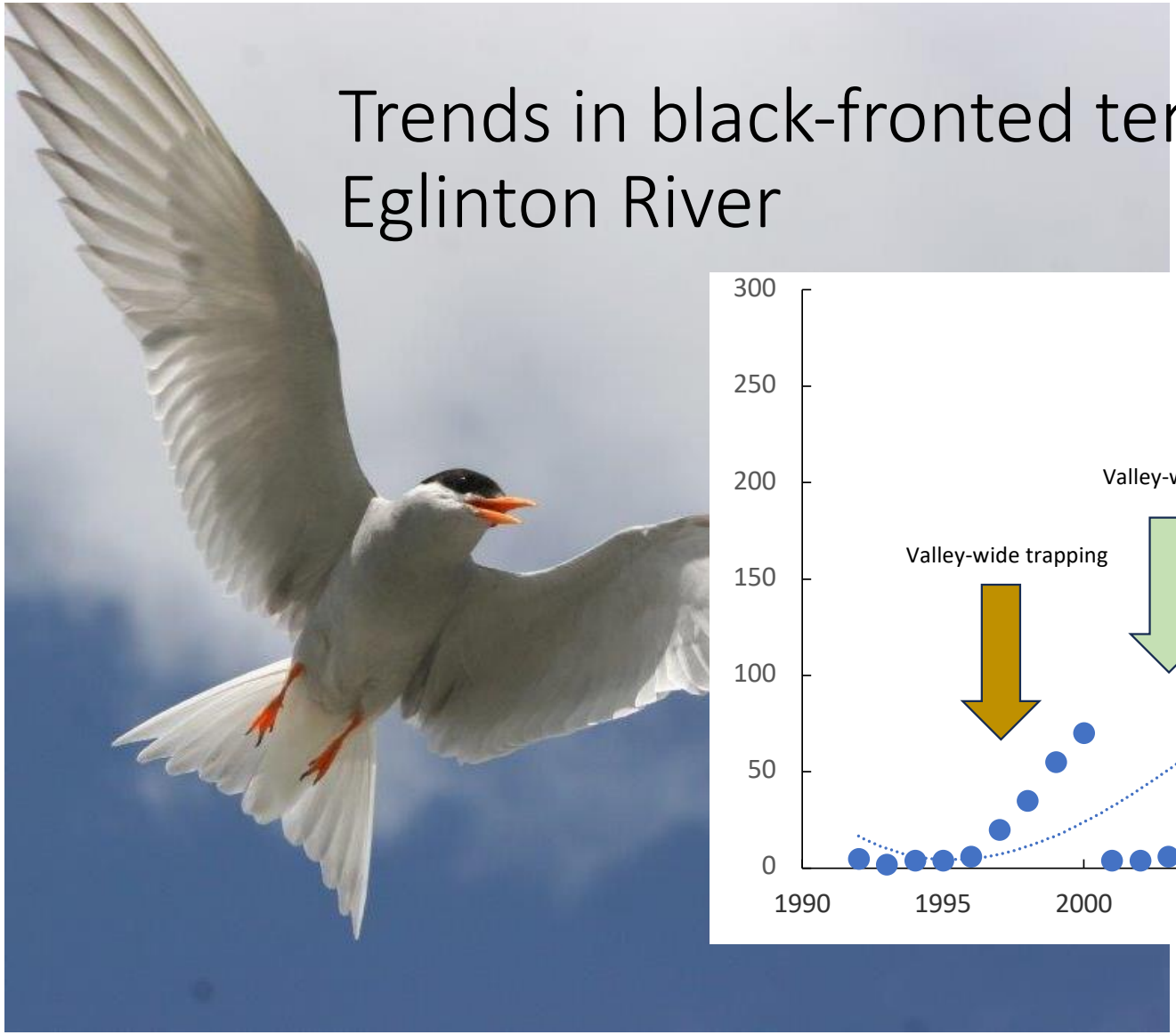
Example of Eglinton Valley Fiordland

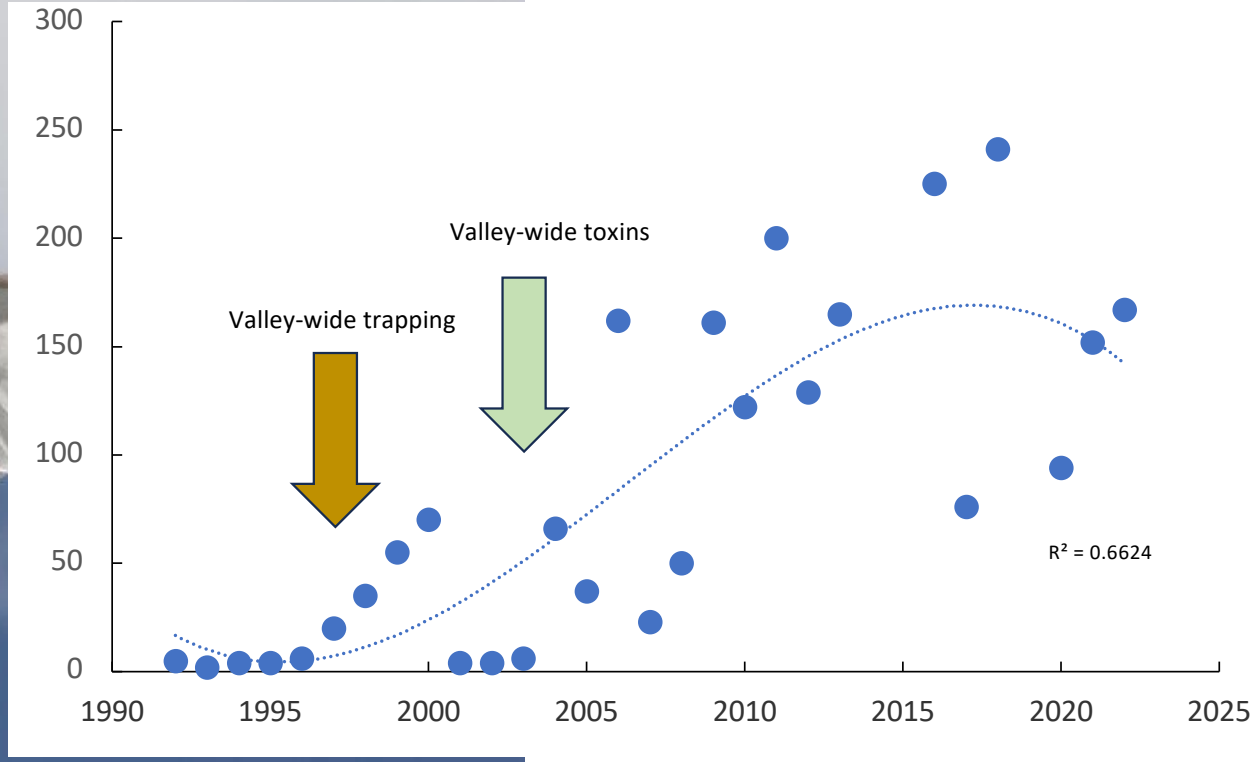
c.30,000 ha

872 traps



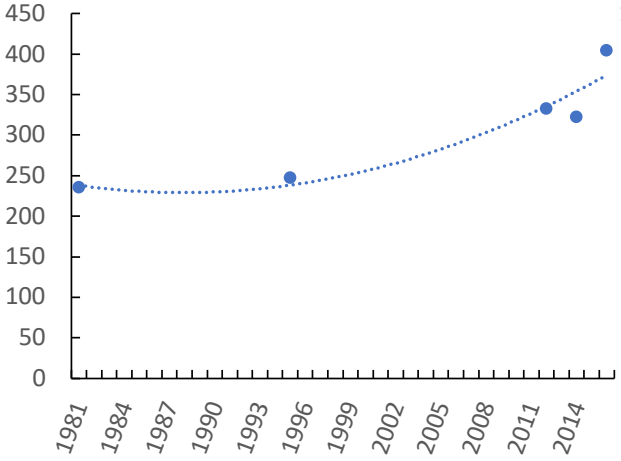
Trends in black-fronted tern numbers – Eglinton River

