Landcare Research
Manaaki Whenua

7th Sanctuariesnz Workshop Nelson 2011

Introduction

John Innes
Landcare Research
Hamilton

IO3: Increased effectiveness of conservation flagships
(John Innes, was Bruce Burns)
Now part of core-funded biodiversity research (Bill Lee, Rob Allen)

Goals of workshop (ex Burns 2005)

- Present science, policy, management advances
- Identify common research needs
- Exchange experience, information, ideas between sanctuaries
- Identify cooperative actions between sanctuaries for mutual benefit

Programme

- Today: Science talks 10-12 noon
  1-3 pm
  3.30-5.30 pm

- Tomorrow (Thursday): 8 am Geospatial tools
  8.30-10.30 Sanctuaries and education OR
  Fenced sanctuaries
  11-11.30 Complete above workshops
  11.30-12 noon The Brook (talk)
  1-4.30 pm The Brook (walk)

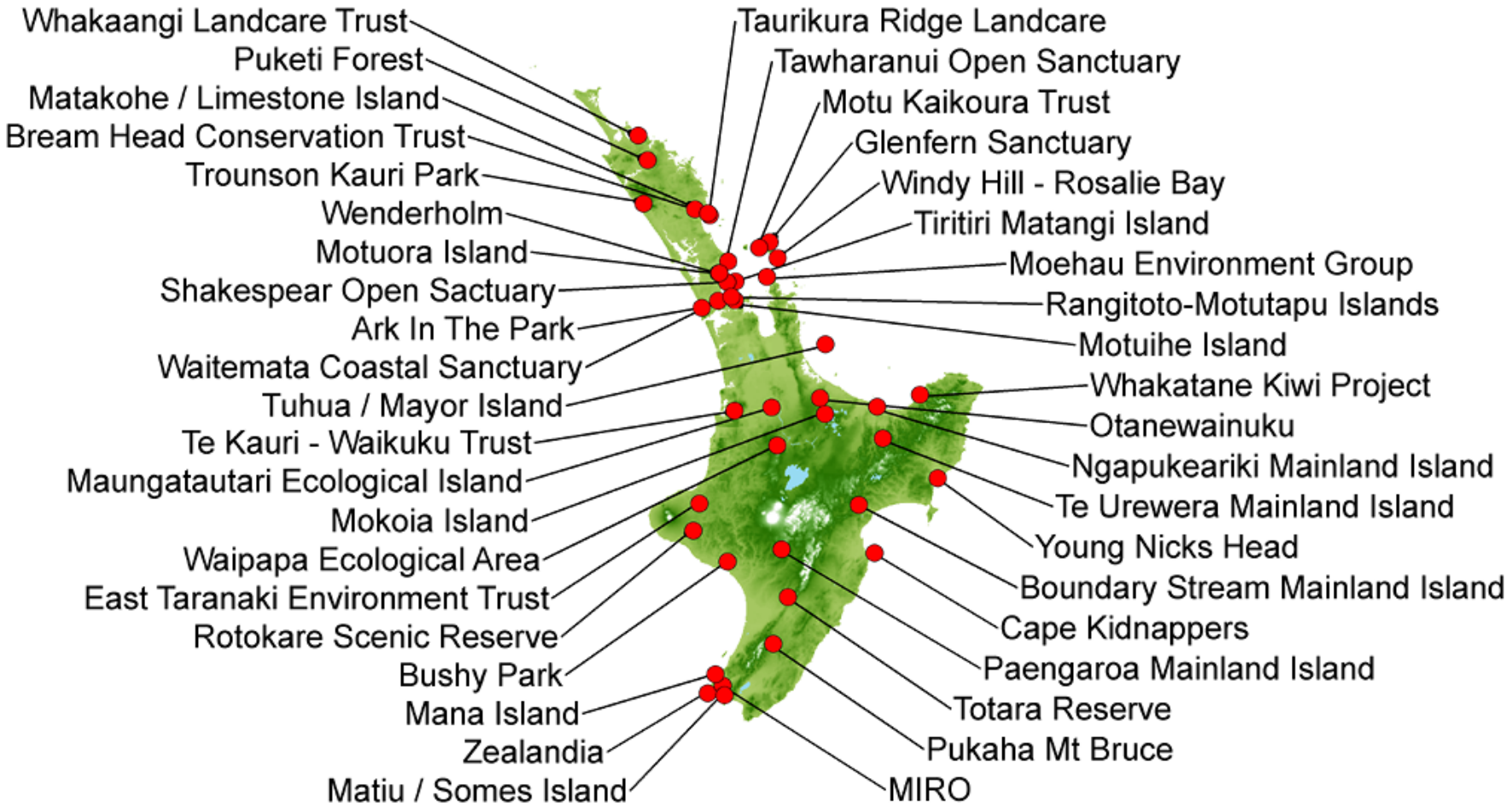
- Friday: 8.30 am- 3.30 pm Field trip Rotoiti

