Landcare Research
Manaaki Whenua

6th Sanctuariesnz Workshop Great Barrier Island 2010

Introduction

John Innes
Landcare Research
Hamilton

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

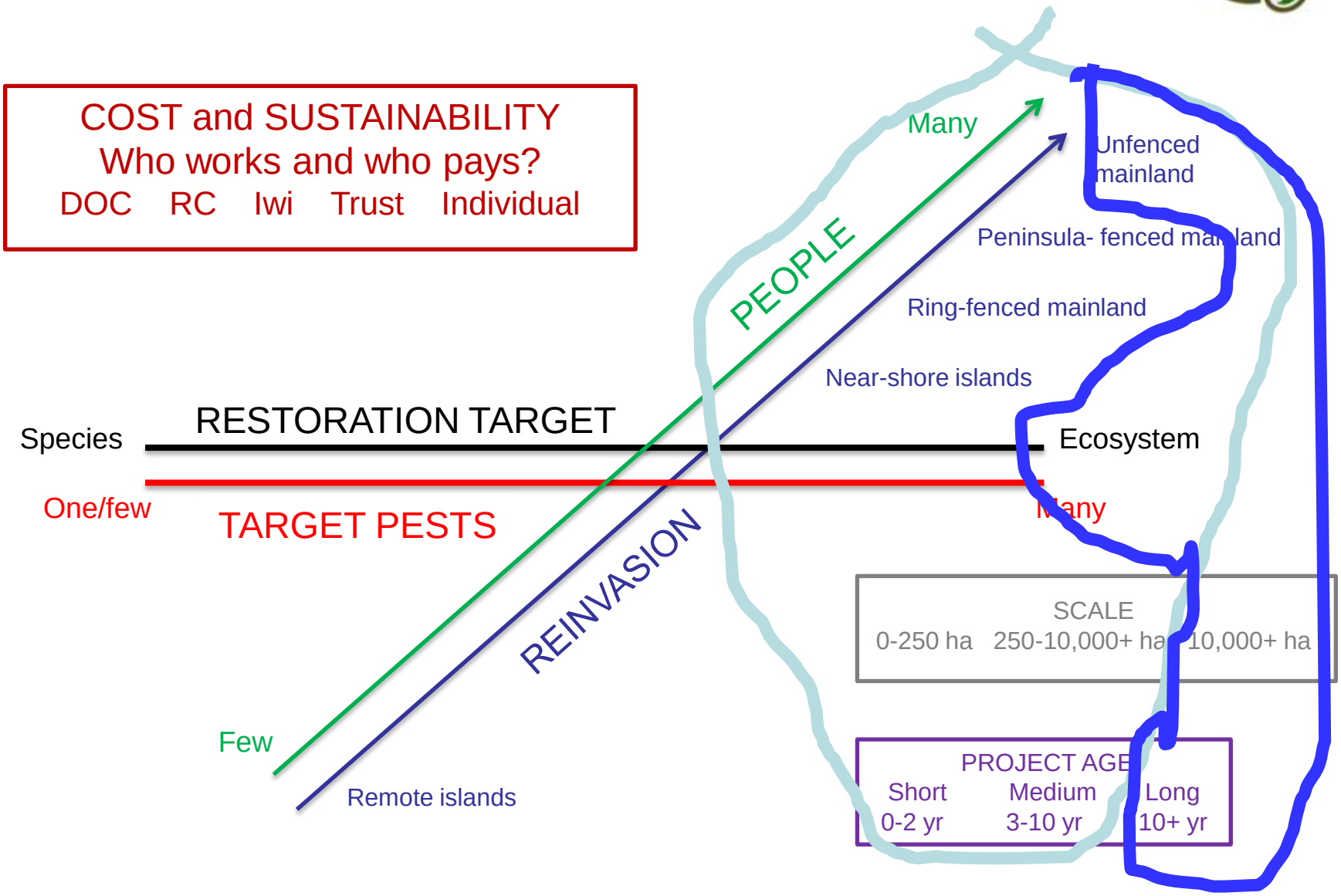
Goals of workshop (Burns 2005)

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

Iconic species and Flagship sanctuaries

Pest-proof fence at Maungatautari, Waikato

What drives sanctuary management and research?



