

**AOTEAROA
FOUNDATION**



**Department of
Conservation**
Te Papa Atawhai

Poutiri



Ao ō Tāne
Embracing restoration

NEW ZEALAND'S
BIOLOGICAL
HERITAGE

Ngā Kōiora
Tuku Iho

National
SCIENCE
Challenges



Landcare Research
Manaaki Whenua

THE CAPE SANCTUARY

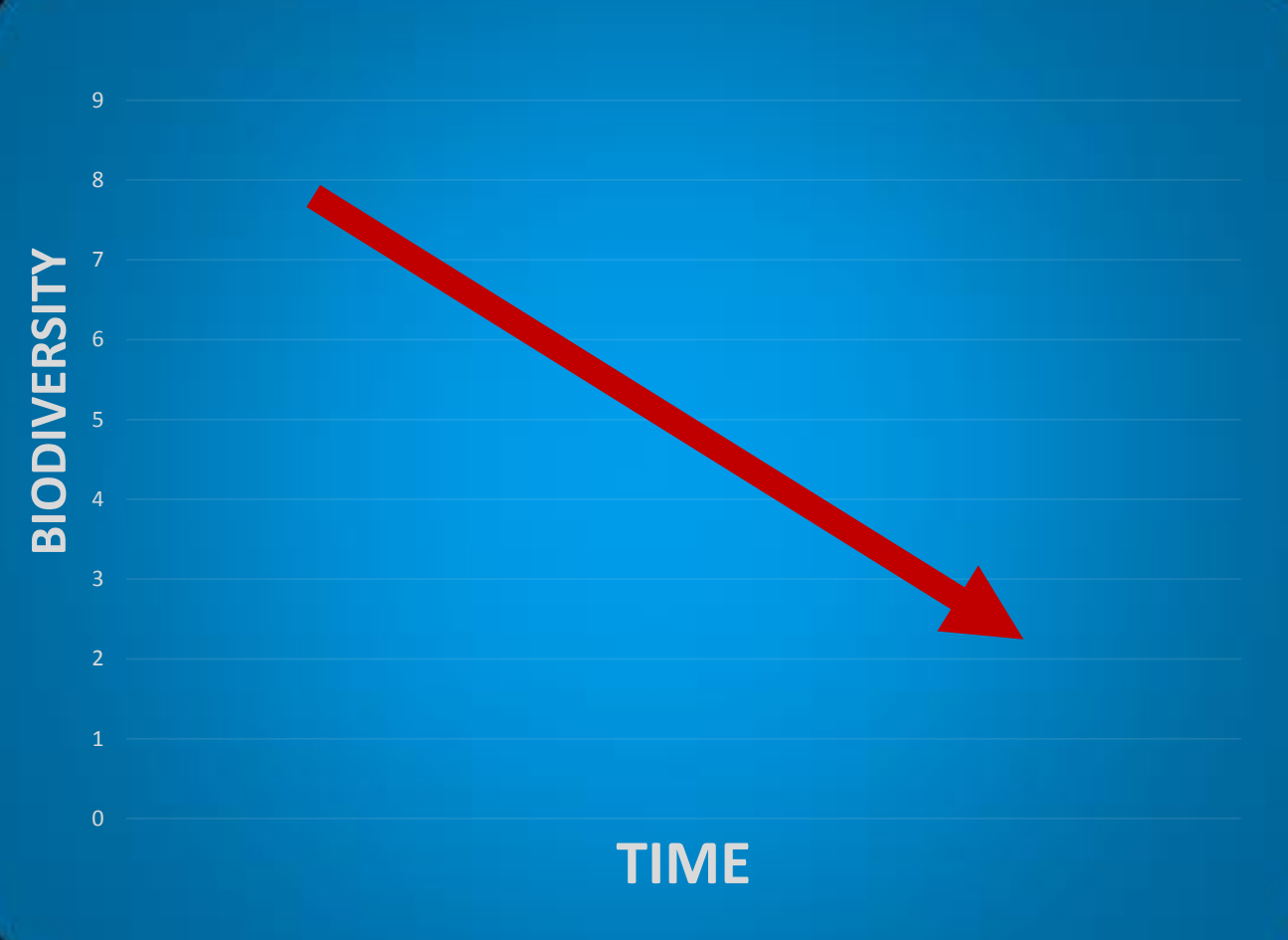


HAWKE'S BAY
REGIONAL COUNCIL



“Native species thrive where we live,
work and play”

Biodiversity and predator pests - The Problem



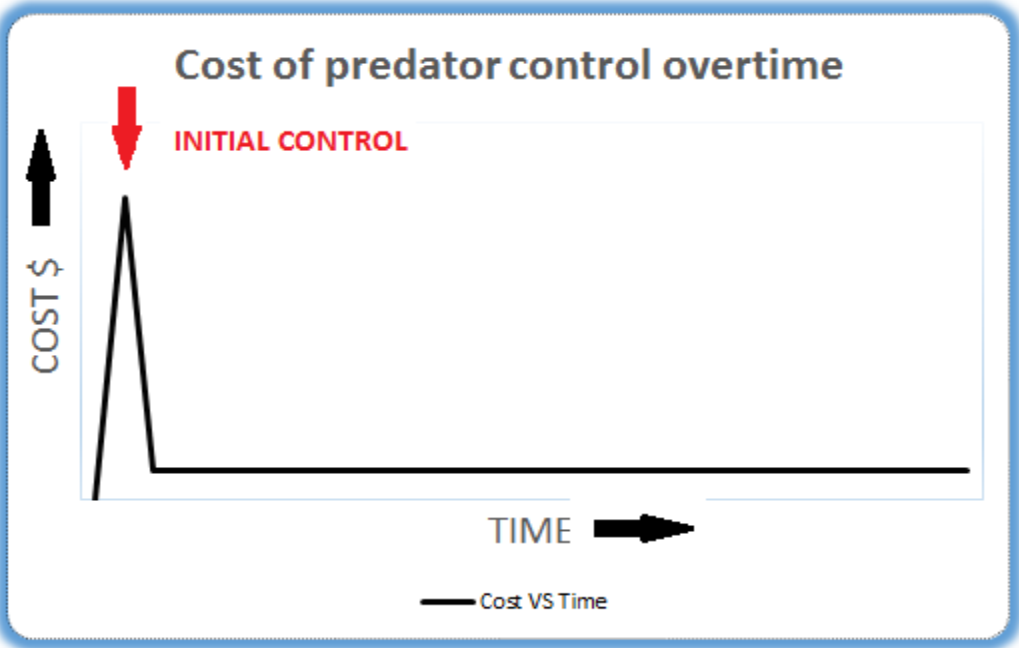
• Credit Nga Manu images

Transforming farmland predator pest management in NZ

- Possums, feral cats and mustellids
- People – both urban and rural communities have key roles to achieve long term success for our country
- Technical - Very low multi predator maintenance control cost



Predator pest maintenance -The tail is wagging the dog



We require a new model that integrates:

Site based
biodiversity
restoration
projects

Schools and
environmental
education



Business as
usual primary
production
landscapes

People – Urban
and rural
communities

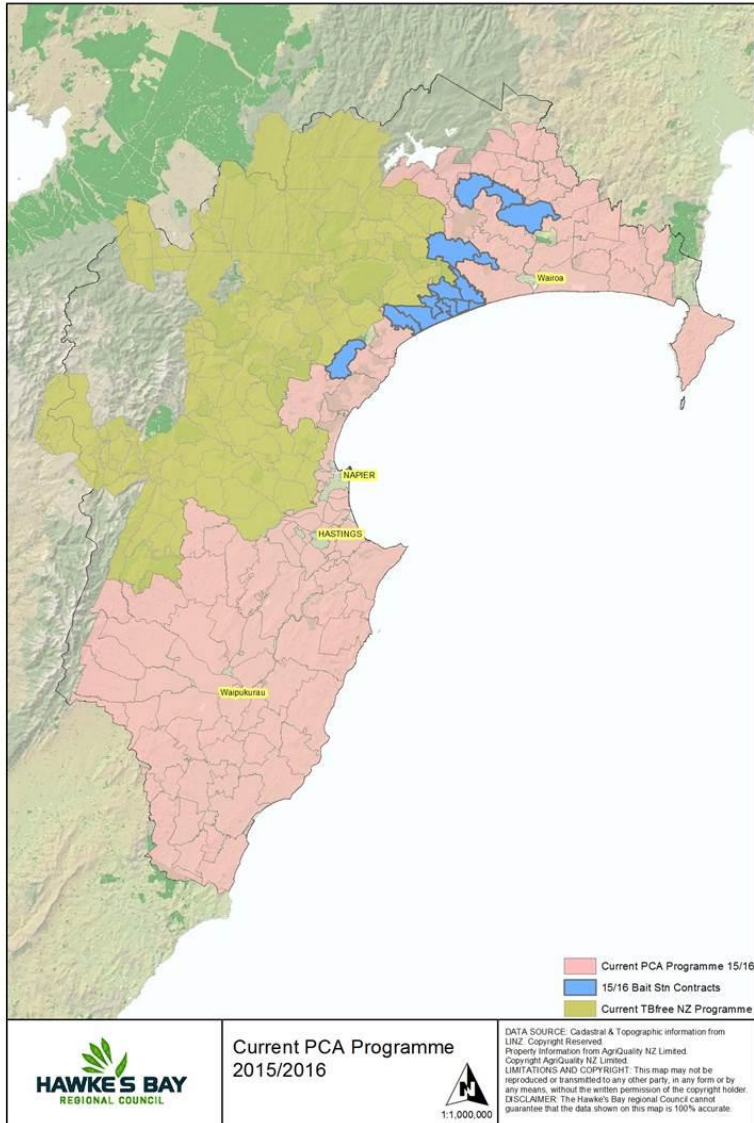
The transition from possum control integrated predator pest management