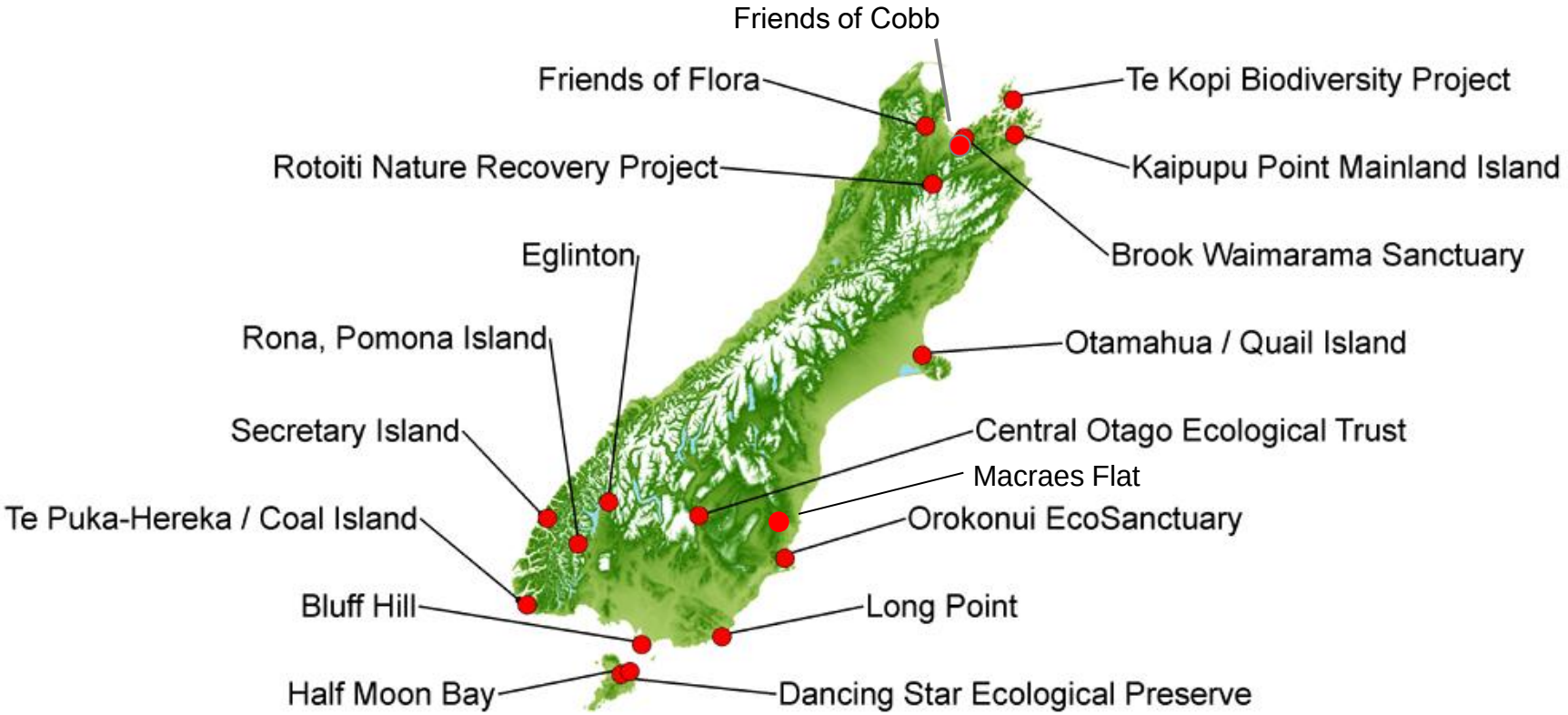
What are ‘biodiversity sanctuaries’?