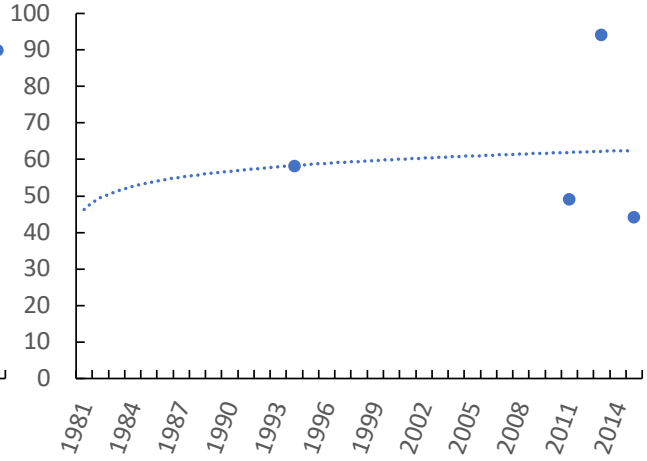


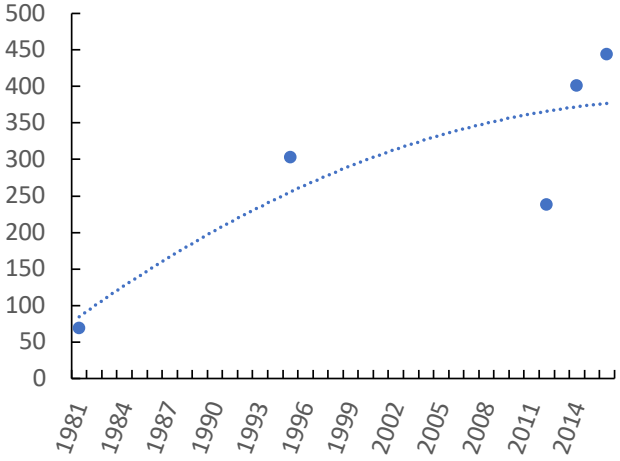


Predator trapping Eglinton Valley – 25 years

Predator control in adjacent habitats
Upper Waimakariri – bird trends

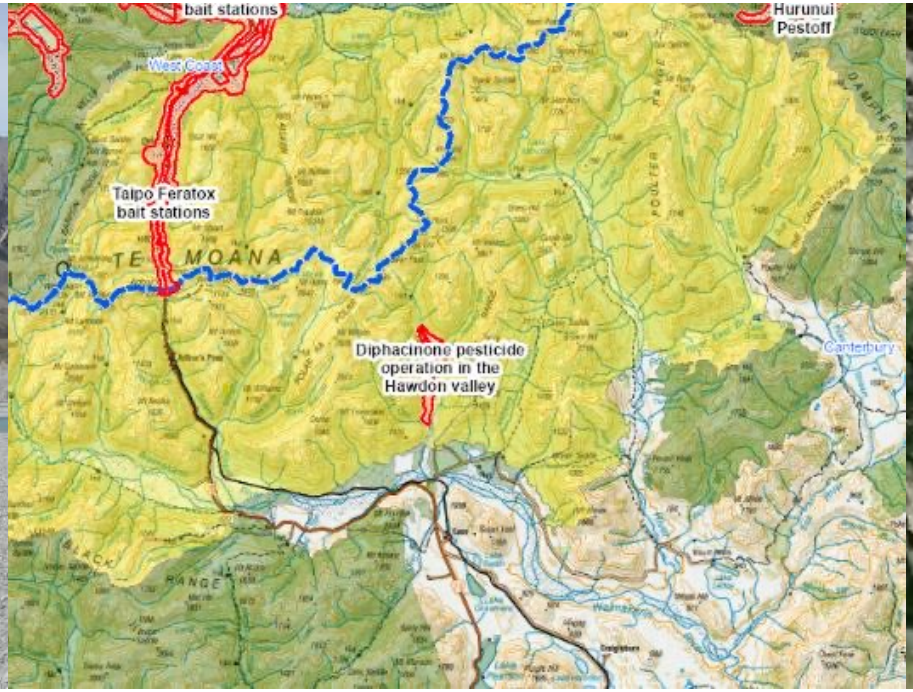






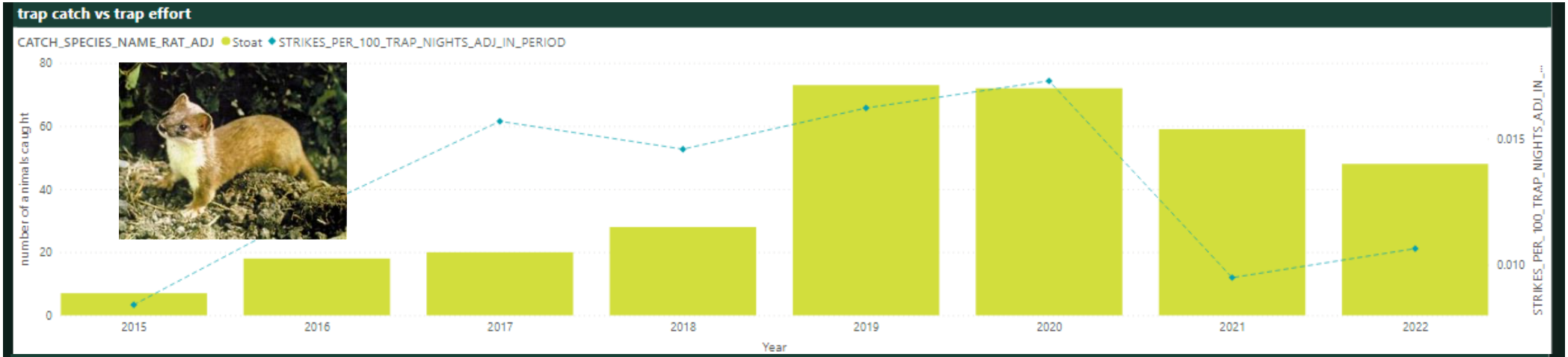