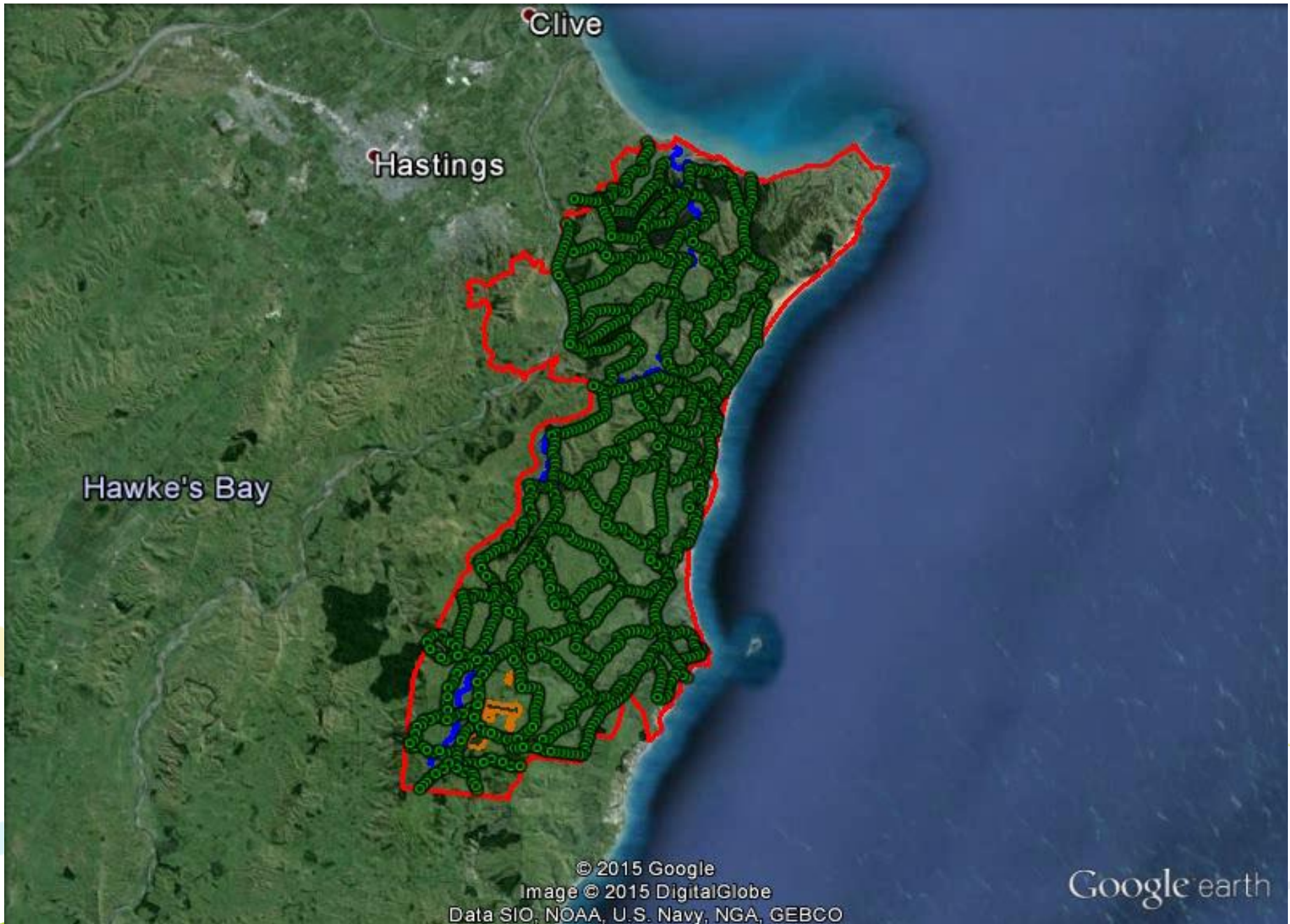
- Integrate predator control into existing possum control areas

- Transfer knowledge to community groups, contractors and other agencies

- Requires ultra low cost techniques including wireless trap monitoring



Google earth



Clive

Hastings

Hawke's Bay

© 2015 Google

Image © 2015 DigitalGlobe

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Google earth

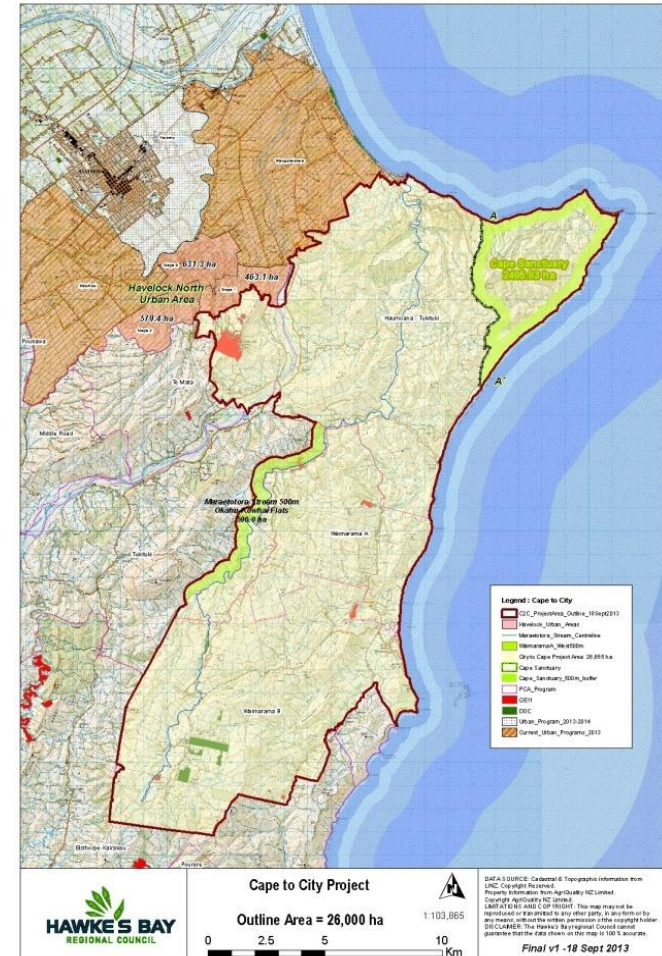
Cape to City

- Five year funded \$6m ecological restoration project (along with sister project Poutiri Ao o Tane)
- Multi stakeholder (Department of Conservation, Landcare Research, Hawkes Bay Regional Council, Cape Sanctuary, Aotearoa Foundation)
- Built on three years work in Poutiri Ao o Tane
- Transform how we do predator pest control in farmland
- Engage urban communities much more fully into the value of biodiversity and our ability to make a difference



Cape to City - workstreams

- Pest management
- Habitat restoration and enhancement
- Research
- Species and biodiversity
- Community engagement and education
- Project management
- Governance (Richard Gordon, Bruce Wills, Mike Mohi, Reg Kemper, Mike Adye, Andy Lowe, Tania Hopmans)



Workstreams

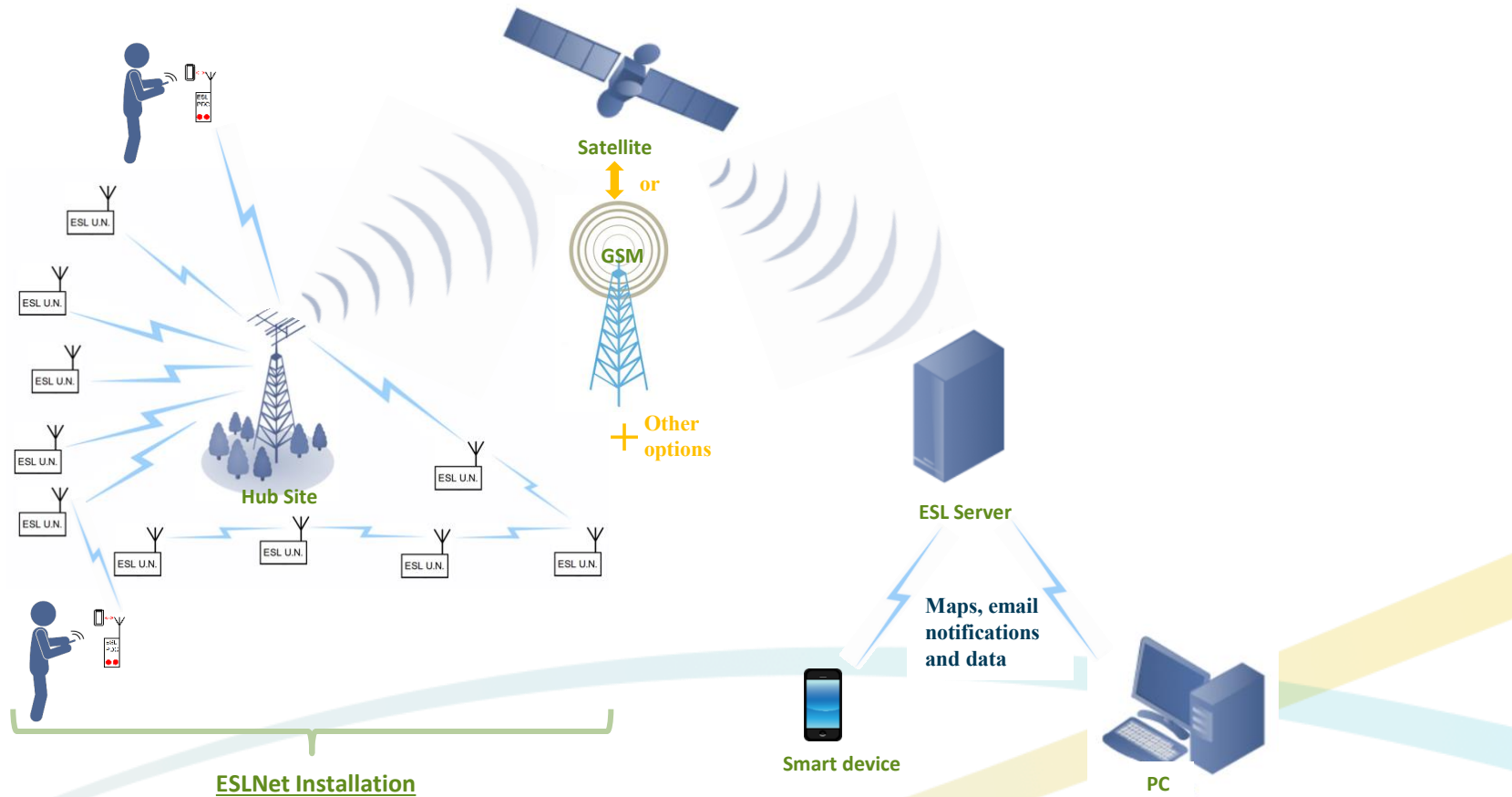
- A lot of activity across the workstreams
- Research (Toxoplasmosis, farmland biodiversity increases, soil DNA monitoring)
- Threatened species coexisting on farmland (Blue duck, Pateke ect)
- Engagement (Maori, education, alignment with relevant national organisations)
- Predator pest management (Wireless trap monitoring, motion sensitive cameras)
- Planting programme (Native trees/high UMF Manuka)
- A range of things will create success



