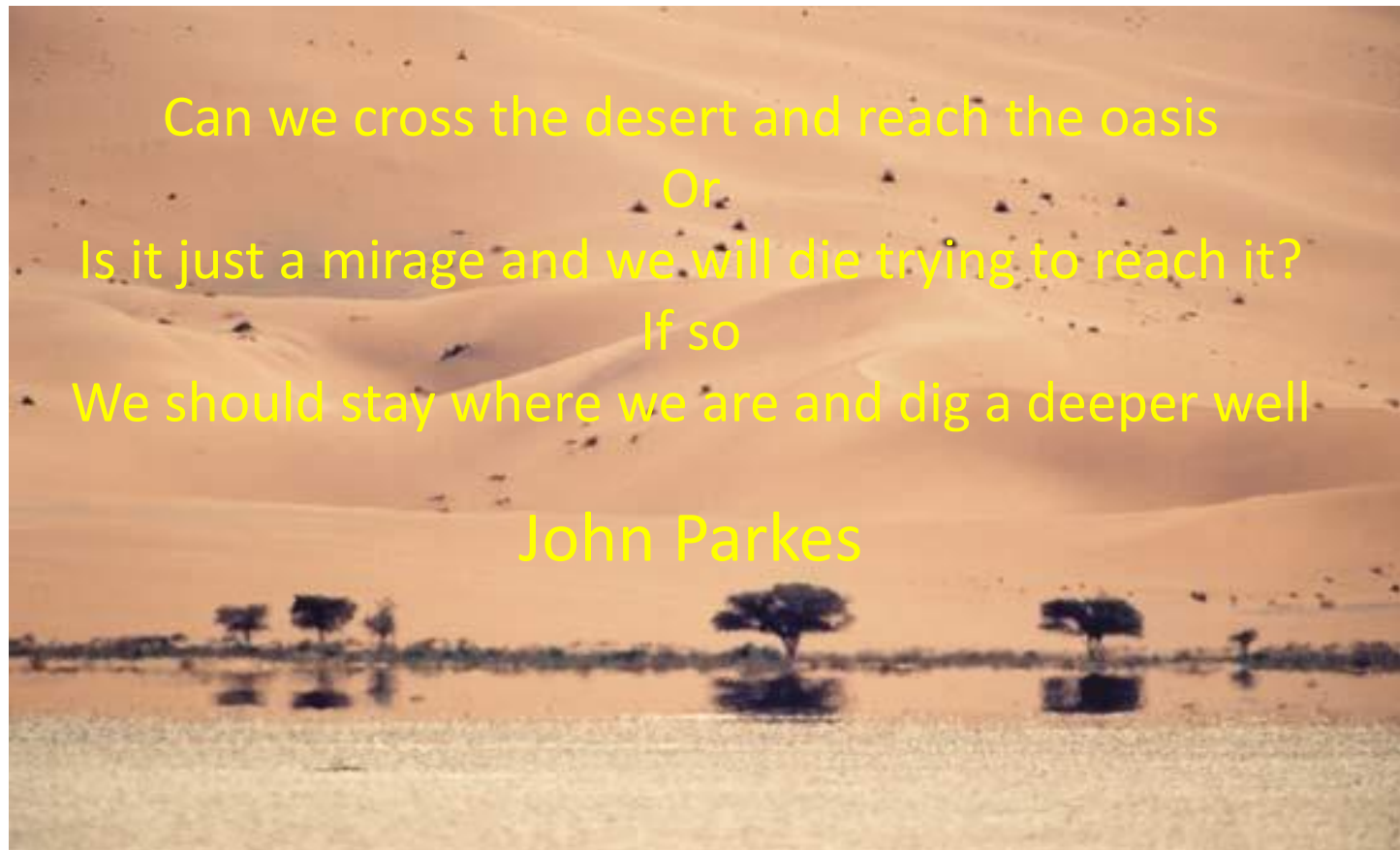


# Predator Free NZ 2050: an achievable vision or a mirage?



Can we cross the desert and reach the oasis

Or

Is it just a mirage and we will die trying to reach it?