https://braidedrivers.org/wp-content/uploads/A-Repeat-Bird-survey-of-the-Upper-Waimakariri-River-2016.pdf

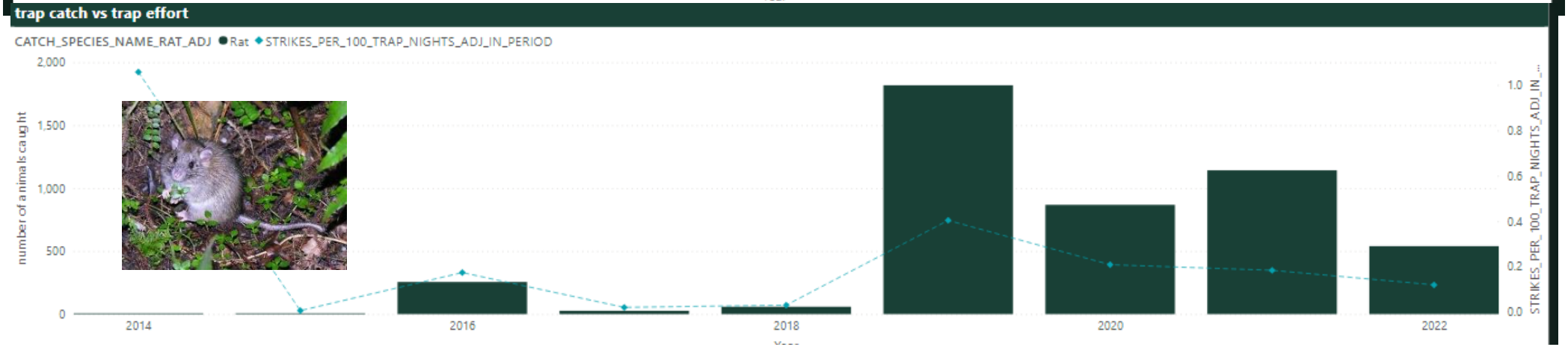
Predator control in adjacent habitats - Upper Waimakariri



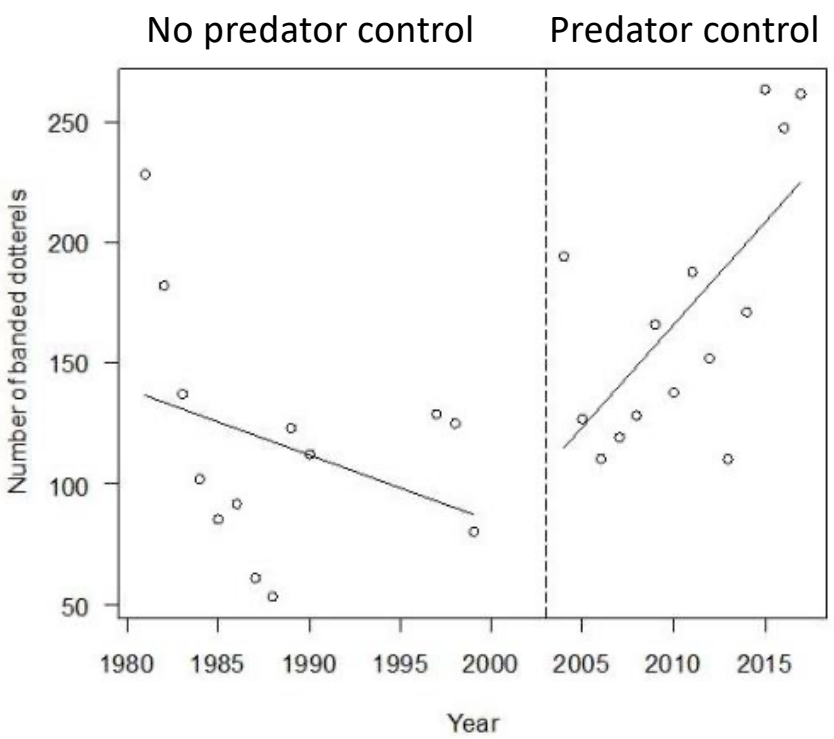
Trapping in adjacent valleys started in 1990 – Expanded to aerial 1080 & trapping over >90,000 ha
>7,000 traps