The Pathway

- Technical solutions
- People
- Scale
- The role of research

Celium – System Schematic from Encounter Solutions

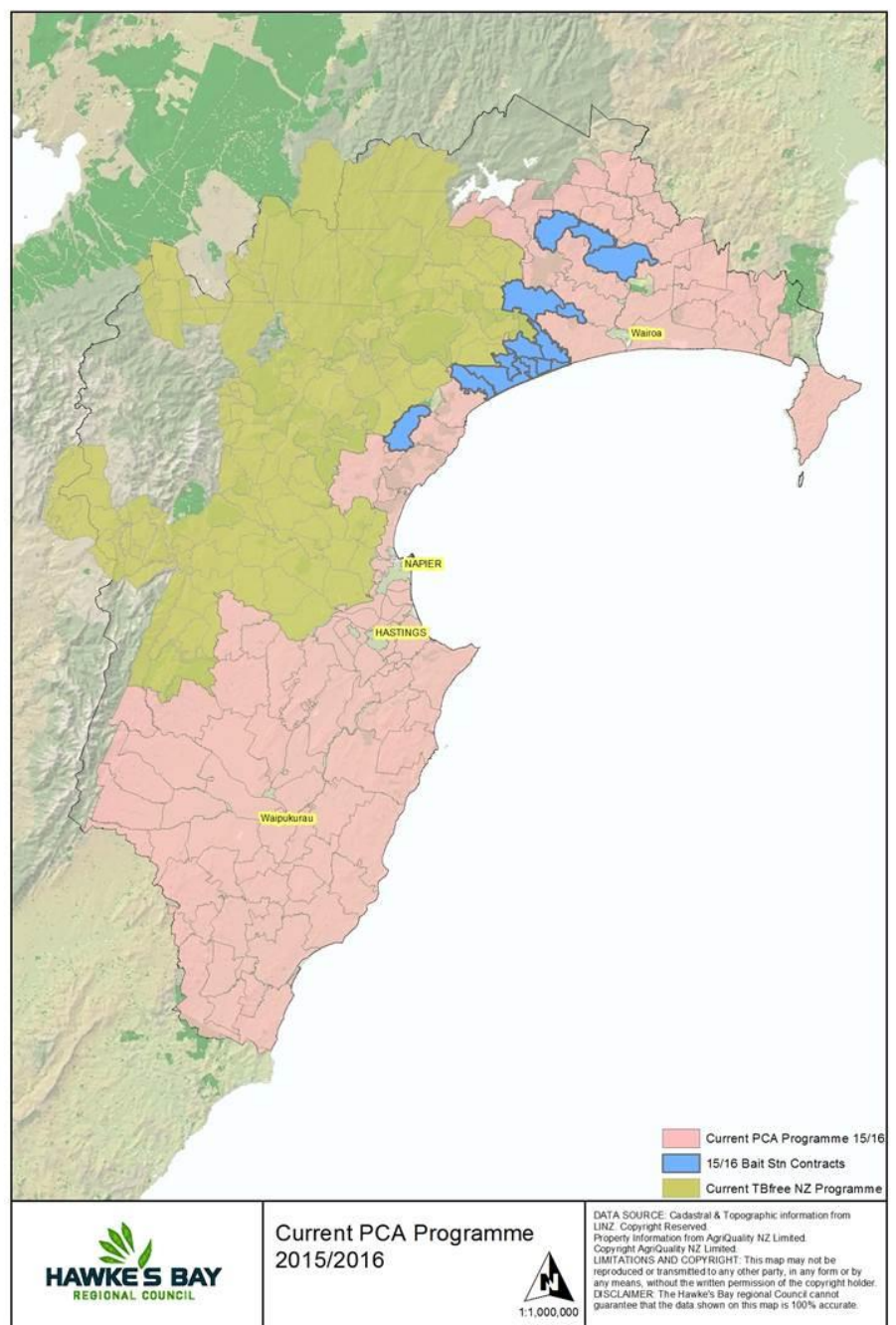


Cape to City-Education workstream

- Education in an environmental context is a key part of the project
- Engage a minimum of 15 schools over the next five years
- Engage a tertiary institute
- Ruud Kleinpaste is the project ambassador



Possum Control Area (PCA) programme



The role of policy

Regional Pest Management Plan (RPMP) review

- Within 12 months - pathway to ultra low cost predator maintenance
- Community consultation on RPMP mechanism
- Within 24-36 months – secure funders for the one off capital investment
- Capital investment is secured long term by a rule in a regional pest plan
- 1 July 2018 staged rollout starts



Conclusion

- The elements exist to transform farmland predator pest management
- Significant biodiversity gains can be achieved on farmland alongside strong primary sector productivity
- These gains can support and integrate with New Zealand's public conservation efforts
- Cape to City is trialling the template for how small mammal predator control on a wide scale could work in the Hawkes bay region

Research workstream

- Significant commitment from key partner Landcare Research.
- Cape to City is now a partner to the Biological Heritage National Science Challenge
- Research is:
 - Providing insights into some ground breaking opportunities
 - Directly guiding on ground management effort to show change at scale
 - Providing credible and robust monitoring and outcomes assessment

Research Workstream

Have we successfully reduced predator numbers?

Have we done it cost-effectively?

Are there biodiversity benefits?

Are there economic benefits?

Are people willing to engage, and what motivates them?

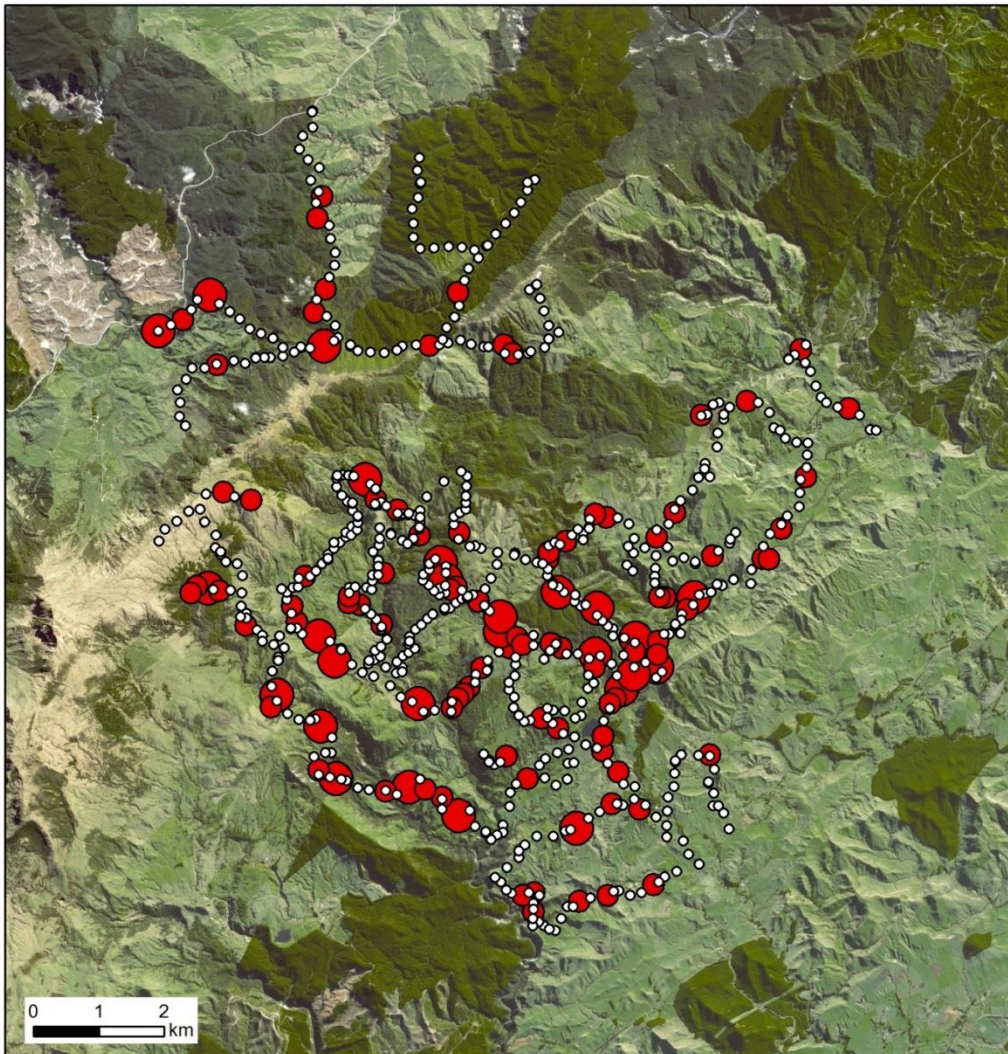
Have we changed attitudes?

What are the long-term ecosystem benefits?



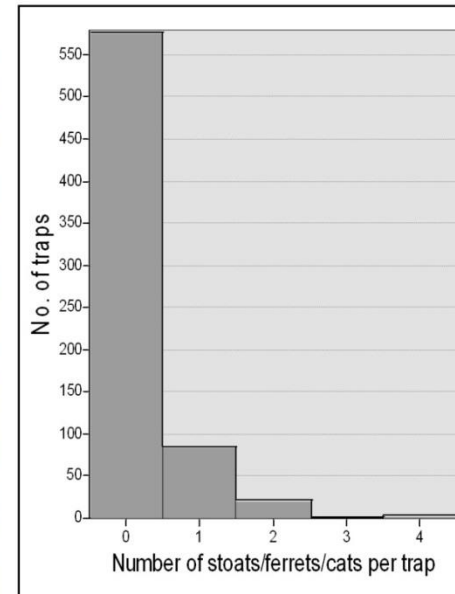
Predator control at Poutiri Ao ō Tāne

Which traps catch predators?



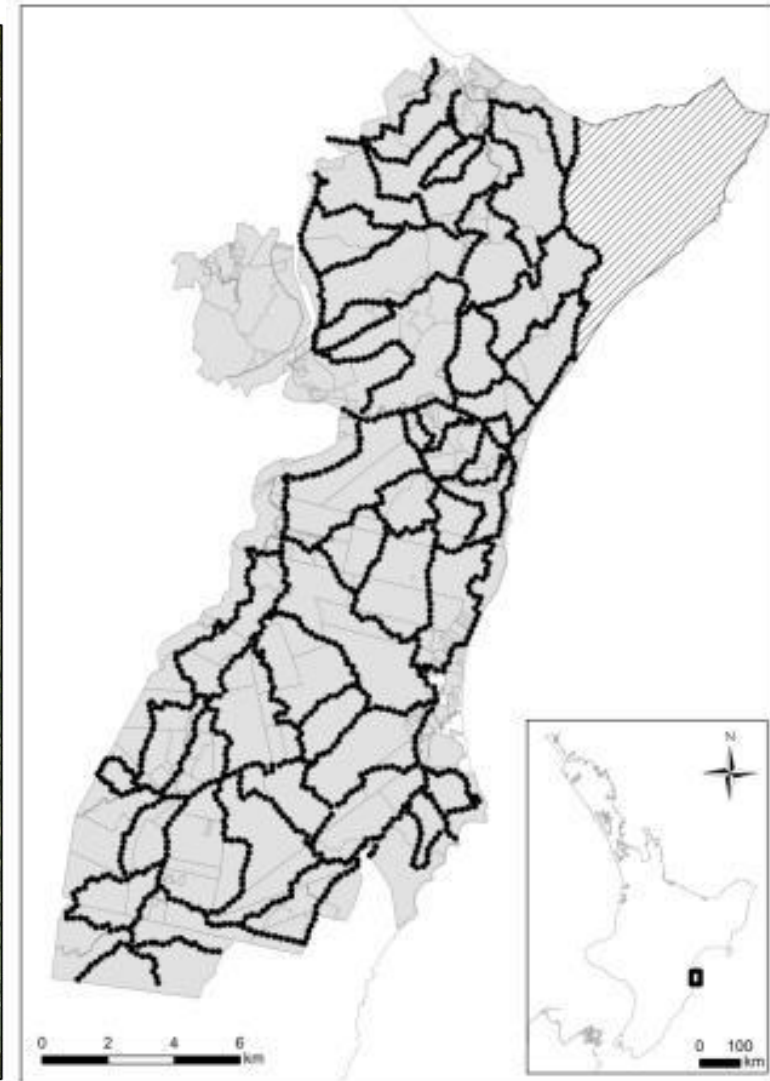
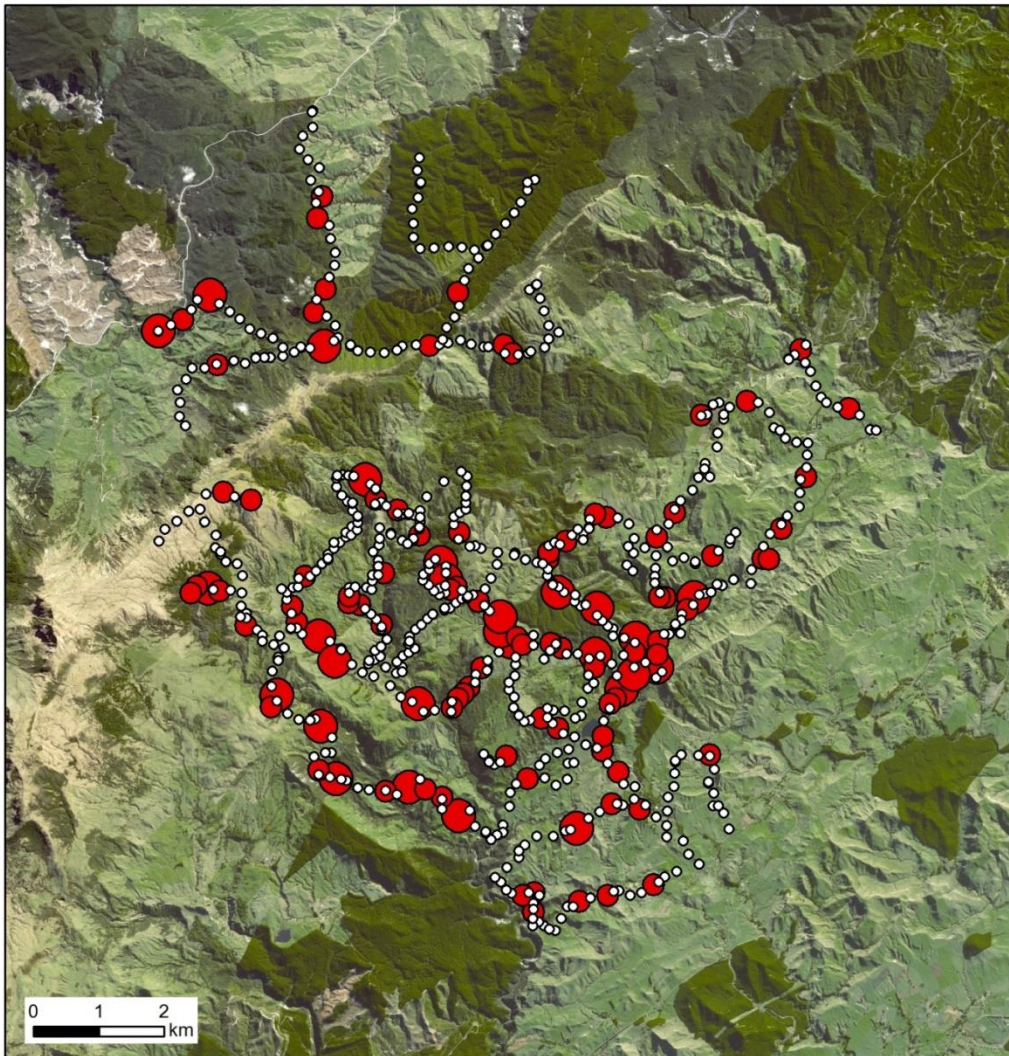
**No. stoats/ferrets/cats
per trap,
Nov. 2012 - May 2014**