If so

We should stay where we are and dig a deeper well

John Parkes

# Outline of talk

- The interim 2025 goals
  - Eradication on islands as a template to upscale
  - Large-scale mainland control ++ as a template
- The 2050 goals
  - Costs and constraints on feasibility
  - What new tools might do the trick at large scales
  - Downside of chasing a mirage (the perfect is the enemy of the good)
  - Upside of the enthusiasm to capture alternative paradigms

# PFNZ2050 Interim goals

- Eradicate all predators from island nature reserves by 2025
  - 616 islands in NZ over 1 ha
  - 299 have some form of 'reserve' tenures
  - 48 still have one or more mammal predators
  - 15 have low reinvasion risks
  - 2 meet strict 'rules' re target 2050 predators, reserve status and invasion risk (both with kiore)

Island	Area	Tenure	Predators present	Issue
Stewart	168,540	Mixed	Rats, possum, cat	People, 105 islands and cost
Chatham	90,650	Mixed	Rats, mice, possum, cat, pig	People, pigs valued
Auckland	45,975	NR	Mice, cat, pig	Cost
Gt Barrier	28,510	Mixed	Rats, cat, pig	People, 32 islands
Waiheke	9,459	Mixed	Rodents, mustelids, cats, hedgehogs	People
Pitt	6,203	Mixed	Mice, cat, pig	People, pigs valued
Motukawanui	355	Mixed	Kiore	Routine and planned
Rakitu	312	SR	Ship rat	Routine and planned
Rakino	150	Mixed	Cat	People
Quail	80	RR	Mice	Reinvasion
Mauitaha	23	NR	Kiore	Protected for Ngati Wai
Masked	4	NR	Mice, cat	Part of Auckland job
Araara	2	NR	Kiore	Protected for Ngati Wai

# Conclusion 1

- No nature reserves with 2050 predators left
- Auckland Is. is a NR but no PFNZ species
- Some others are worth doing but routine
- Maybe should pick an inhabited island and learn how to get social consent (or not)?

# Eradication as a template

- NZ good at this
  - Eradicated **all** mammals from 143 islands
  - Total area 50,840 ha (0.19% of NZ)
- Multispecies lessons from Rangitoto-Motutapu (3830 ha)
  - Possums and wallabies (cost unknown)
  - Rodents, stoats, hedgehogs, rabbits (\$1000/ha)
- Not so experience on islands with people



# Two sorts of eradication

- 100% killed in one control event



- 100% killed by a succession of control events



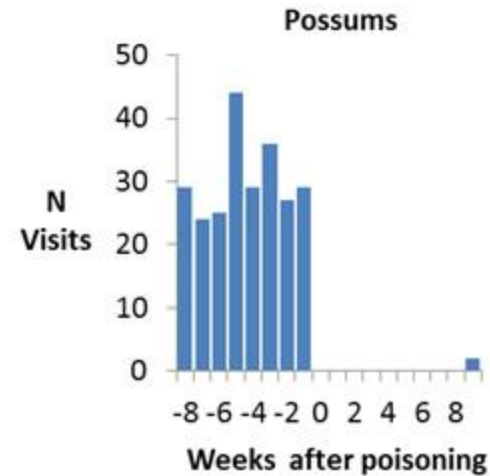
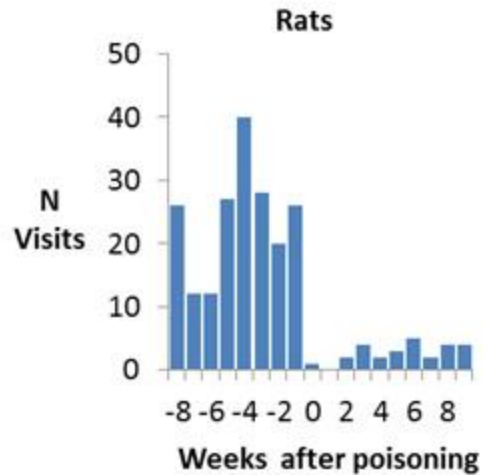
# Traditional tools for PFNZ species at large-scales

- Ground-based methods = many control events over time
  - Bait stations
  - traps
- Aerial baiting = potentially one-hit
  - 1080
  - anticoagulants



# Can aerial 1080 get 100%?

(camera trap data after Nugent et al. 2017)



# Can aerial brodifacoum get 100%?

- Yes for rats and mice .... costs c\$300/ha
  - 30 populations
  - On 18 islands over 1000 ha
  - 28 eradicated
  - 2 failed (mice on Ile Australia, kiore on Henderson)
- No for stoats, possums, rabbits, cats, ... costs c.\$700/ha to get survivors
  - Some always (almost always) survive