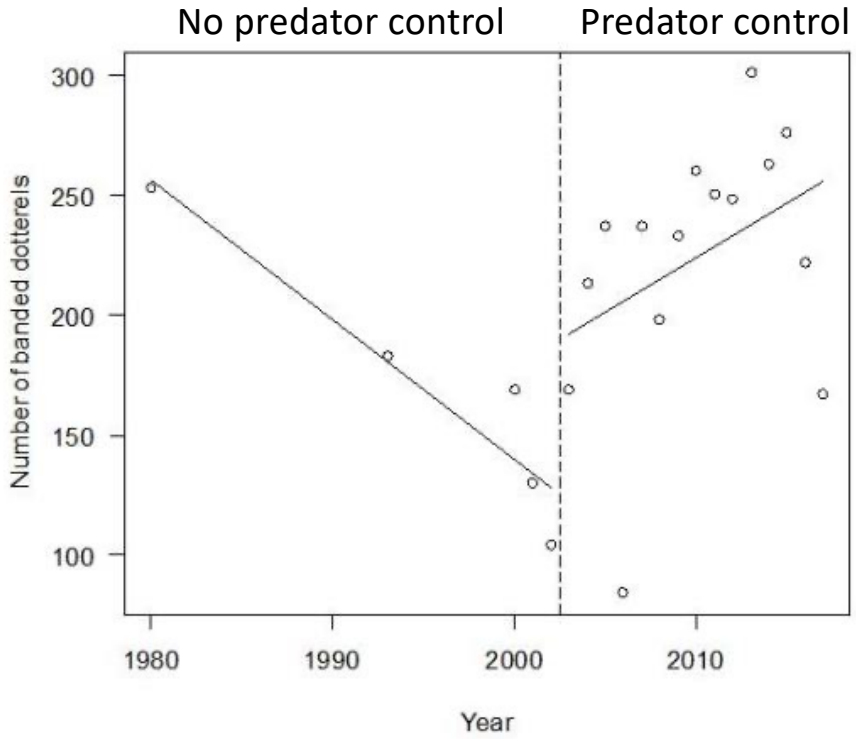
Upper Waimakariri – trapping results





Smaller scales can work!





Banded dotterels - Upper Ashburton River & Ashley River

Active habitat management: creating safe islands from mammalian predators

Schlesselmann et al. 2018. NZ J Ecology 42

Active habitat management: creating safe islands from mammalian predators

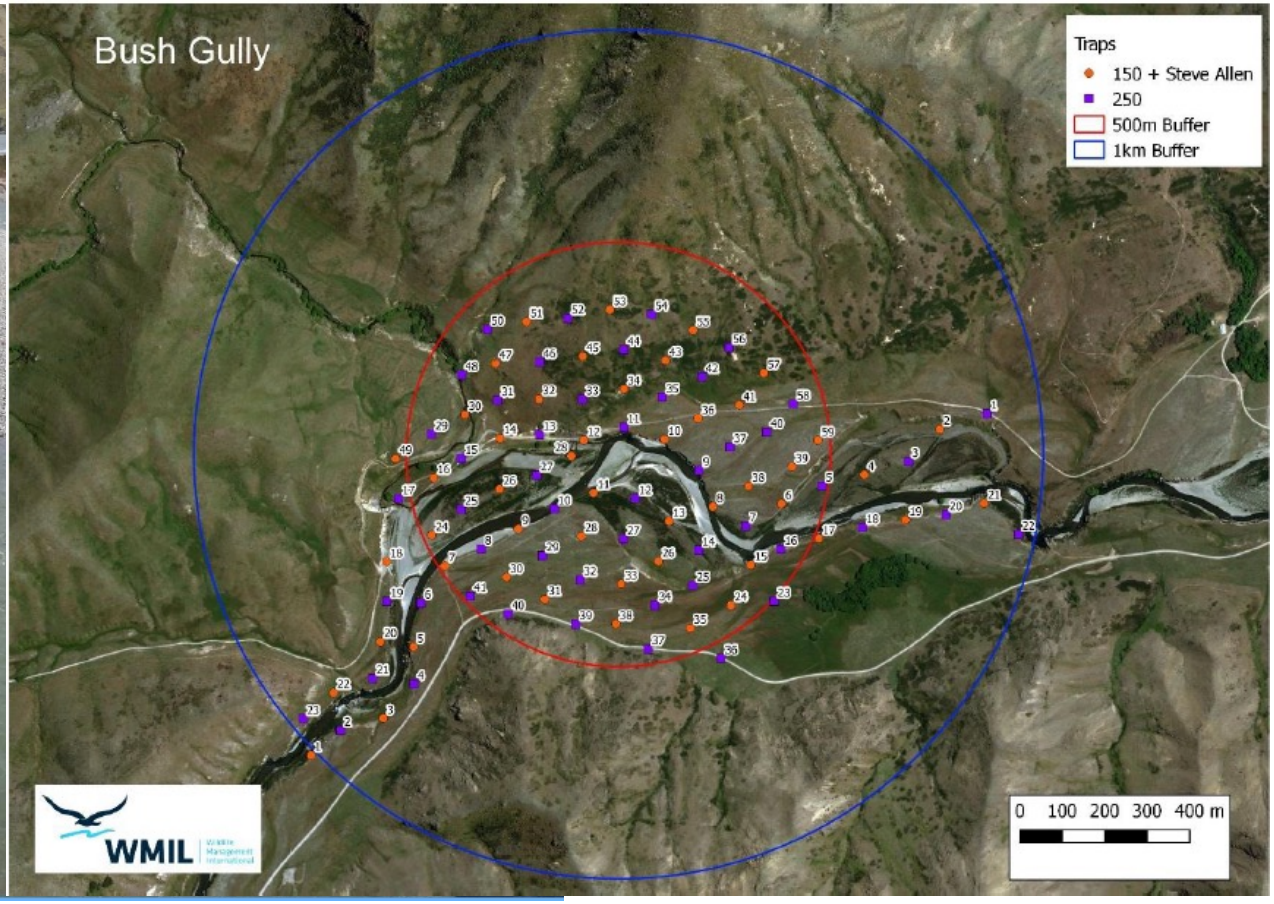
Schlesselmann et al. 2018. NZ J Ecology 42