- 0
- 1
- 2 - 4

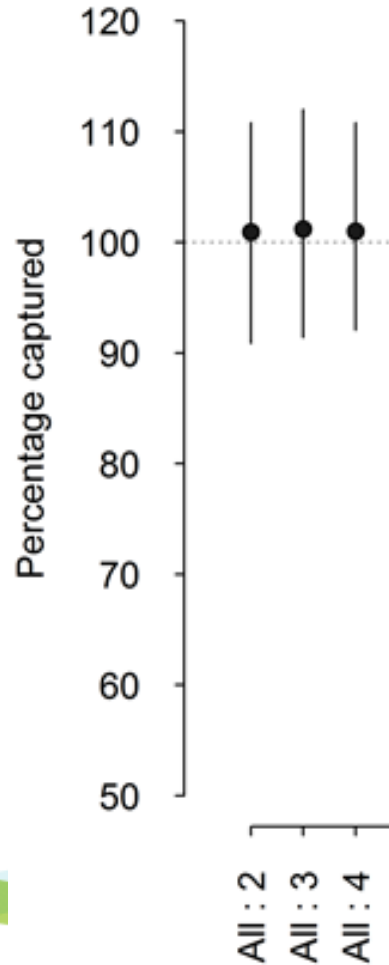


Predator control

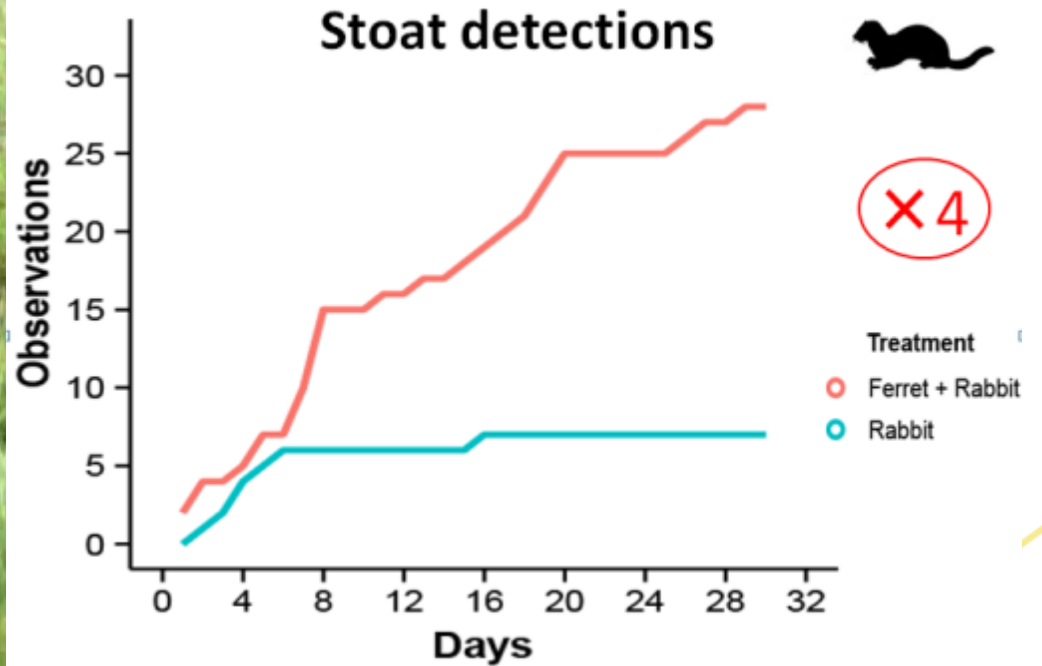
Which traps catch predators?



Can predator trapping be more cost-effective?

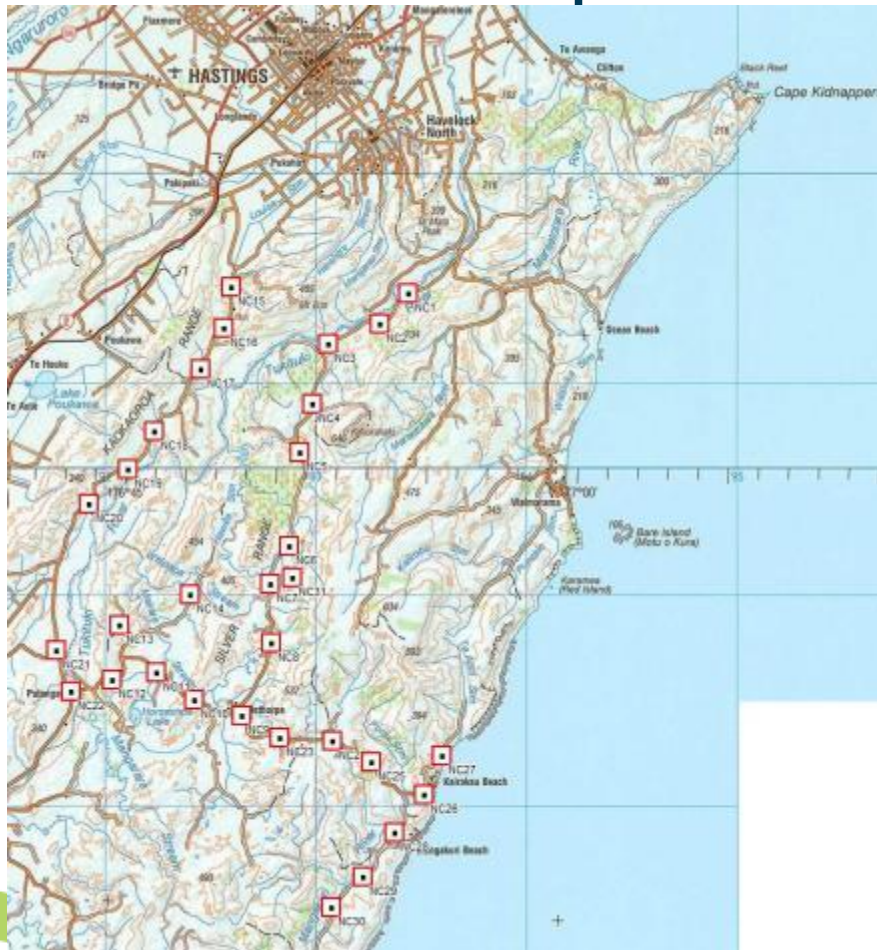


Ferret odour lure

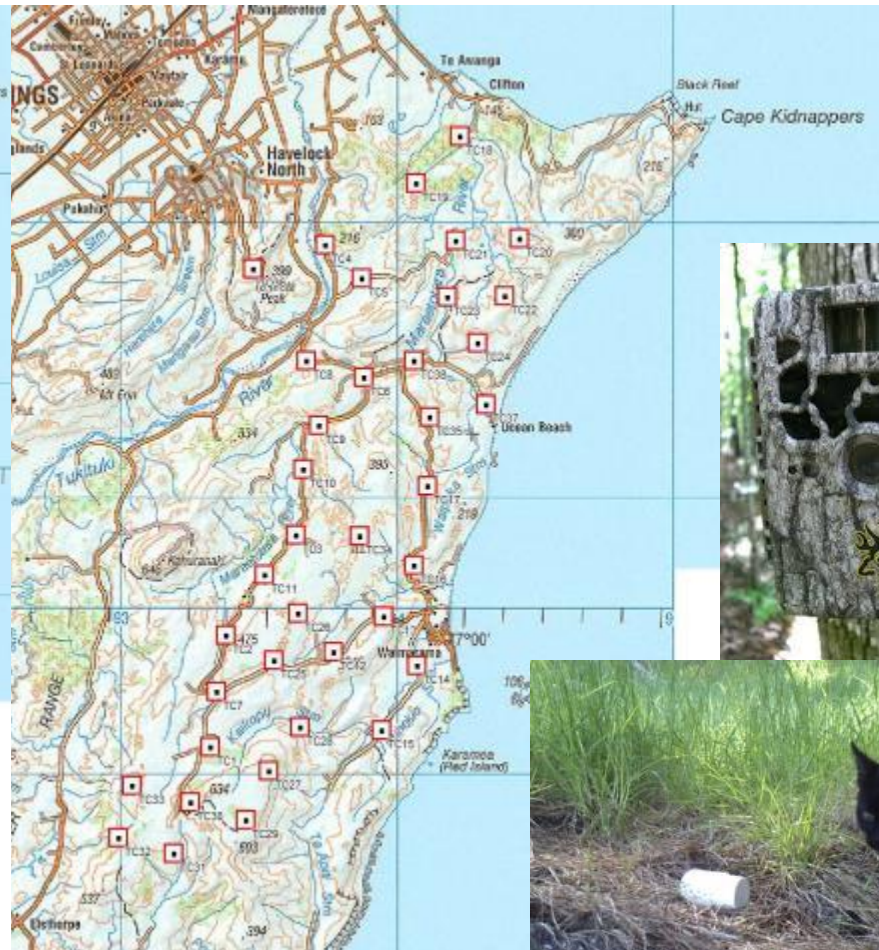


Predator monitoring at 'C2C'