Sites that:

- experimentally restore NZ ecosystems to indigenous dominance and full species complement
- control or eradicate a broad suite of pests with best practice techniques
- manage a permanent and substantial risk of pest reinvasion
- reintroduce missing species
- inspire and galvanise communities to local conservation

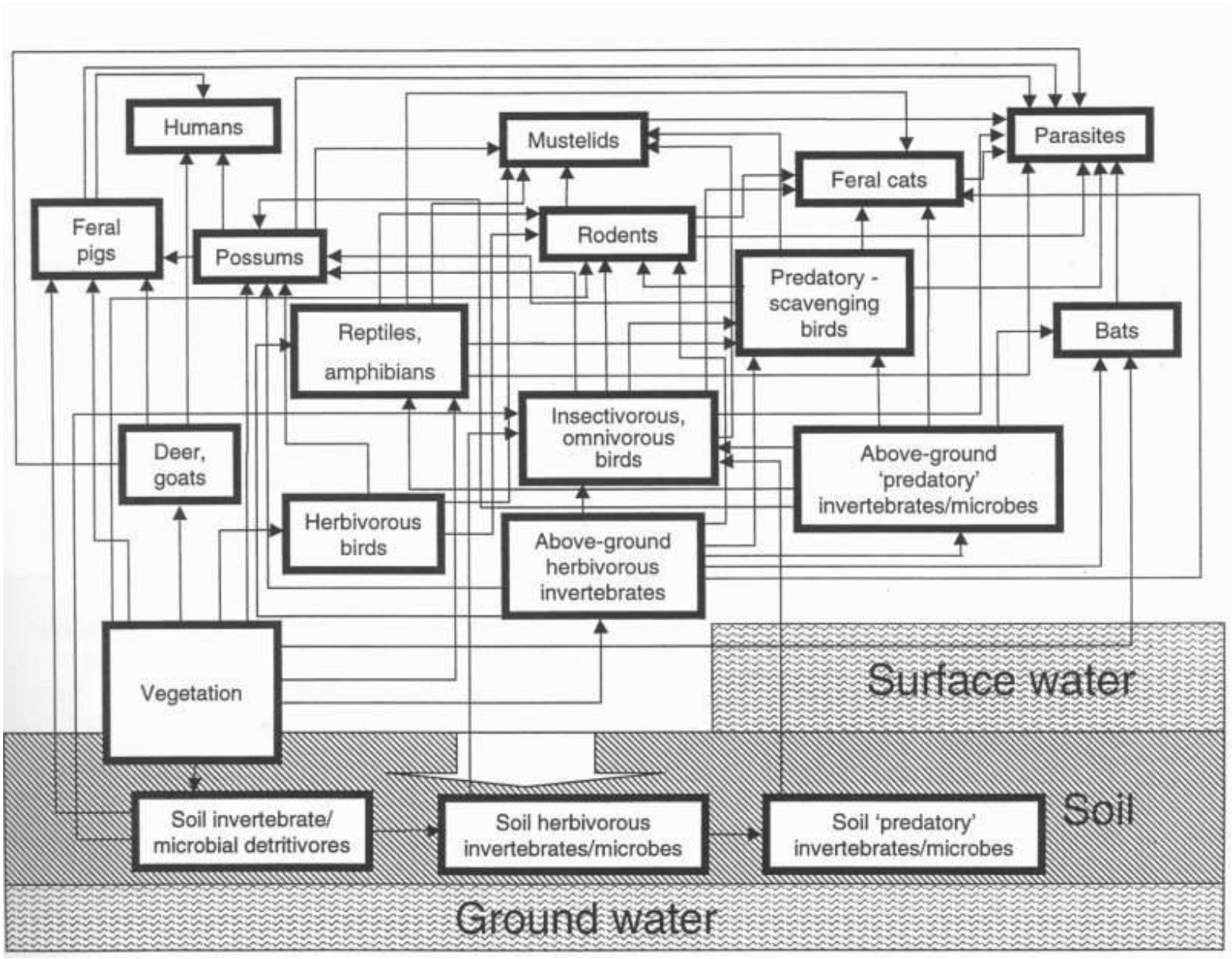
We identified 58 such projects on or near the NZ mainland