But…..creating safe islands confounded by avian predation

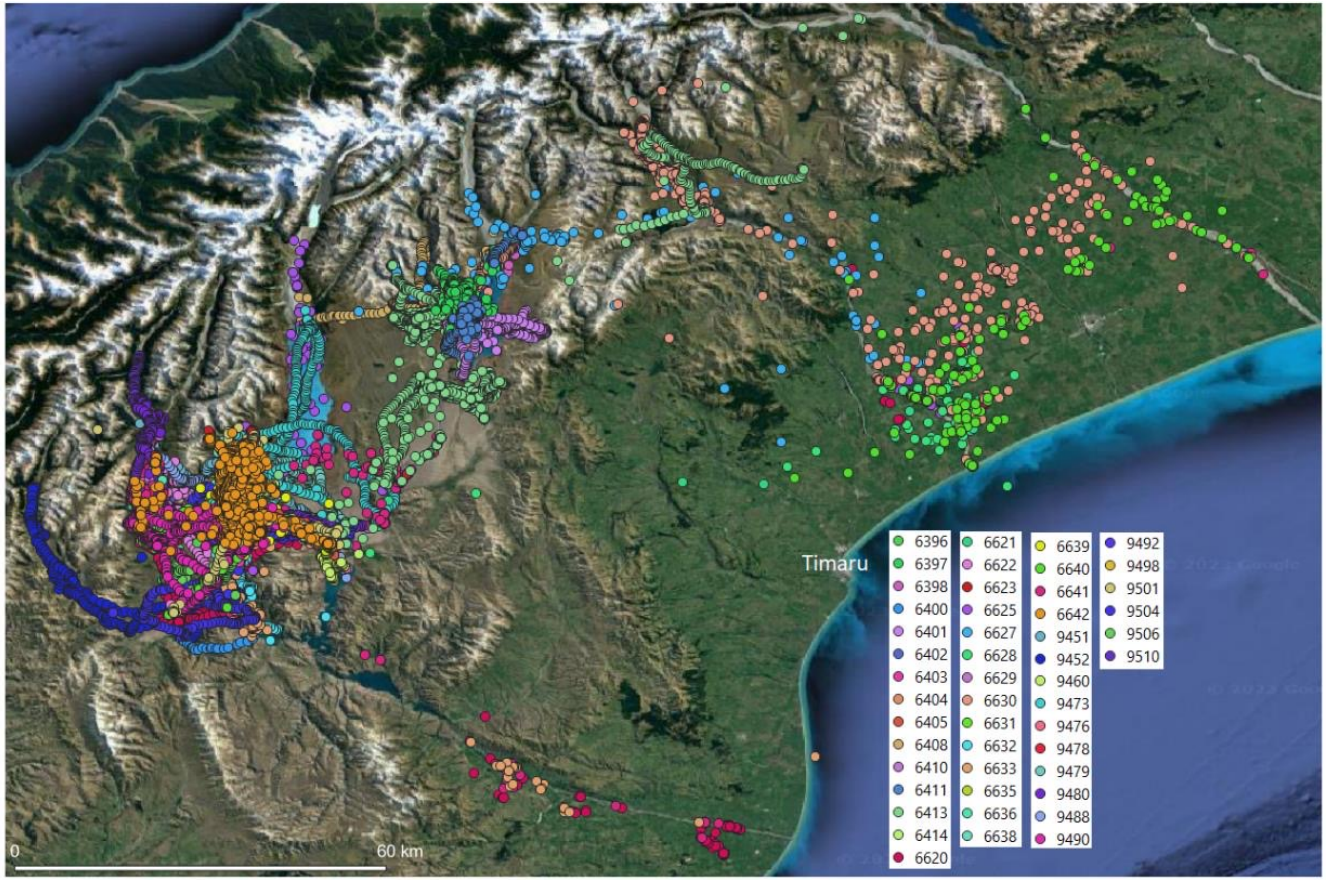
Schlesselmann et al. 2018. NZ J Ecology 42