Camera traps for broad trends



Non-treatment area
31 cameras



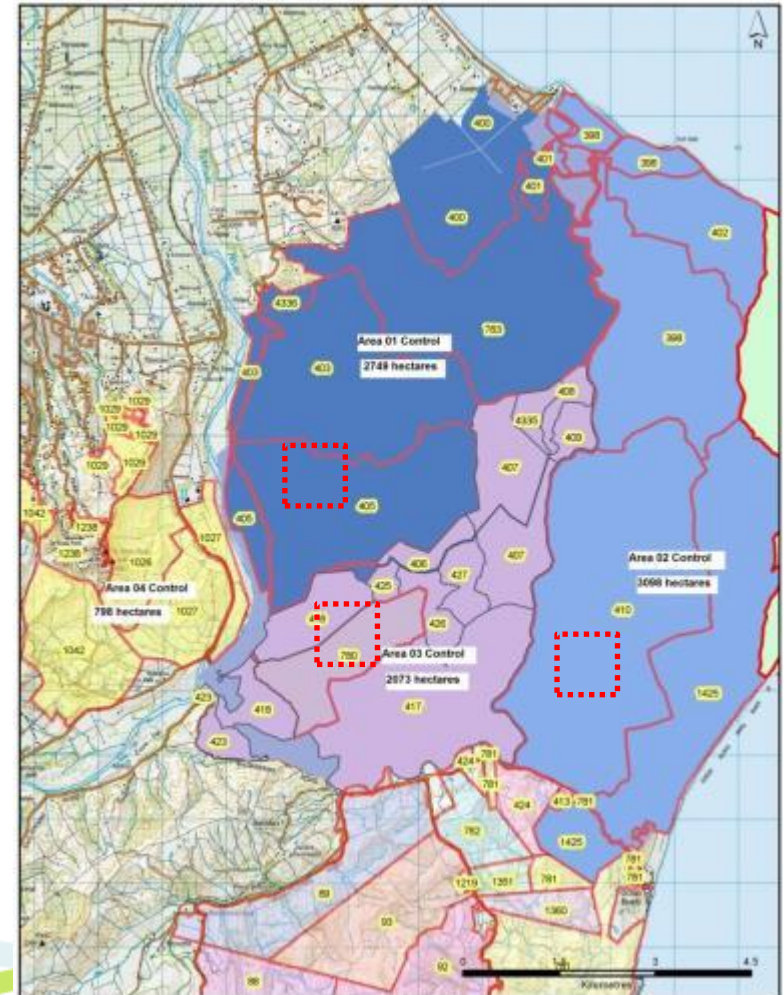
C2C footprint
37 cameras



Predator monitoring

Camera traps for initial knockdown

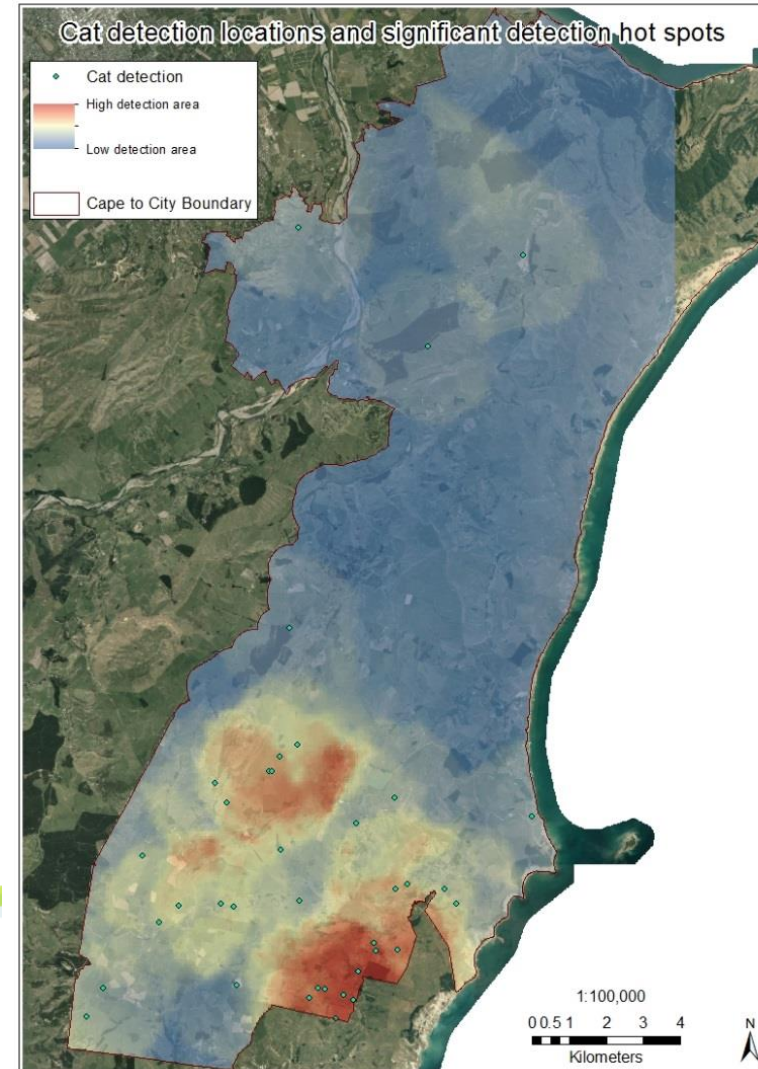
'Hollow grids' of 20 cameras either side of 'rolling front'
Estimates 'detection probability'



Possum monitoring

Chew cards to map residual distribution

- There are 'hot spots' of possums in the Cape to City footprint



Predators – Poutiri

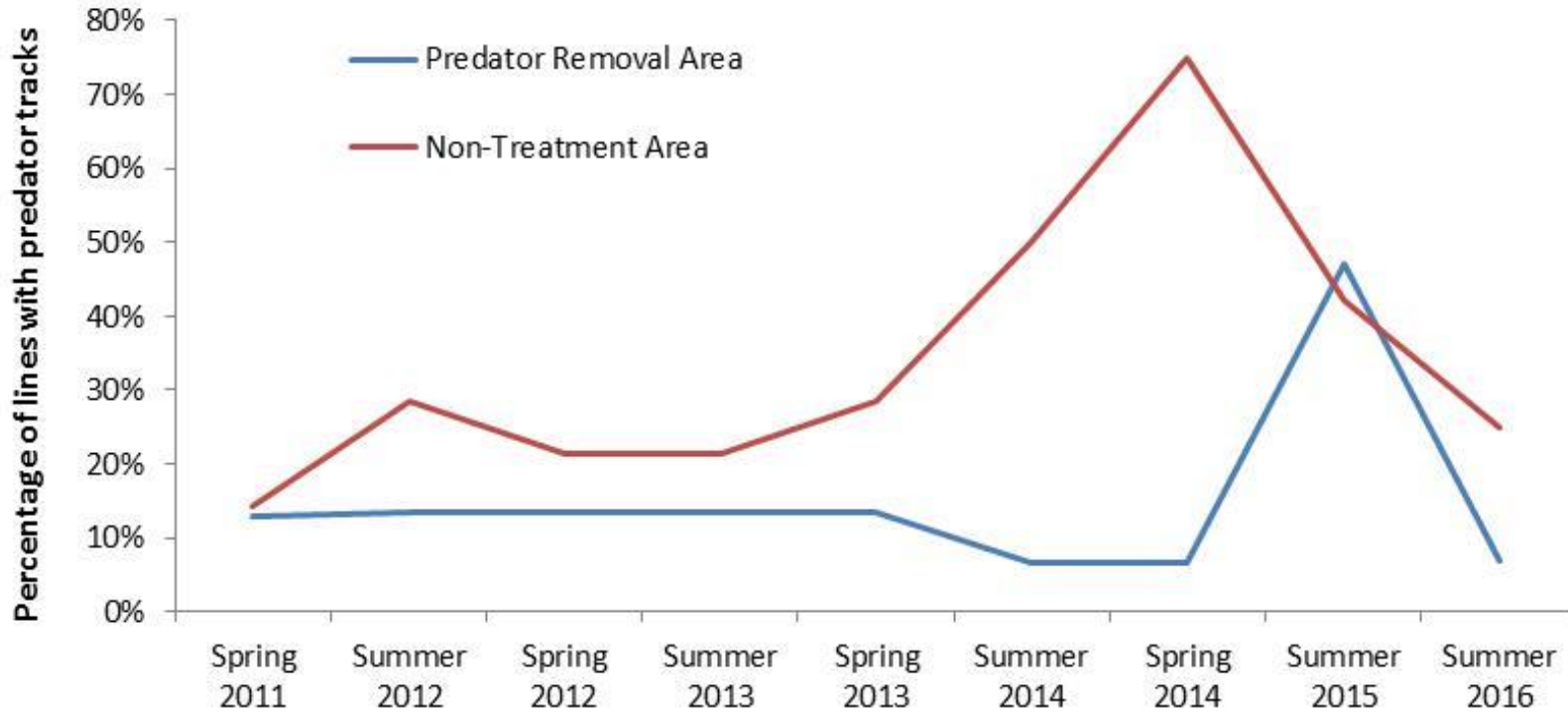
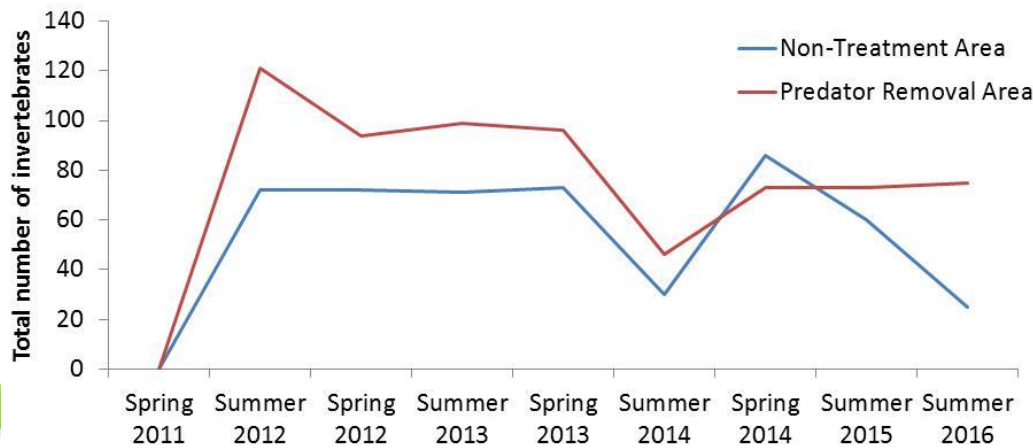
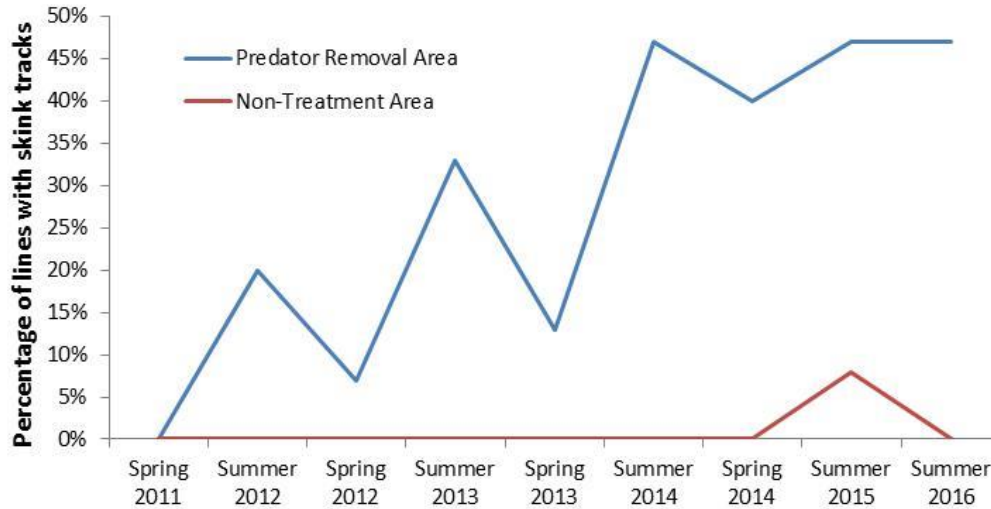
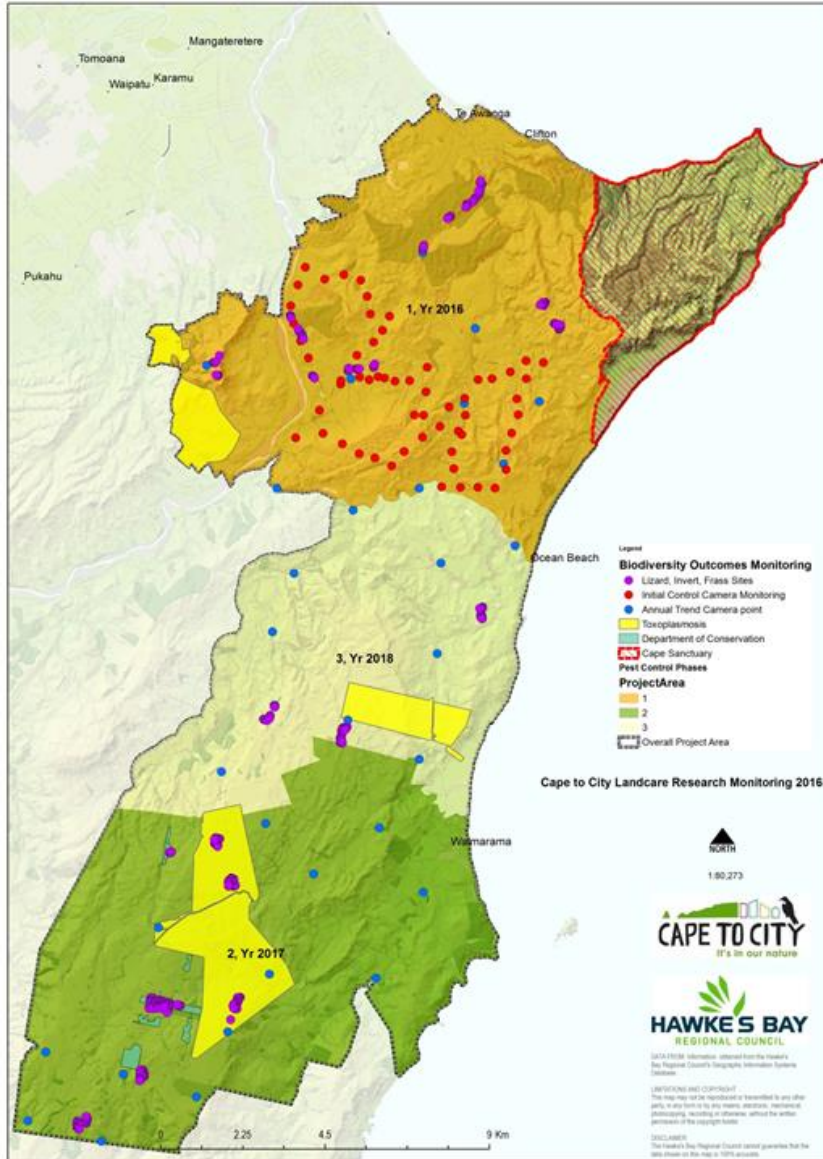