Whakaangi Landcare Trust
Puketi Forest
Matakohe / Limestone Island
Bream Head Conservation Trust
Trounson Kauri Park
Wenderholm
Motuora Island
Shakespear Open Sactuary
Ark In The Park
Waitemata Coastal Sanctuary
Tuhua / Mayor Island
Te Kauri - Waikuku Trust
Maungatautari Ecological Island
Mokoia Island
Waipapa Ecological Area
East Taranaki Environment Trust
Rotokare Scenic Reserve
Bushy Park
Mana Island
Zealandia
Matiu / Somes Island
Taurikura Ridge Landcare
Tawharanui Open Sanctuary
Motu Kaikoura Trust
Glenfern Sanctuary
Windy Hill - Rosalie Bay
Tiritiri Matangi Island
Moehau Environment Group
Rangitoto-Motutapu Islands
Motuihe Island
Whakatane Kiwi Project
Otanewainuku
Ngapukeariki Mainland Island
Te Urewera Mainland Island
Young Nicks Head
Boundary Stream Mainland Island
Cape Kidnappers
Paengaroa Mainland Island
Totara Reserve
Pukaha Mt Bruce
MIRO

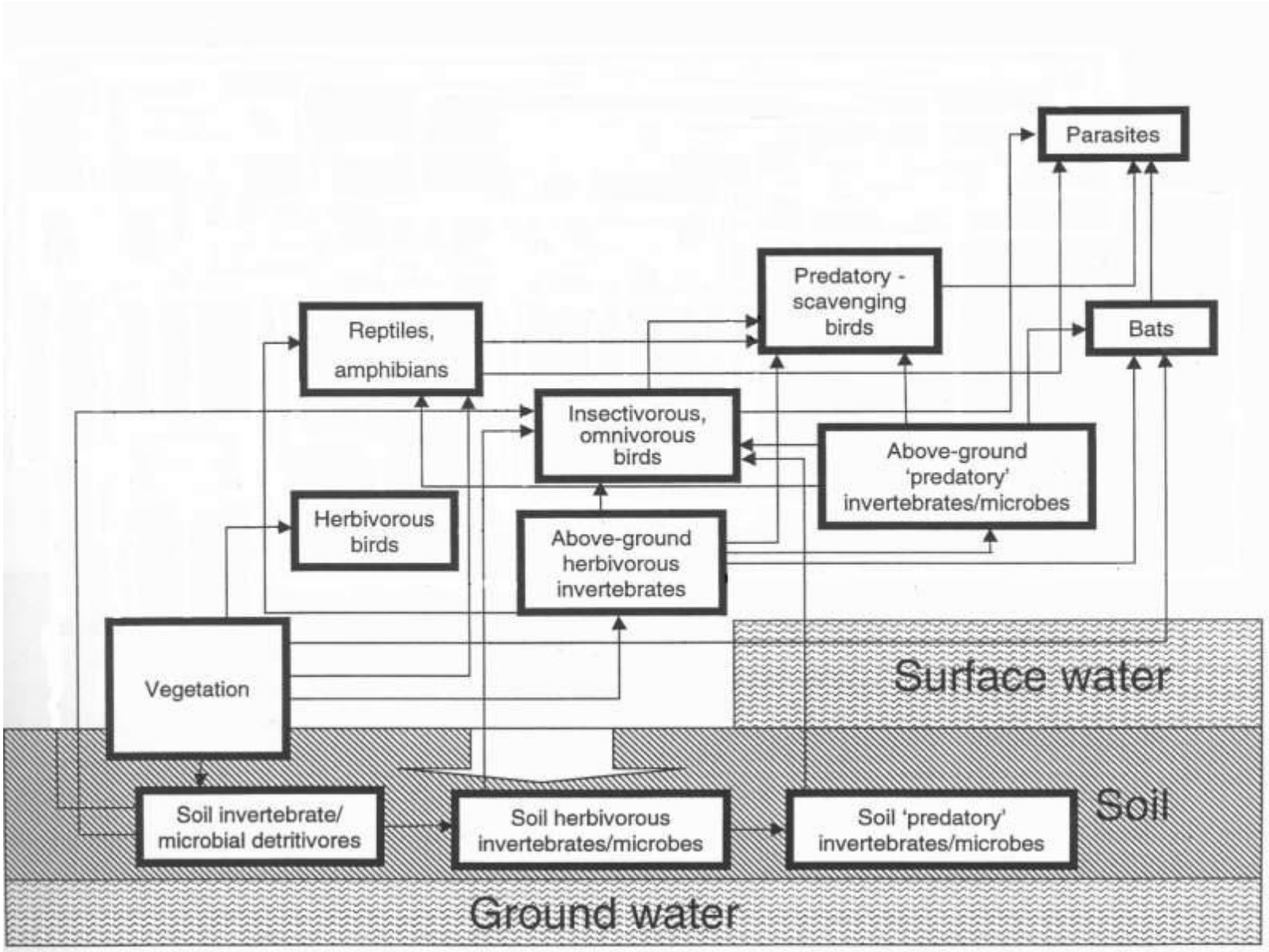


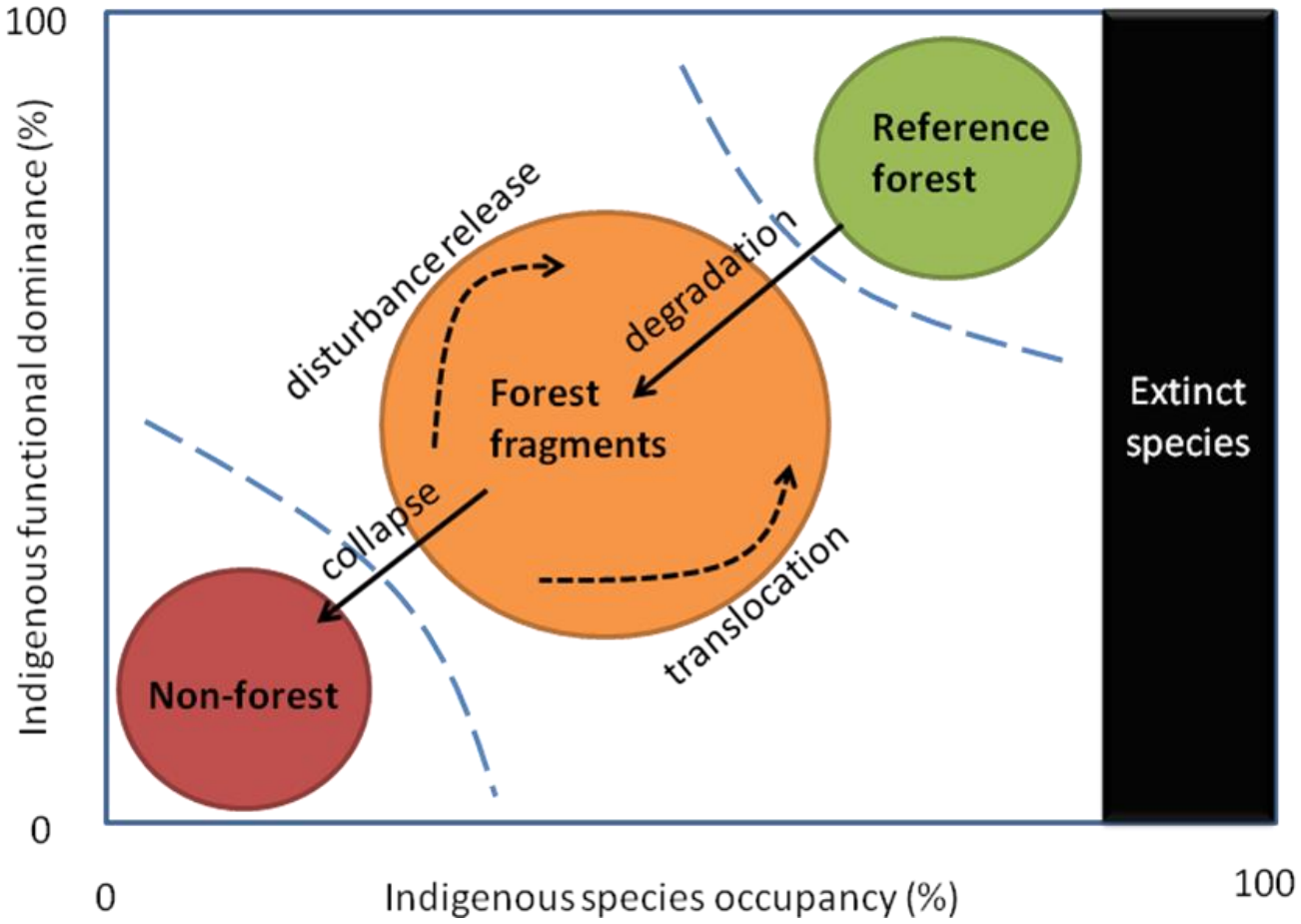
Total sanctuary area is 0.20% NZ land area