Combining island creation with trapping

Clarence River example



Black-fronted terns – connecting the rivers

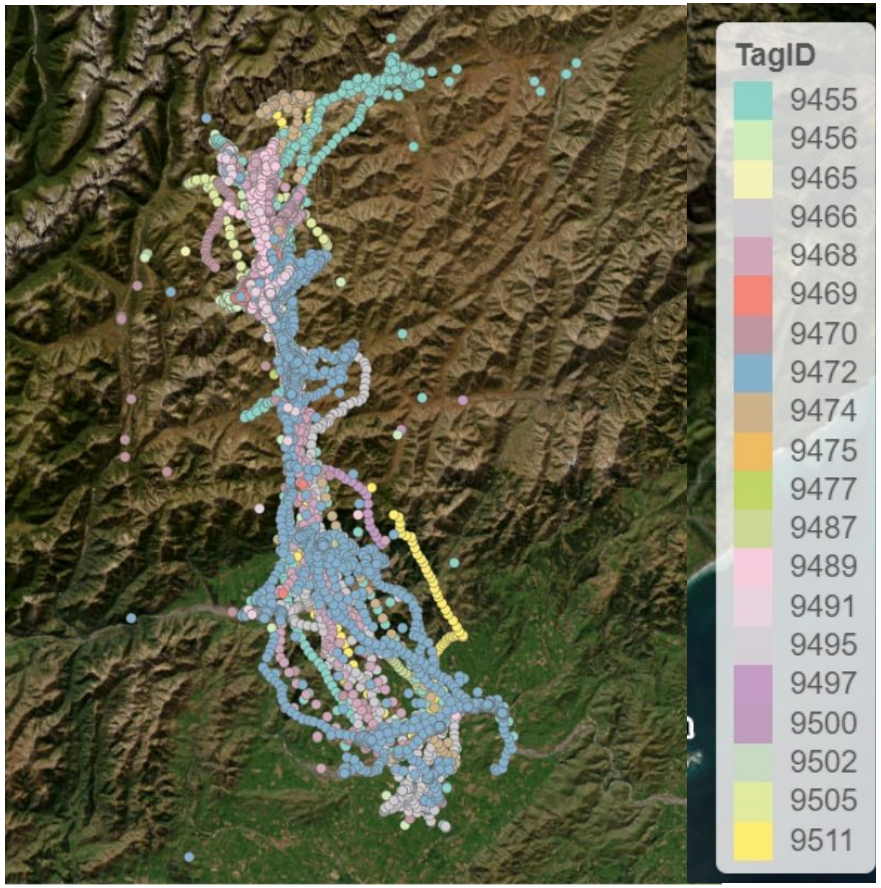


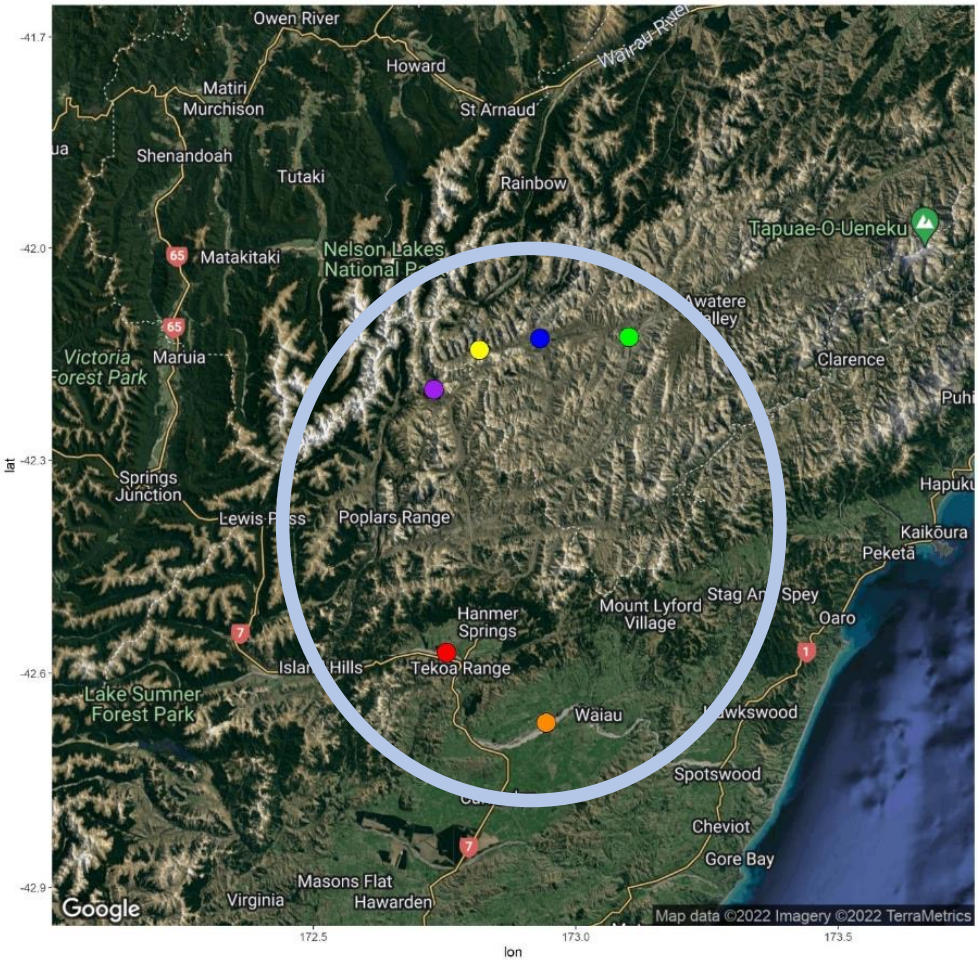
All Mackenzie caught birds
- tracked for c.3-6 months

Courtesy: Fraser Gurney, Emma Williams & Sam Krouse

Next steps – predator control in multiple catchments

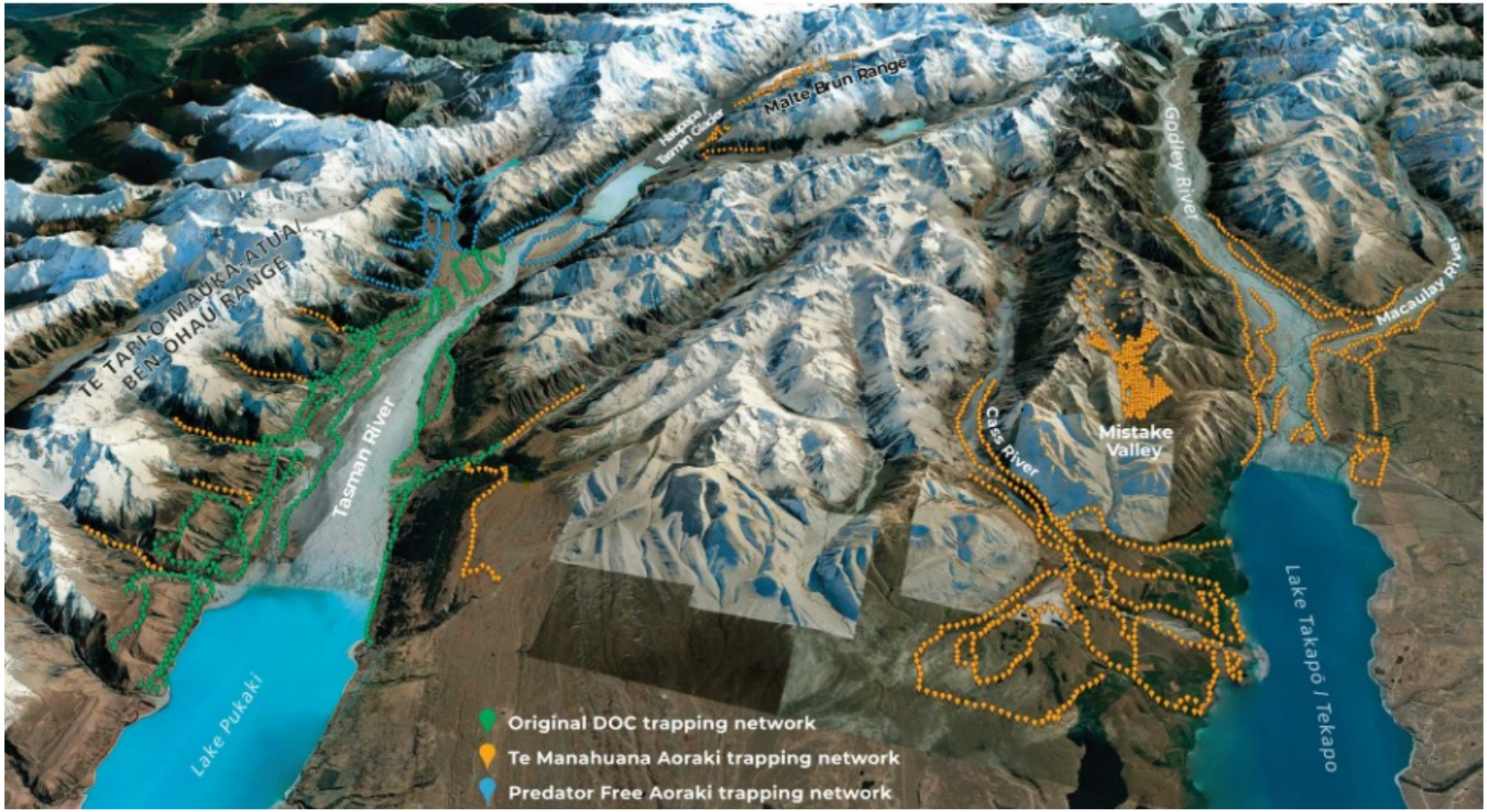
Clarence caught black-fronted terns – 6 roost sites