Photo by Patrick Garvey

Biodiversity – Poutiri

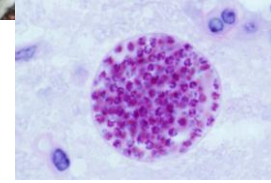


Biodiversity Monitoring Cape to City

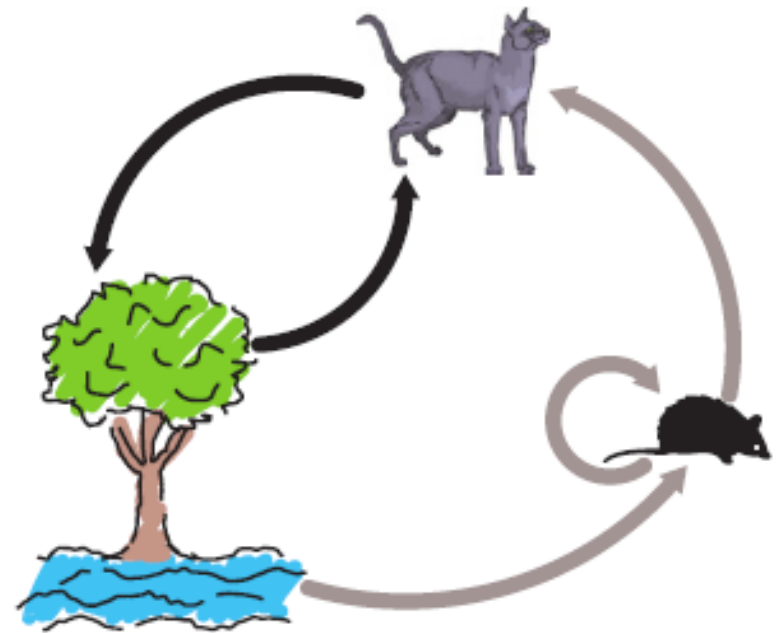


Economic benefits: Feral cats & toxoplasmosis

- Sole reproductive host for toxoplasmosis
- Considerable economic impact on NZ sheep farmers
- Also affects pregnant women and kiwi
- Reducing feral cat numbers likely to bring significant economic and environmental benefits



Landcare Research
Manaaki Whenua

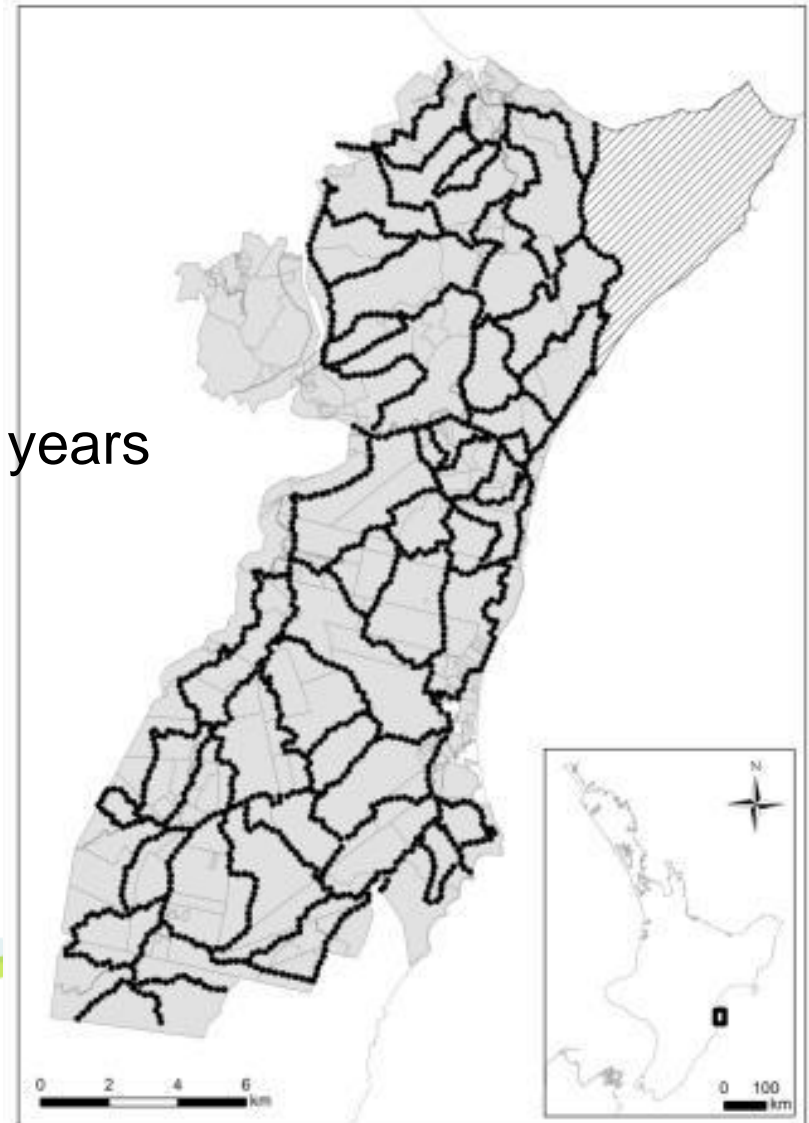


Landholder Participation

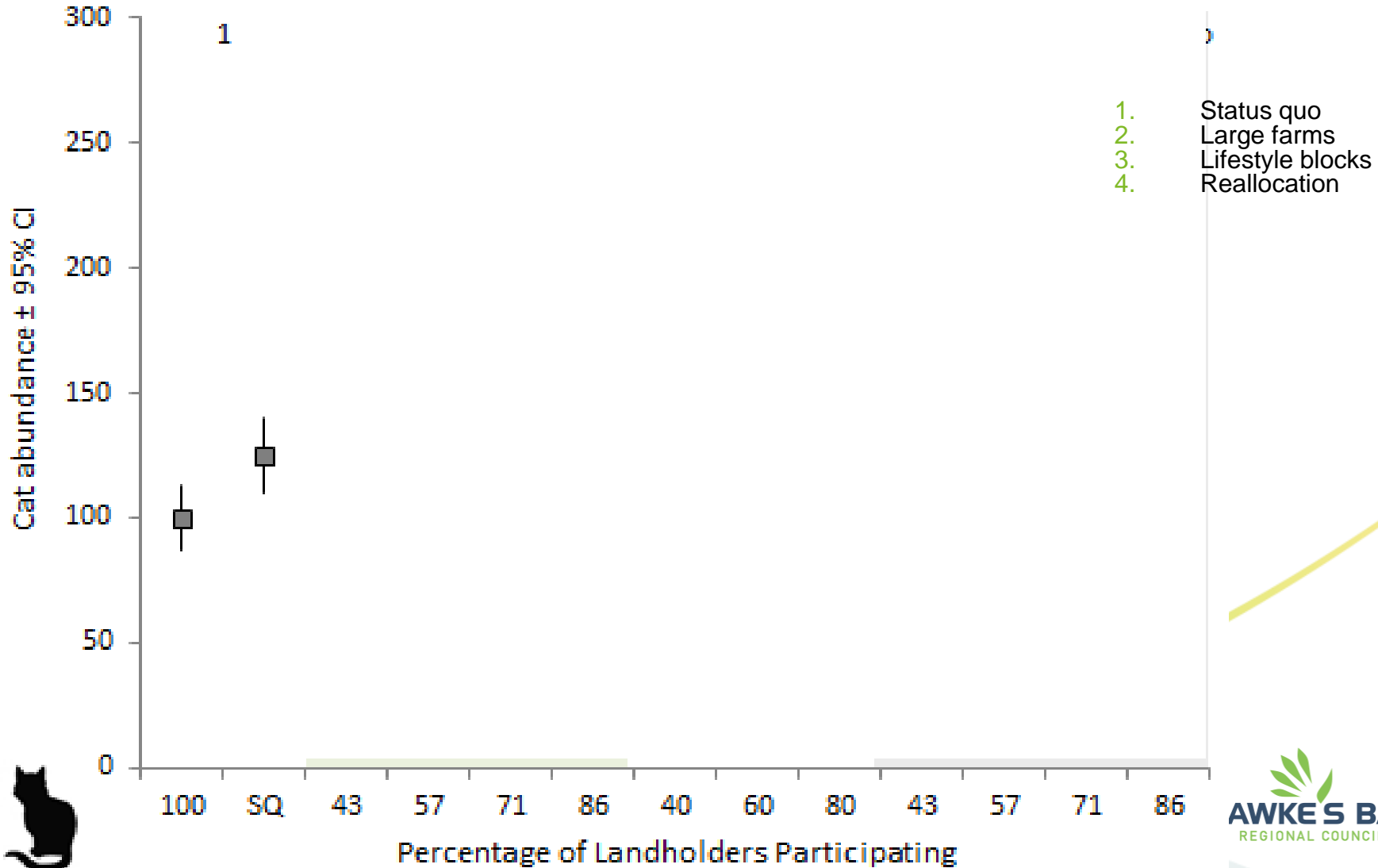
4 scenarios:

1. Status quo
2. Large farms opt out
3. Lifestyle blocks opt out
4. Reallocation of traps

Predator abundance modelled over 6 years



Landholder Participation



Landholder Participation

Large properties (>800 ha) influenced effectiveness

Lifestyle blocks (<25 ha) negligible effect

Reallocating traps to neighbouring farms could offset effect of non-participating properties

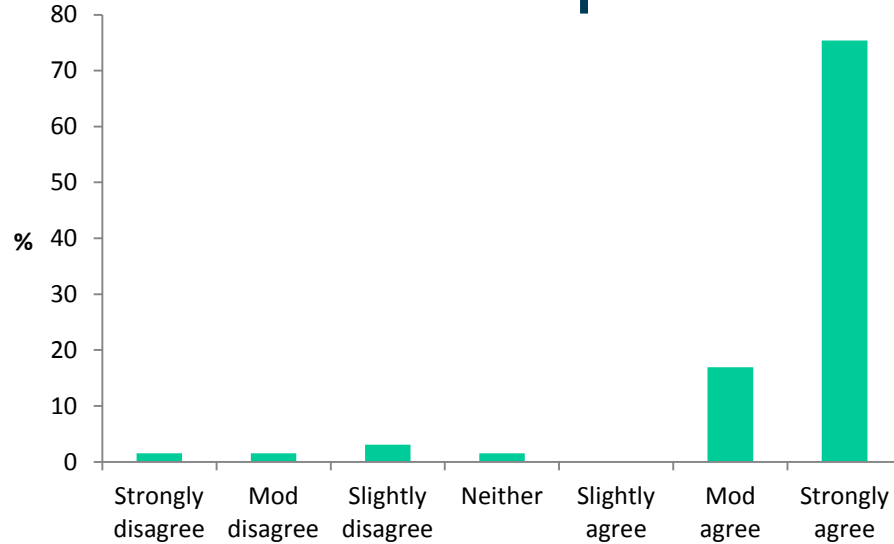


Landholder Perspectives Survey of Rural Landholders

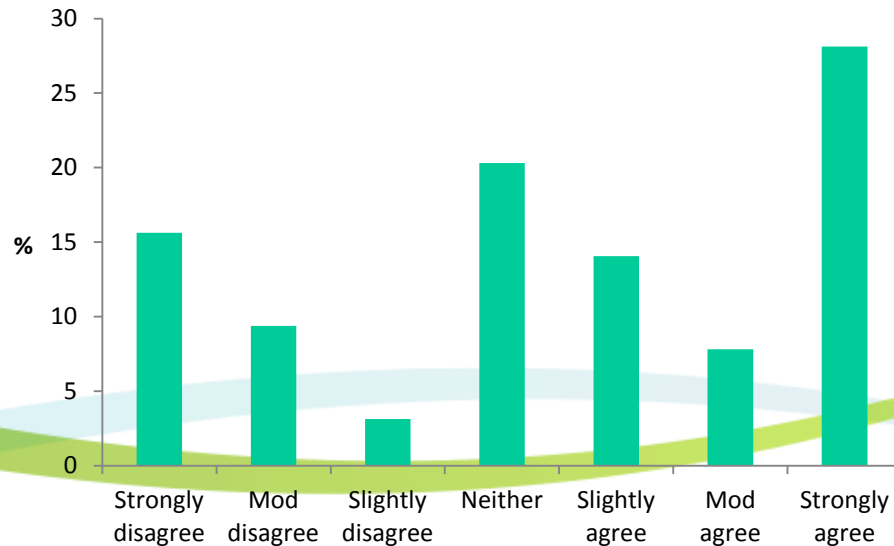
- *Method:* mail-out questionnaire plus interviews
- *Quantitative questions:* e.g. What is your land used for? How much of your property is currently being controlled for the following pests?
- *Qualitative questions:* e.g. What do you think is the value, if anything, of widespread predator control efforts through C2C?
- *Sample size:* 28 inside C2C, 40 outside the footprint



Landholder Perspectives



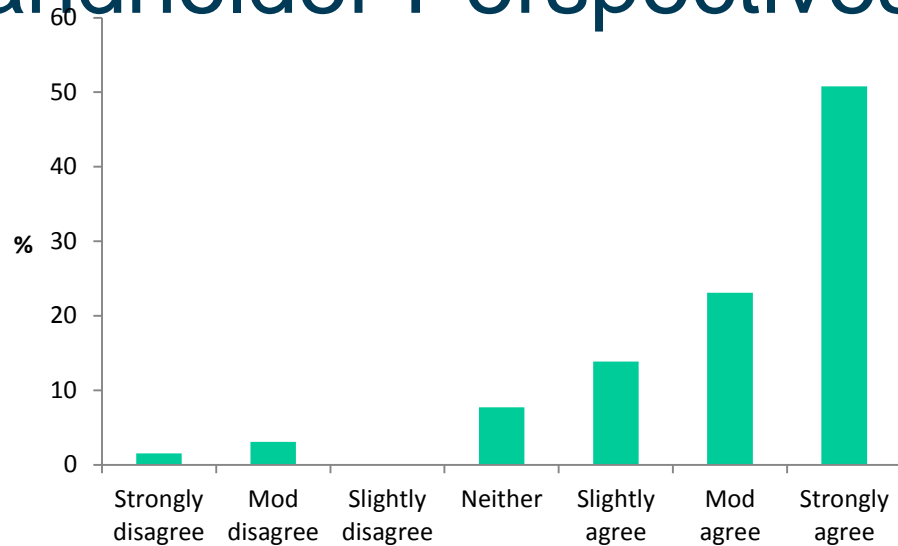
Stoats, ferrets, and feral cats in the region pose a significant threat to native birds and other animals



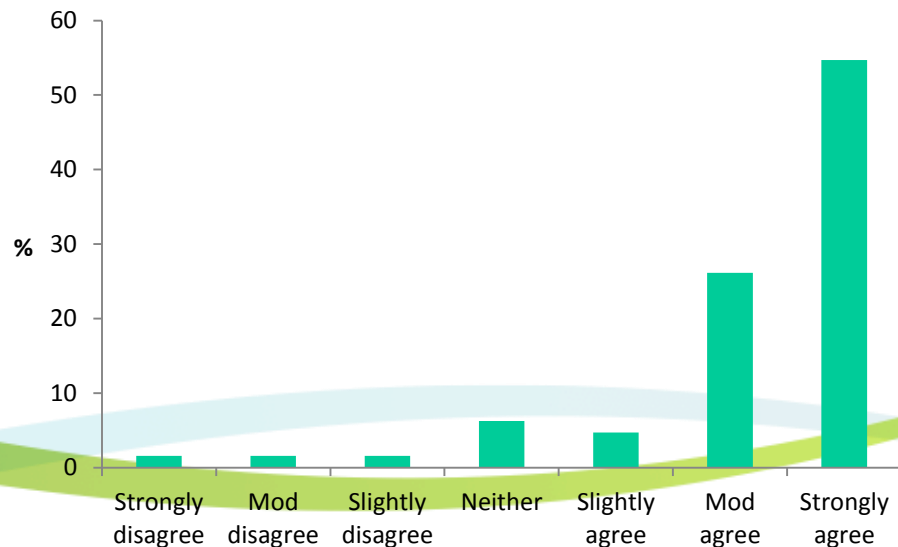
Reducing the number of feral cats will provide economic benefits to me



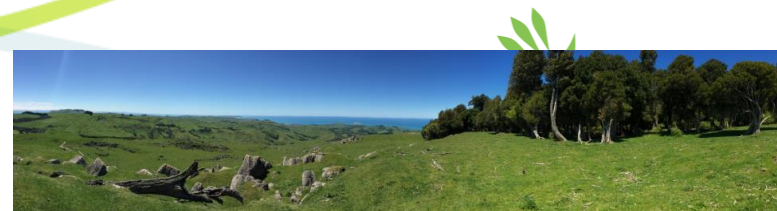
Landholder Perspectives



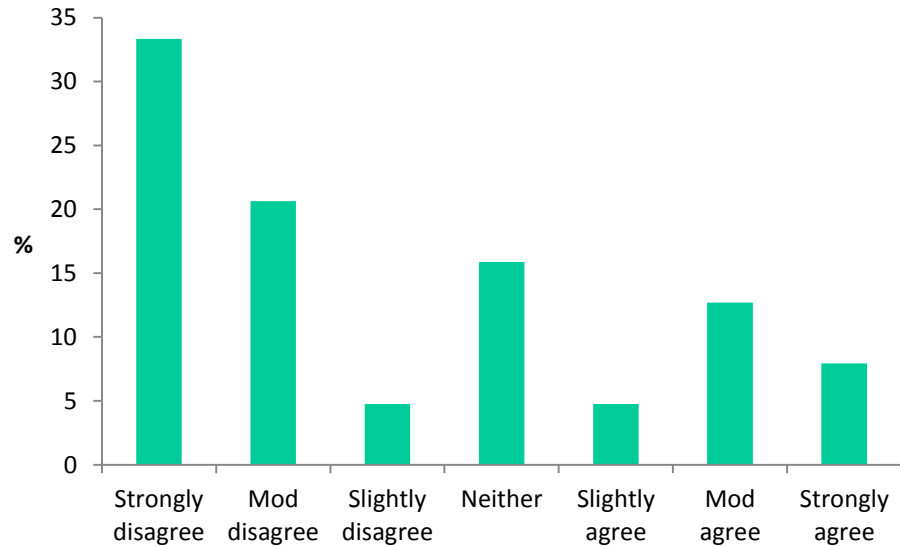
Emotional: I often wish there were more native birds and other native animals on or near my property