# Scaling up to NZ: phase 1 aerial baiting of rodents and some of the rest

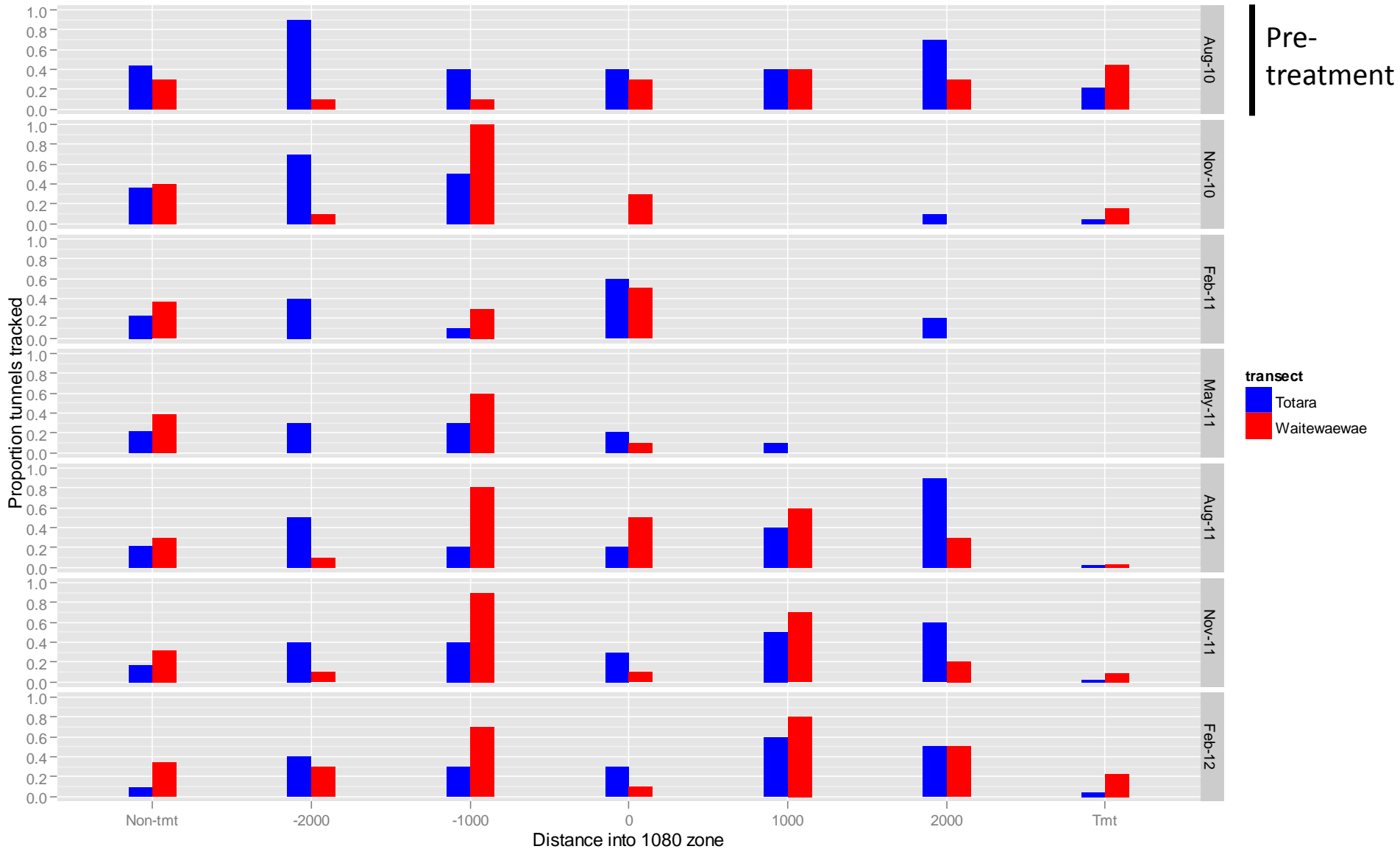
- Aerial brodifacoum 27 million ha @ \$300/ha = \$8.1 billion
- Not enough bait (450 000 tonnes) or helicopters to do all at once = managing reinvasion
- Majority approval is inadequate = anyone who says NO and means it rules

# Scaling up to NZ :phase 2 mopping up other species

- Trapping, shooting etc of 27 million ha  
@\$700/ha = \$20 billion
- Takes time – the longer the time the higher  
the reinvasion probability = 100%