Courtesy: Emma Williams & Sam Krouse

The next step – predator control at landscape scales

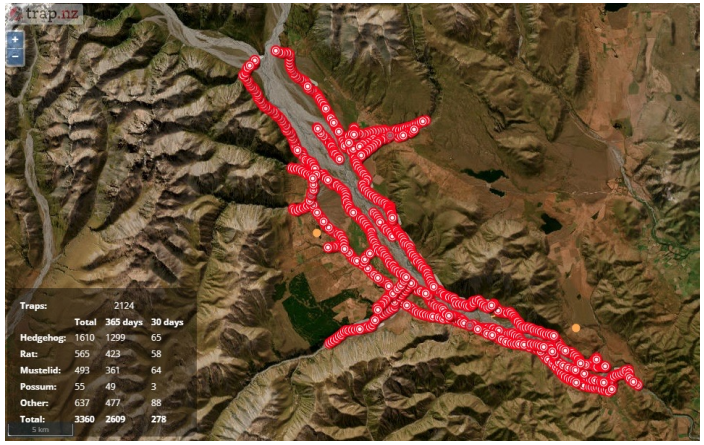


https://www.temanahunaaoraki.org/our-work/predator-control/

The next step – predator control at landscape scales

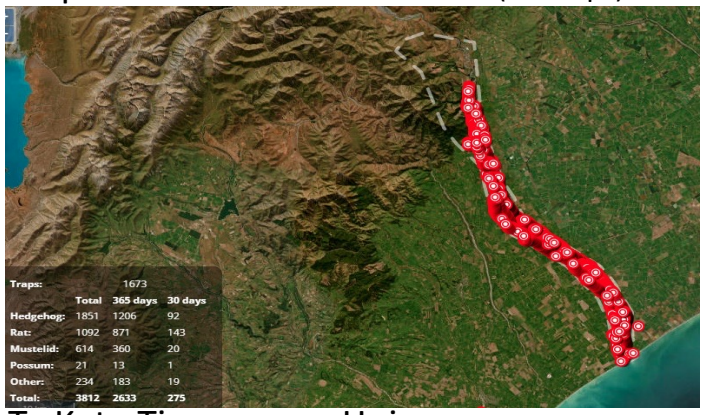
Rangitata River – Headwaters to the sea – 4,497 traps