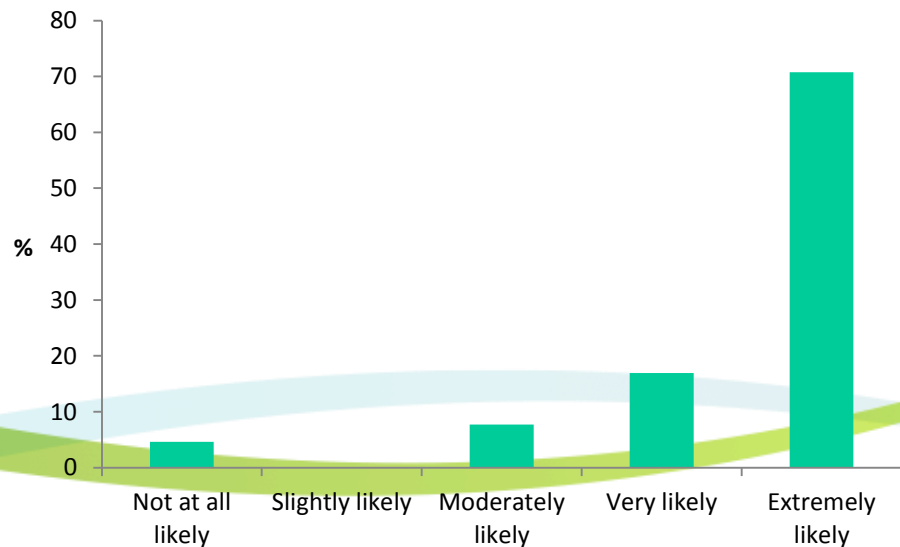
Collective Efficacy: together landowners could bring back native species



Landholder Perspectives



I often enjoy hunting predators for recreation



Allowing a trained contractor from the programme to do predator control on property



Landholder Perspectives

“Everyone has to do it or it’s pointless. . If it were to occur it has to include everyone and they have to enforce it”

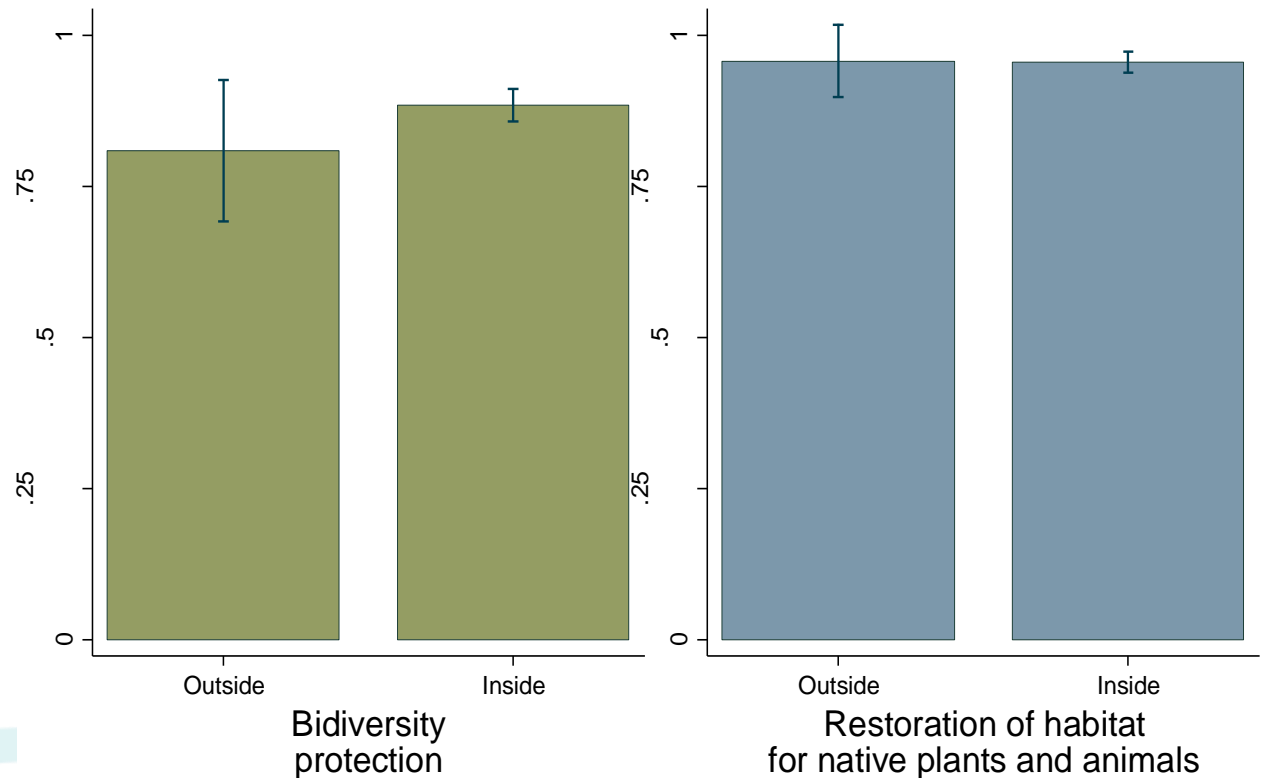
“there should be equitable funding [...] it's riding the whole cost of predator control back on to the landowners”



Urban Perspectives

Are biodiversity protection and habitat restoration important to you?

- Regardless of location, biodiversity protection and habitat restoration is important/desirable

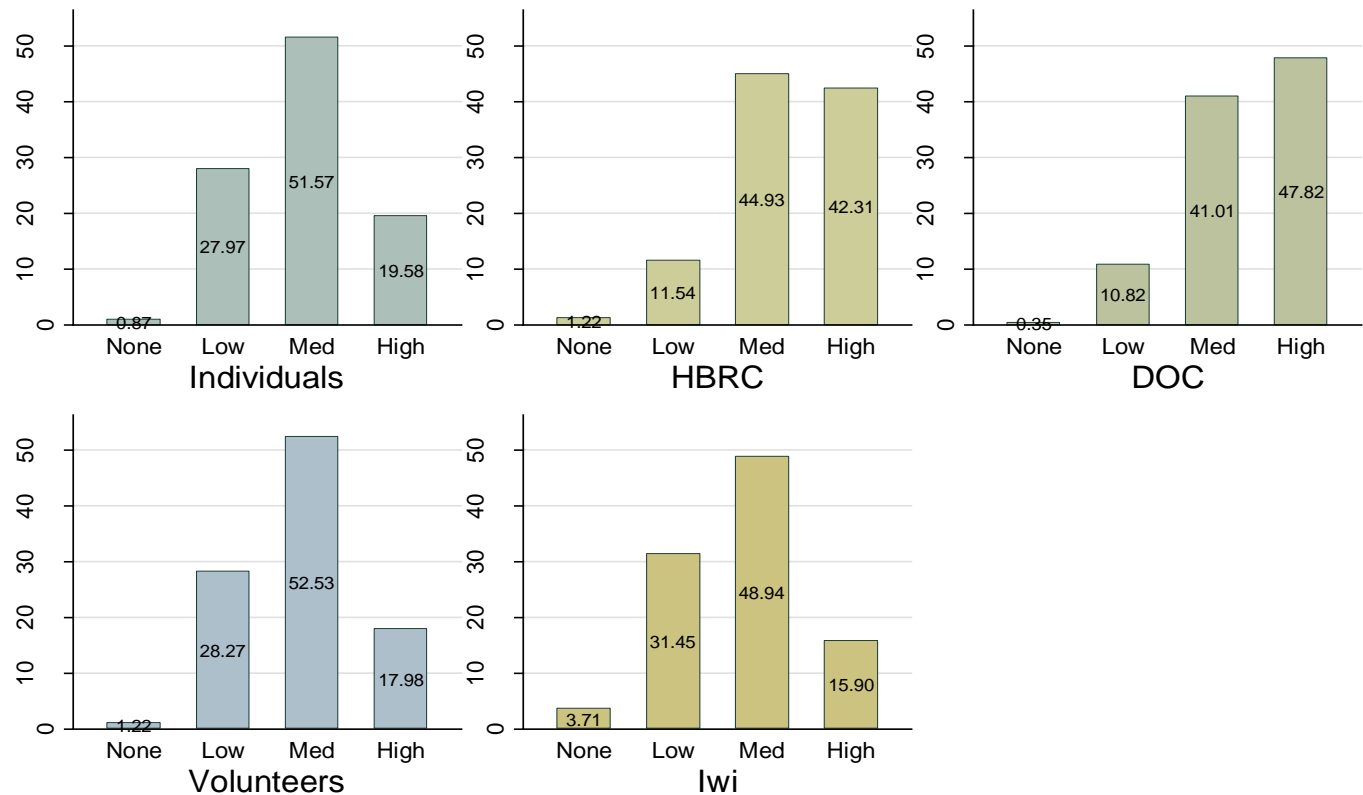


Note: Outside/Inside refers to whether the respondent resides outside or inside the Cape to City footprint.

Urban Perspectives

- DOC & HBRC have greatest responsibility for environmental protection
- Also seen as trustworthy

Who is responsible for protecting biodiversity and restoring native habitat?



Maori perspectives



Taku Wao

A Maungaharuru-Tangitū perspective
on wide-scale pest control and biodiversity restoration

30 June 2016

Report by the Maungaharuru-Tangitū Trust

Prepared for Manaaki Whenua Landcare Research and Hawke's Bay Regional Council

Funded by the Ministry of Business, Innovation and Employment Envirolink Fund

Other work

Cost-effective trapping regimes (including wireless) *at very large scales*

Bird dispersal and connecting habitat corridors

Cost-effective monitoring of invertebrate responses (eDNA)

Ecosystem services

Socio-ecological thresholds

Integrated economic outcomes, including perverse outcomes

Citizen science and use of data repositories

Peer-review important

Wildlife Society

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<http://dx.doi.org/10.1080/03014223.2015.1103761>



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RESEARCH ARTICLE

Wildlife detector dogs and camera traps: a comparison of techniques for detecting feral cats

AS Glen^a, D Anderson^b, CJ Veltman^c, PM Garvey^d and M Nichols^e

^aLandcare Research, Auckland, New Zealand; ^bLandcare Research, Lincoln, New Zealand; ^cDepartment of Conservation, c/o Landcare Research, Palmerston North, New Zealand; ^dCentre for Biodiversity and Biosecurity, School of Biological Sciences, University of Auckland, New Zealand; ^eCentre for Wildlife Management and Conservation, Lincoln University, Canterbury, New Zealand

ABSTRACT

A major challenge in controlling overabundant wildlife is monitoring their populations, particularly as they decline to very low density. Camera traps and wildlife detector dogs are increasingly being used for this purpose. We compared the cost-effectiveness of these two approaches for detecting feral cats (*Felis catus*) on two pastoral properties in Hawke's Bay, North Island, New Zealand. One property was subject to intensive pest removal, while the other had no recent history of pest control. Camera traps and wildlife detector dogs detected cats at similar rates at both sites. The operating costs of each method were also comparable. We identify a number of advantages and disadvantages of each technique, and suggest priorities for further research.

*Correspondence author.

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KEYWORDS

Carnivore; cryptic pest species; *Felis catus*; invasive predator; monitoring



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lead to lasia?

land.

ers believe that local predator
European rabbit *Oryctolagus*
validity of their concerns by

reviewing the published literature on effects of predators on rabbit abundance.
2. In New Zealand, where rabbits and their predators are introduced, predators appear to have relatively little effect on rabbit numbers compared with other

REGIONAL COUNCIL

Science outputs to date

5 publications in science journals

9 manuscripts either submitted or drafted

7 conference presentations

13 unpublished reports



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