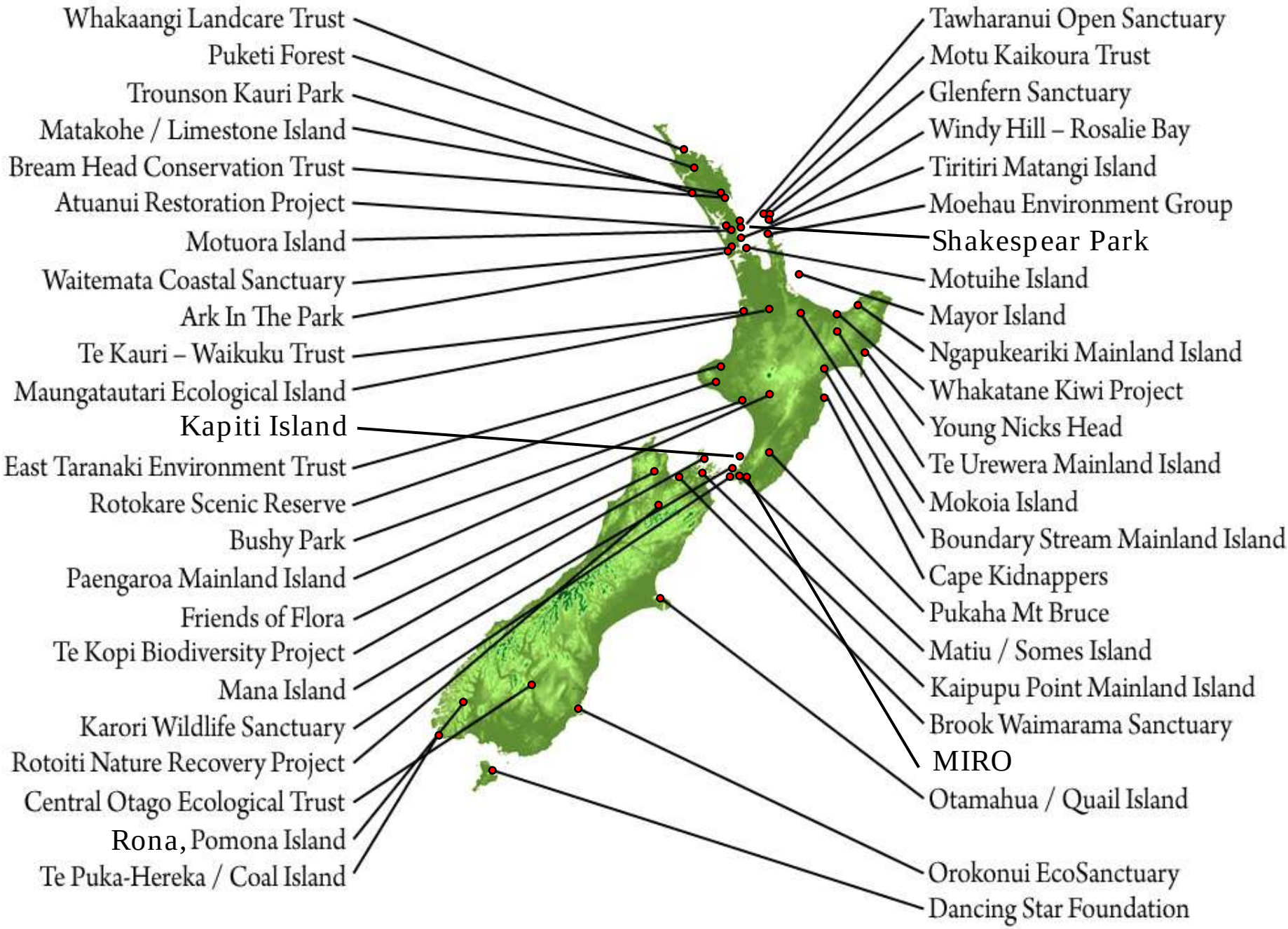
What are ‘biodiversity sanctuaries’? (Ex Burns)

- Sites that are experimentally restoring New Zealand ecosystems to indigenous dominance and full species complement

- ‘New’, inspiring and innovative initiatives that have galvanised communities to local conservation.