Current situation



Ecological release!





Conceptual model for forest fragments

(Dodd 2009 after Lee et al. 2005)

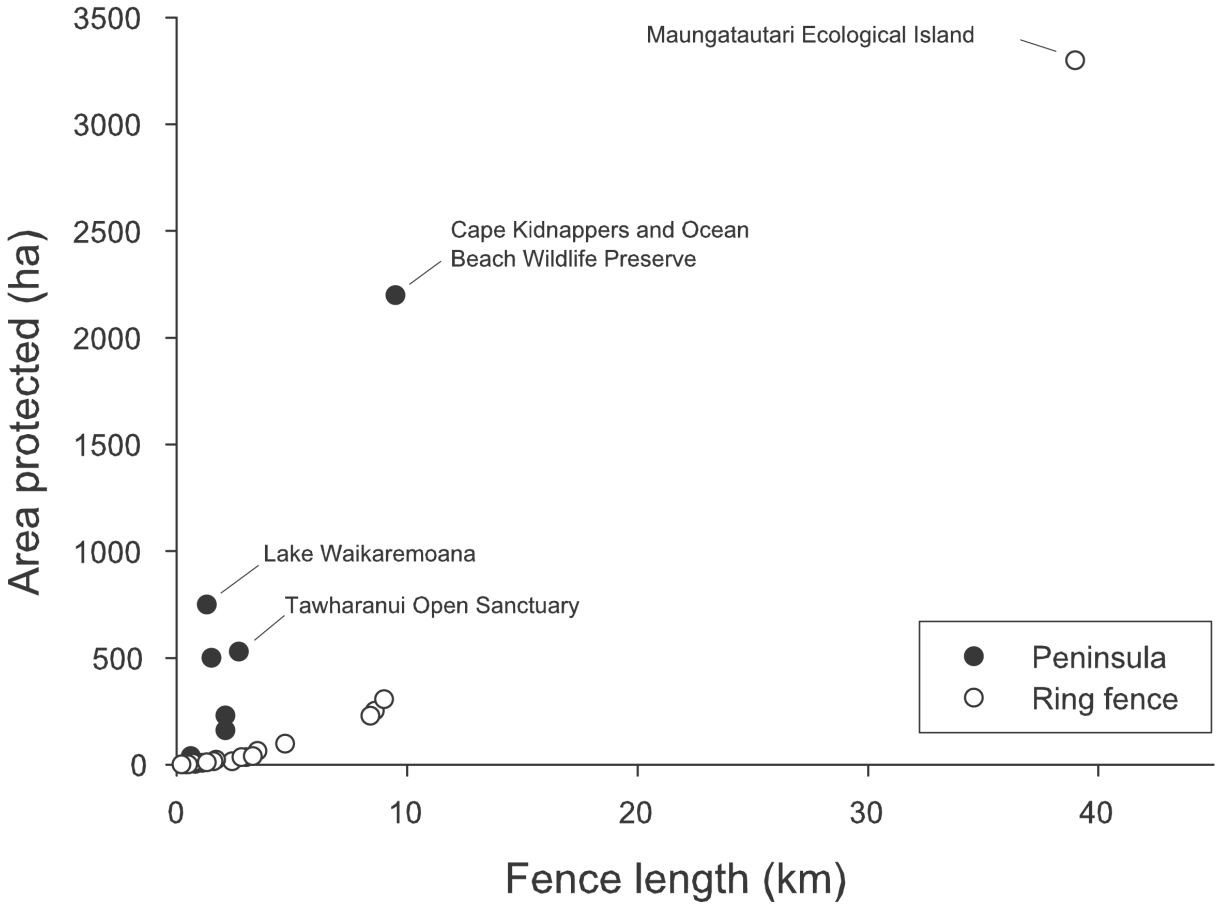
R Paul Scofield[1], Ross Cullen[2], Maggie Wong[2]