Rangitata Landcare Group

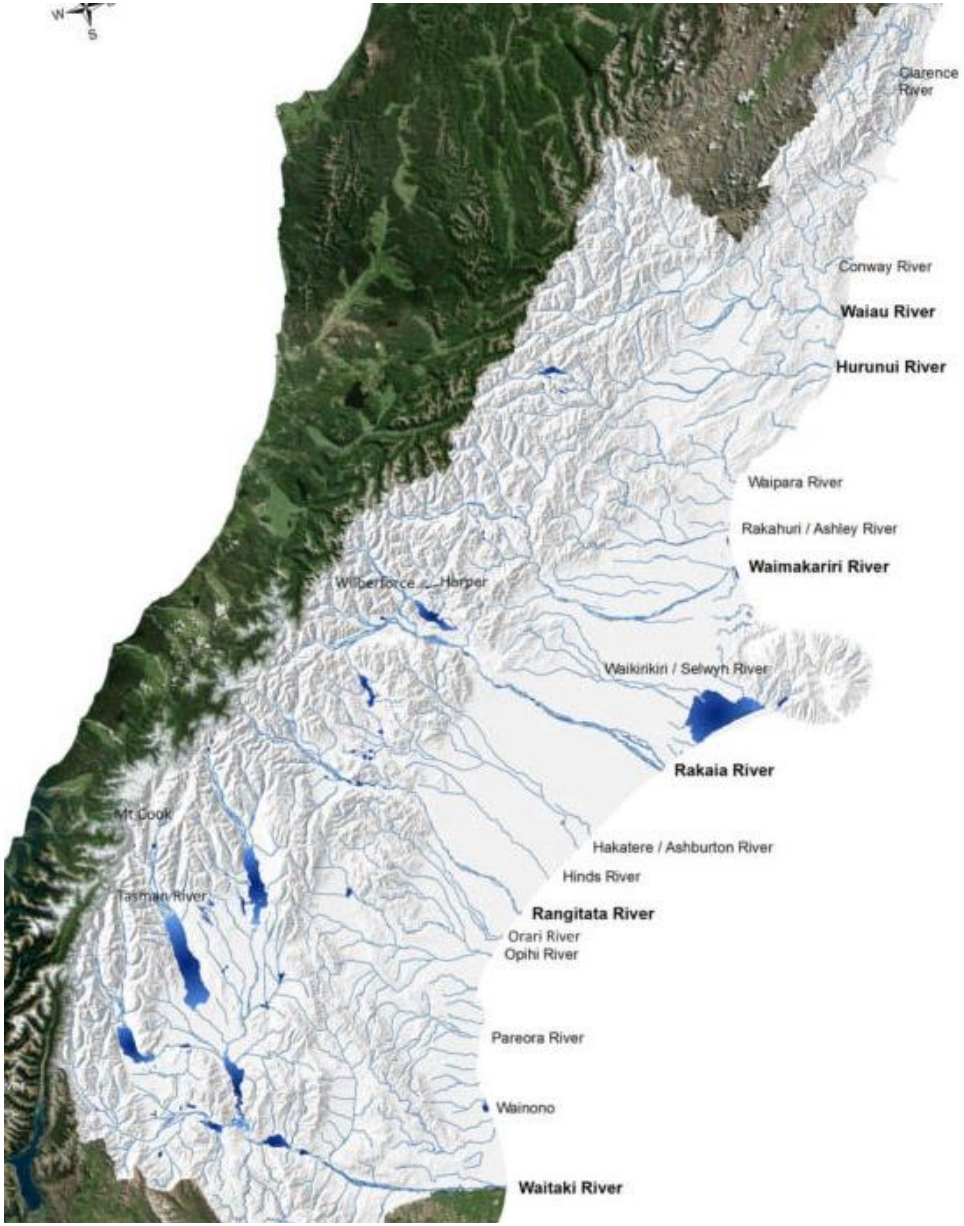


Department of Conservation (kill traps)

Department of Conservation (leg holds)



Te Kete Tipuranga o Huirapa



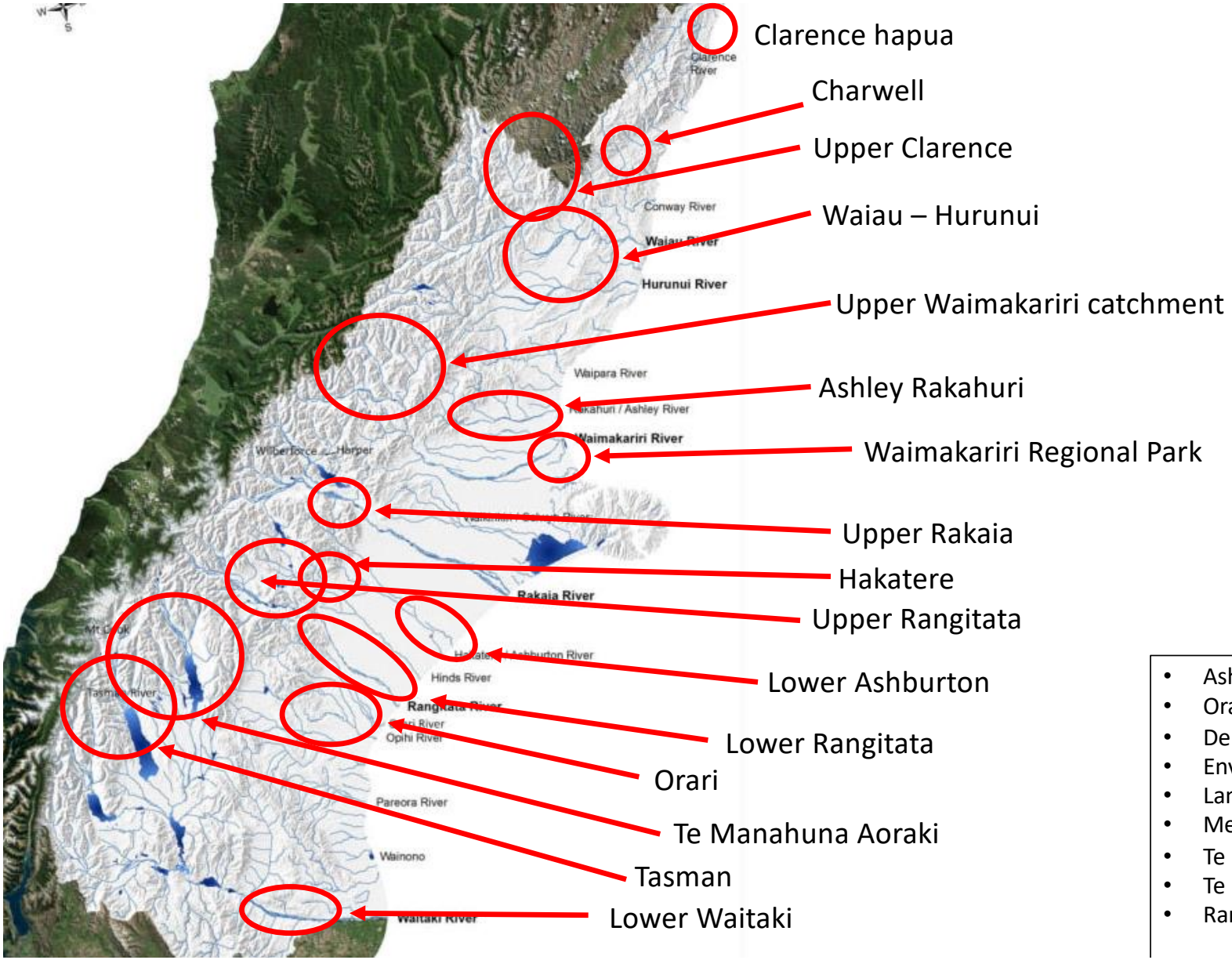
Extent of predator control in Canterbury braided rivers

1978

Map image -https://braidedrivers.org/rivers/#1

Extent of predator control in Canterbury braided rivers

2023



- Ashley-Rakahuri Rivercare group
- Orari River Protection Group
- Department of Conservation
- Environment Canterbury
- Land Information New Zealand
- Mercury Energy
- Te Manahuna Aoraki Ltd
- Te Kete Tipuranga o Huirapa Ltd
- Rangitata Landcare Group

Conclusions

- Our understanding of the significance of braided rivers for birdlife and the threats they face has increased dramatically over the last 40 years
- Predator control experiments expanded as realised predators a problem for more and more species
- Predator control has advanced from small scale that didn't achieve benefits to landscape scales >30,000 ha in extent that are showing benefits after 10-15 years
- However, bird recovery is slow and predator control is an ongoing job because of constant reinvasion
- Monitoring and refining predator control is essential because factors influencing predator abundance also change

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