- Projects that aim to:
  - Control or eradicate a broad suite of pests
  - Reintroduce missing species
  - Manage a permanent and substantial risk of reinvasion by pests
  - Involve local communities

- We identified a network of 48 such projects (>25 ha) on/near the mainland (but undoubtedly others)


Whakaangi Landcare Trust
Puketi Forest
Trounson Kauri Park
Matakohe / Limestone Island
Bream Head Conservation Trust
Atuanui Restoration Project
Motuora Island
Waitemata Coastal Sanctuary
Ark In The Park
Te Kauri – Waikuku Trust
Maungatautari Ecological Island
Kapiti Island
East Taranaki Environment Trust
Rotokare Scenic Reserve
Bushy Park
Paengaroa Mainland Island
Friends of Flora
Te Kopi Biodiversity Project
Mana Island
Karori Wildlife Sanctuary
Rotoiti Nature Recovery Project
Central Otago Ecological Trust
Rona, Pomona Island
Te Puka-Hereka / Coal Island
Tawharanui Open Sanctuary
Motu Kaikoura Trust
Glenfern Sanctuary
Windy Hill – Rosalie Bay
Tiritiri Matangi Island
Moehau Environment Group
Shakespear Park
Motuihe Island
Mayor Island
Ngapukeariki Mainland Island
Whakatane Kiwi Project
Young Nicks Head
Te Urewera Mainland Island
Mokoia Island
Boundary Stream Mainland Island
Cape Kidnappers
Pukaha Mt Bruce
Matiu / Somes Island
Kaipupu Point Mainland Island
Brook Waimarama Sanctuary
MIRO
Otamahua / Quail Island
Orokonui EcoSanctuary
Dancing Star Foundation

Sanctuary area

- 34 mainland sites 36,034 ha
- 14 near-shore and freshwater islands 6,271 ha
- Total area 42,305 ha

- cf. pest-free islands – 36,482 ha (Parkes & Murphy 2003)
- cf. mainland sanctuary-related stoat control – 99,332 ha

Total sanctuary area is 0.16% NZ land area

Other kinds of ‘sanctuaries’

- Featured species projects, eg kokako, Macraes Flat skinks, kiwi sanctuaries
- Large-scale aerial 1080/stoat trapping for species/ecosystem recovery – Project Kaka (Tararuas), SIPRAG (large scale = ‘fence’)
- Complex large-scale, multi-pest control sites eg Moehau kiwi ‘zone’ (32,000 ha) with embedded ship rat, possum, goat, cat control

Pest control areas

- Total sanctuary area 42,305 ha
- Project Kaka (Tararuas) 22,000 ha
- DOC SI possum/ship rat/stoat, mostly aerial 585,527 ha

AHB:

- Area under possum mgmt for Tb 9,000,000 ha
- Tb possum mgmt in 0809 3,700,000 ha
- Tb possum mgmt aerial 1080 0809 450,000 ha
- Tb ferret mgmt in 0809 1,100,000 ha

Management method (2008)

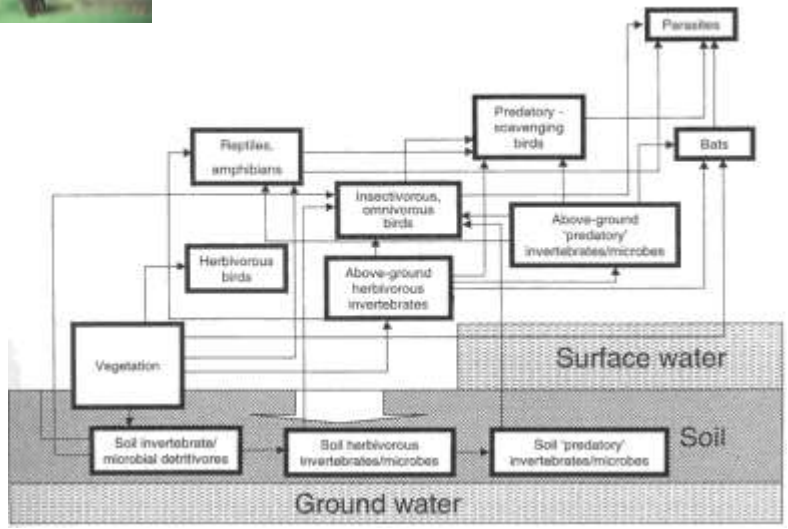
- Pest-proof fenced or planned (eradication and surveillance) – 14,361 ha (34%)

  = *largest multi-species eradications in world*

- Not PP fenced (sustained control) – 21,763 (51%)
- Near-shore islands – 6,271 ha (15%)

RESTORATION TARGETS

- Easy for species
- Harder for ecosystems



- Focus on 'ecological integrity' (Lee *et al*. 2005)