Are predator-proof fences the answer to New Zealand's terrestrial faunal biodiversity crisis? *NZ Jnl Ecology 35*: 312-317 (2011)

[1]Canterbury Museum, [2]Faculty of Commerce, Lincoln University

Abstract: "A review of pest-exclusion fences throughout New Zealand shows that the goals of fence projects are frequently not achieved and cost-benefit analyses often do not adequately quantify ongoing costs. The creation of these sanctuaries enclosed by predator-proof fences often creates small expensive zoos surrounded by degraded habitat that will never be able to sustain the animal and plant species contained within the fence. We examine what fence proponents and conservation trusts believe they are achieving and ask whether the evidence available demonstrates that fenced areas are capable of fulfilling these objectives".

Biodiversity outcomes – fenced sanctuaries



Scofield et al. 2011

ASSERT: Species restoration ok, ecosystem restoration not.

"We emphasize, however, that what is critically important here is the preservation of taxa that will become extinct without immediate intervention, not the somewhat illusory goal of the preservation of an exact copy of a prehuman functional ecosystem"

BUT

- Impossible to reproduce prehuman ecosystem
- Sanctuaries don't have this goal
- Ecosystem restoration is demanded by all key NZ acts and policies

Scofield et al. 2011

ASSERT: Conservation achievements in fenced sanctuaries can be measured by changes to threat status (Townsend et al. 2008) of species translocated to them

BUT

- Townsend et al. assesses taxa, not sites
- Needs 3 generations or 10 years to assess population change
- Impossible in the time fenced sanctuaries exist (mostly 2004 onwards)
- Normally needs new populations at multiple sites to change status
- Anyway, 4 of 19 birds with improved status 2005-2008 (Miskelly et al. 2008) have been translocated to fenced sanctuaries

Scofield et al. 2011

ASSERT: Sanctuaries 'not sustainable' because fence needs ongoing maintenance

"..a population is deemed to be self-sustaining if it is considered probable that succeeding generations will persist without human interference (Dudley 2005)"

Dudley (2005): A self-sustaining population is one "that survives at, or increases beyond, what is assessed to be a viable stable level in a natural state in the wild in Britain"

BUT

- Even remote islands need human vigilance
- ALL conservation management in NZ needs human vigilance

Scofield et al. 2011

"A huge weight of published evidence shows that islands suitably far from shore are better than fences at.. restricting ongoing… expenditure, eliminating the probability of reinvasion, providing low-cost conservation benefit".