# Tracking tunnels - rats



# Conclusions with current technologies

- Not feasible
  - Cost
  - Social restrictions on access for baiting at least
  - Timeframe versus defence of cleared areas
  - Improved techniques good but don't change the basics

# So what about novel methods: genomics

- Several suggested ways to manipulate genetics
  - Optimists (and researchers bidding for funds) say they might eradicate
    - Pandora's box – if true should we open the box?
    - Some ethical issues we should decide now
    - International issues – the Cartagena protocols etc



# Genomics cont.

- Realists? (including the same researchers) say not likely to eradicate
  - Good in that it avoids some of the Pandora's issues and provides a 'cheap' way of reducing pest populations
  - Bad in that it leave us with \$1000/ha bill to remove the residual populations

# So is PFNZ feasible? Looking to the future



# So what's wrong with trying?

- Been there done that and wasted our time and money – the last rabbit the last deer campaigns of yore
  - All rabbits and deer (now rats, stoats, possums) equally pestiferous = nonsense
  - So no prioritisation of effort = essential when \$ limit choices
  - Most native species can exist and thrive in the presence of some level of predation. The few that cannot have to live in sanctuaries or on islands

# So what should we do?

- I like the onion or halo model
- A kiwi can walk in suitable habitat from the Raukumara to Puysugur Point (with help over the Strait)
- Why not a string of 'smallish' mainland islands of intensive pest control with enough action between them to allow 'safe' passage if not safe breeding for some asset species?

# 1. Onion rings & landscape-scale pest management



## Integrating Control of Mammalian Pests

### To Protect Conservation Values in New Zealand

INVESTIGATION NO:  
KEY OUTPUT: 4.2

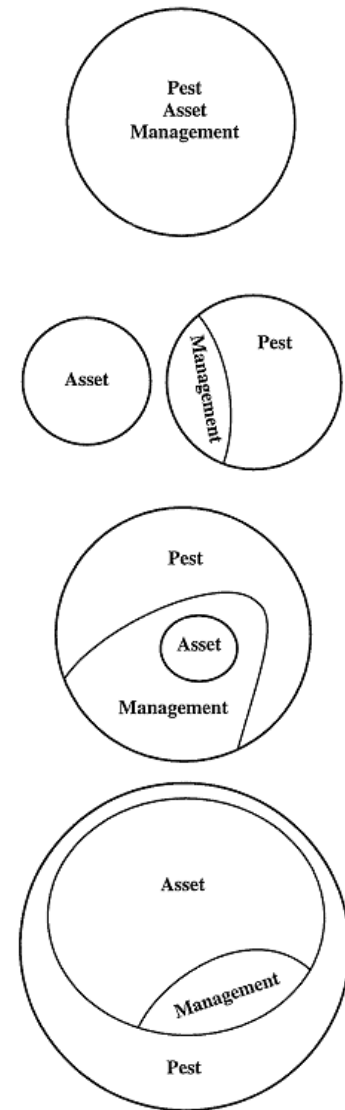
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Landcare Research Contract Report: LC9495/104

PREPARED FOR:  
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P.O. Box 10-420, Wellington

DATE: April 1995



**Fig. 4.** Some spatial relationships between assets, pests, and management responses.  
(a) A typical island where the resource, pest, and management action coincide.  
(b) Where a widespread pest is controlled to stop it dispersing into the priority place.  
(c) Where a ubiquitous pest is controlled over the whole priority place plus a buffer.  
(d) Where a ubiquitous pest is controlled over part of the priority place.

# The role of the public and the sanctuary movement

- Current allocation of pest control has no national priority imperative
- Sanctuaries (private, regional and DOC) have grow'd like Topsy.

# Roles: who does what?

- I think the only agencies with a national perspective (DOC and maybe PFNZ2050) need to encourage and plan the deployment/location of core sites
  - Sustaining action in the cores maybe best achieved by private/NGOs
  - Periodic actions between the cores by DOC/RCs
  - Will gene jockeys soak up all the funds for research?



# Final point

- I hope the formal PFNZ team will:
  - Don't waste effort on killing rats at the city dump
  - Clean up the islands – those with people!
  - Don't forget about the herbivores – not much point in stopping birds getting eaten but allowing deer etc to trash their habitat
  - Think about how to drive a national prioritisation within the halo/onion model