- indigenous dominance
- species occupancy
- environmental representation

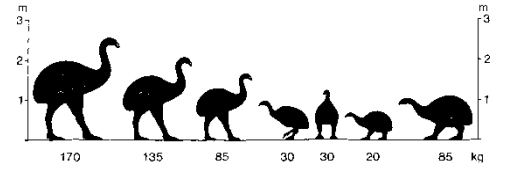
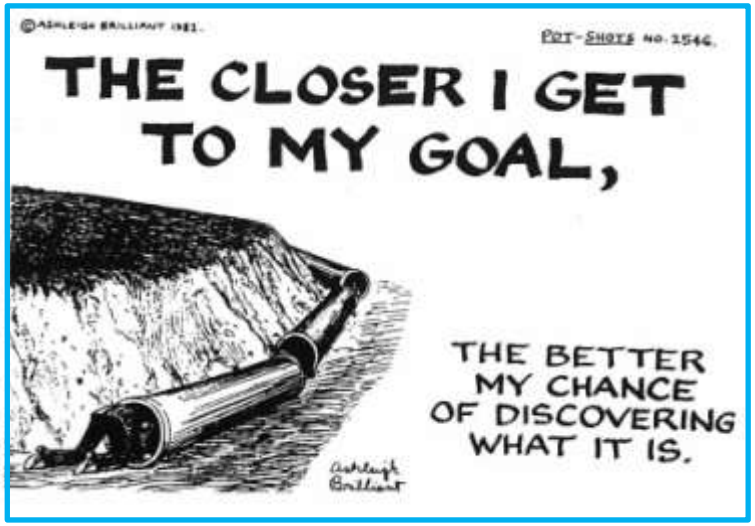


FIGURE 3 – Moas in the ground herbivore guild of the Waitomo region. From left to right: *Dinornis giganteus*, *D. novaezealandiae*, *D. struthoides*, *Anomalopteryx didiformis*, *Pachyornis mappini*, *Euryapteryx curtus*, *E. geranoides*. Estimated weights (kg) are shown for each species.

Atkinson & Milliner 1990

Better to restore key taxa, and ecological processes and outcomes will follow



Dactylanthus
male flower

Avi Holzapfel

pollen grain

Jamie Wood

Kakapo

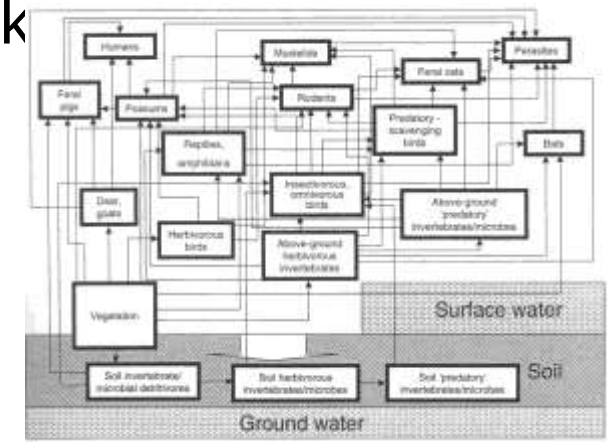
Duvaucel's gecko
Maungatautari

Chris Smuts-Kennedy

Research needs:

- Species monitoring techniques
  - Precision appropriate to question
  - Practical, given resources
  - Short, medium, long term

- Ecosystem monitoring techniques
  - Needs semantic & theoretical framework
  - Focus on ecological integrity
  - 10 years' DOC Mainland Island data
  - Short, medium, long term



TARGET PESTS: Research needs

- Effective, sustainable, large-scale control tools and regimes for multiple key pests

  - For species recovery: ship rats, possums, stoats.
  - For ecosystem recovery: mice, ship rats, stoats, cats, hedgehogs, rabbits, hares, weasels, possums, goats, pigs, deer…

- In sanctuaries: pest control tools that are safe for iconics
- Pest monitoring techniques at all densities
- Species and ecosystem responses to residual pest abundance, esp. none vs some (fence vs no fence)

REINVASION: Research needs

- Pest detection at extremely low density

- Reinvasion behaviour

  - is natal dispersal important?
  - movement behaviour at fence ends
  - behaviour at fence holes (lights?? Mouse burrowing??)
  - fence technology
  - swimming
  - movement behaviour of invaders, esp. mice, stoats, cats.

COST & SUSTAINABILITY:
Research needs

- Substantial research completed on community motivation (Campbell-Hunt; Phipps)

- Research now needed on conventional economics – financial viability

Maungatautari

Karori

National prioritisation?

National vs community objectives?

‘Vital sites’

Jake Overton
Landcare Research
Hamilton

NHMS

Ecosystem prioriotisation

DoC

Sanctuaries	
DoC	Non-DoC

Species prioritisation

Richard Maloney
DoC, Christchurch

Waters of National Importance

John Leathwick
DoC, Hamilton

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