BUT

- Most mainland environments don't occur on islands
- Offshore islands suitable for pest eradication getting exhausted
- Most people live on mainland; they drive sanctuaries
- Better 'spillover' prospects on mainland than at sea
- Better (and cheaper) access to mainland sites (Kapiti stoat)

Scofield et al. 2011

"We believe that the rate of growth in predator-proof fences is out of proportion to its benefits"

"New investment in fences will be needed every 25 years – their estimated life"

"…it is unfortunate that there are no published studies to show that fences in New Zealand either (1) increase breeding success of native birds, (2) increase survival of native birds, or (3) definitely exclude all predators"

BUT

- Now only 3-5 being built each year, mostly v. small
- Away from coast, fences should last 35-50 years (Tim Day, John McLennan)
- Fence construction based on extensive prior research
- Persistence of hihi, tieke, little spotted kiwi, tuatara in Zealandia well-known
- Other data emerging
- Fences leak mice, sometimes ship rats, 1 stoat, no others?

"The creation of these sanctuaries enclosed by predator-proof fences often creates small expensive zoos surrounded by degraded habitat that will never be able to sustain the animal and plant species contained within the fence"

Scofield RP, Cullen R, Wang M 2011. Are predator-proof fences the answer to New Zealand's terrestrial faunal biodiversity crisis? *New Zealand Journal of Ecology 35*: 312-317.

Are sanctuaries small expensive zoos?

- ZOO: Public garden or park with collection of animals for exhibition and study

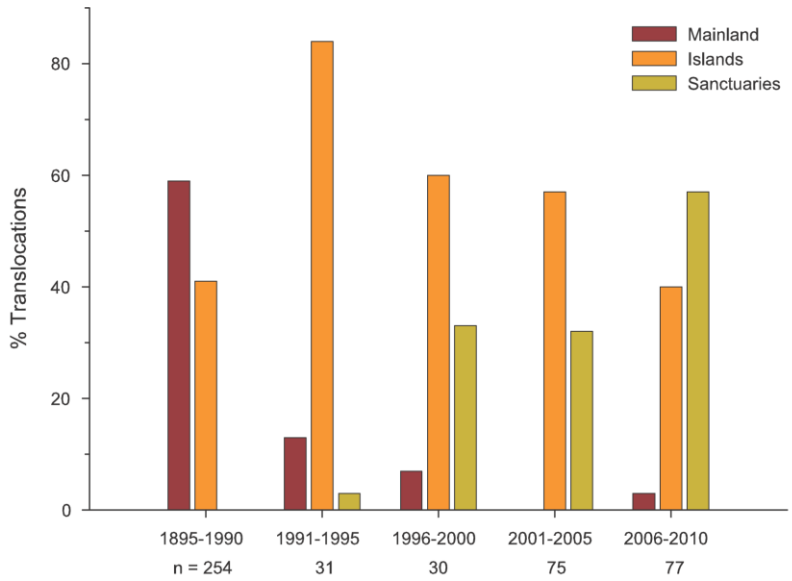
- Encountering wildlife will be important for sanctuary sustainability
- At 80-250 ha, larger than zoo enclosures

- Zoos AND sanctuaries – key roles as conservation advocates?

Do sanctuaries drive biodiversity restoration?

- Not in large (10,000+ha) mainland areas

- Most frequent translocation destination
- Have single-handedly returned iconics to mainland



- As case studies, show biodiversity responses under two major residual pest abundance scenarios

- At last, ambitious attempts to meet key legislation and goals

- By public involvement, may be critical advocacy pathway

Future of fenced & unfenced sanctuaries?

- Are the best restoration effort on NZ mainland (key Acts)
- Cannot achieve Biodiversity Strategy without vast scale increase. OTHERWISE = HUGE TRIAGE
- Currently lack logical national context
- Both fenced/unfenced need $$ forever
- Both face uncertain sustainability (are experiments)
- Share some challenges, and have unique ones

- What opportunities for coordination?
- When/how can outcome monitoring decline?

THE END