



THE UNIVERSITY OF
AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau
NEW ZEALAND

Predator Free New Zealand: Conservation Country

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NEW ZEALAND

Predators



- Predators are a natural part of ecosystems around the world, including New Zealand, from the towering Haast eagle to the diminutive peripatus
- Humans have also introduced predators around the world, both intentionally (cats, stoats, foxes) and inadvertently (rats, snakes)
- These species additions to ecosystems, have gone on to cause subsequent species deletions e.g. nearly half of NZ's bird fauna
- This has often come about because native species, particularly on islands, have been naïve to the predatory mechanisms of introduced predator e.g. mammals hunt by smell not sight
- Predator control, both native and introduced, has always been important in the history of ecosystem management

Target Species



Possums

Mustelids

Ship rat

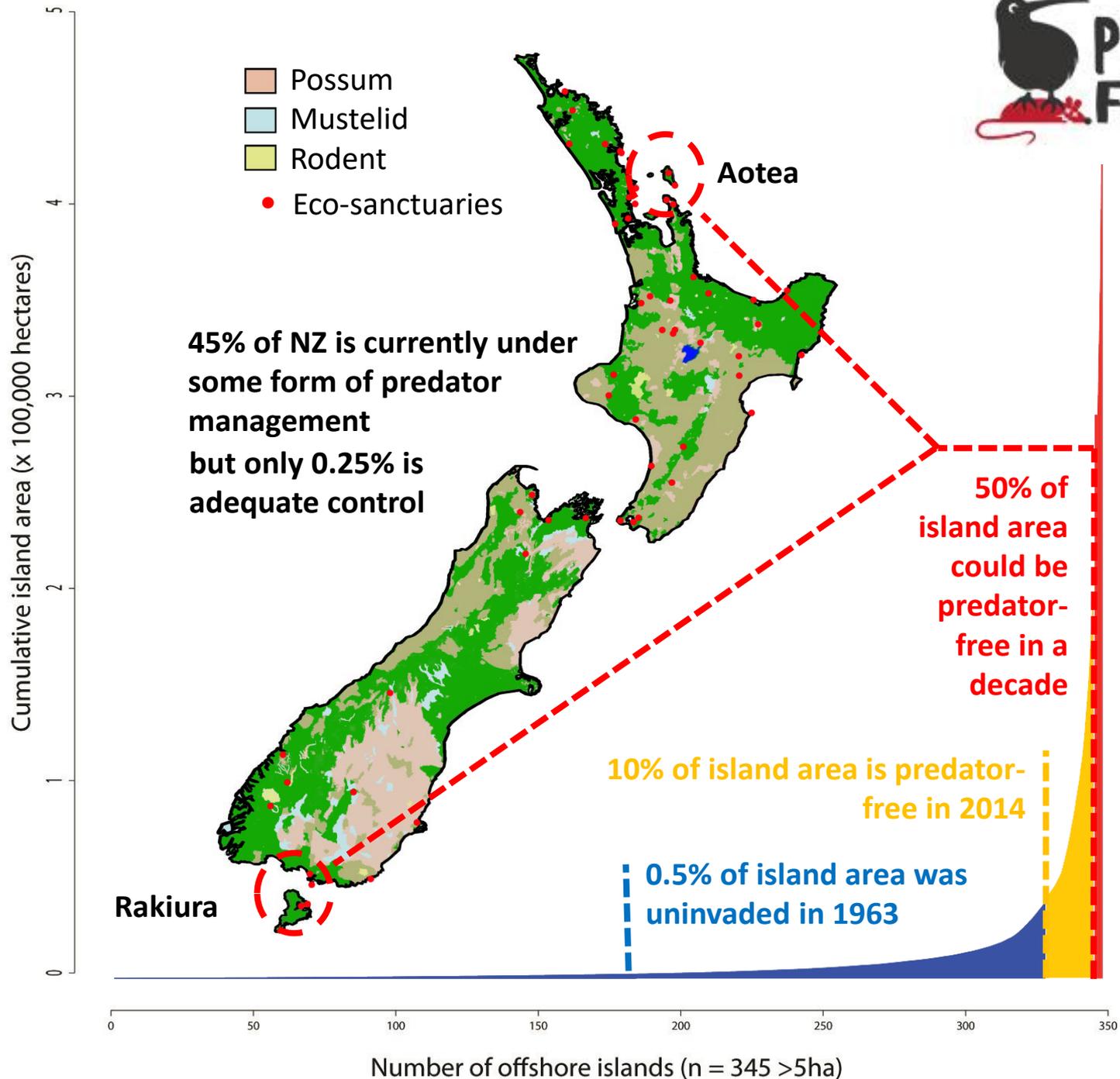
Norway rat

Kiore

These 7 species constitute the predators in Predator-Free New Zealand

They are being targeted as predators that cause overwhelmingly negative effects upon our native biota

Because they are introduced invasive species, we are legitimately able to aim for complete eradication of them from New Zealand



PFNZ 2050



- PFNZ2050 was the 2016 announcement by the government setting levels of support and timelines for achieving a predator-free New Zealand.
- PFNZ is a joint-venture company set-up by the government with start-up funding of \$28 million to be matched 1:2 by philanthropic investment.
- The funding will be used for a combination of scaling up predator control projects on the mainland, and advanced scientific research in to predator control
- 2025 goals are:
 - Increase by 1 million hectares the areas of New Zealand where predators are suppressed.
 - Demonstrate predator removal in areas of mainland New Zealand of 20,000 hectares.
 - Remove all mammalian predators from New Zealand's offshore island nature reserves.
 - Develop science solutions that remove at least one small mammal predator from the New Zealand mainland.



- The high tech solutions to invasive mammal pests project was an investment in long-term high-risk science, which is traditionally not funded under the New Zealand system
- The goal was to deliver step-change in socially-acceptable landscape-scale control and detection of stoats, rats and possums
 - Host-specific toxins
 - Genetic suppression tools
 - Predator lures
 - Remote biosensors
 - Strategy modelling
 - Bioethics



Bioethics Panel

Expert panel of 12 members convened in 2017:

- Responsibilities to Biodiversity
- Kaitiakitanga and Conservation Philosophy
- Human Dimensions
- Governance and Oversight
- Technology
- Outcomes



Bioethics panel (2019). Predator Free New Zealand: Social, Cultural, and Ethical Challenges. BioHeritage Challenge.

Genomes



University of Otago



Landcare Research

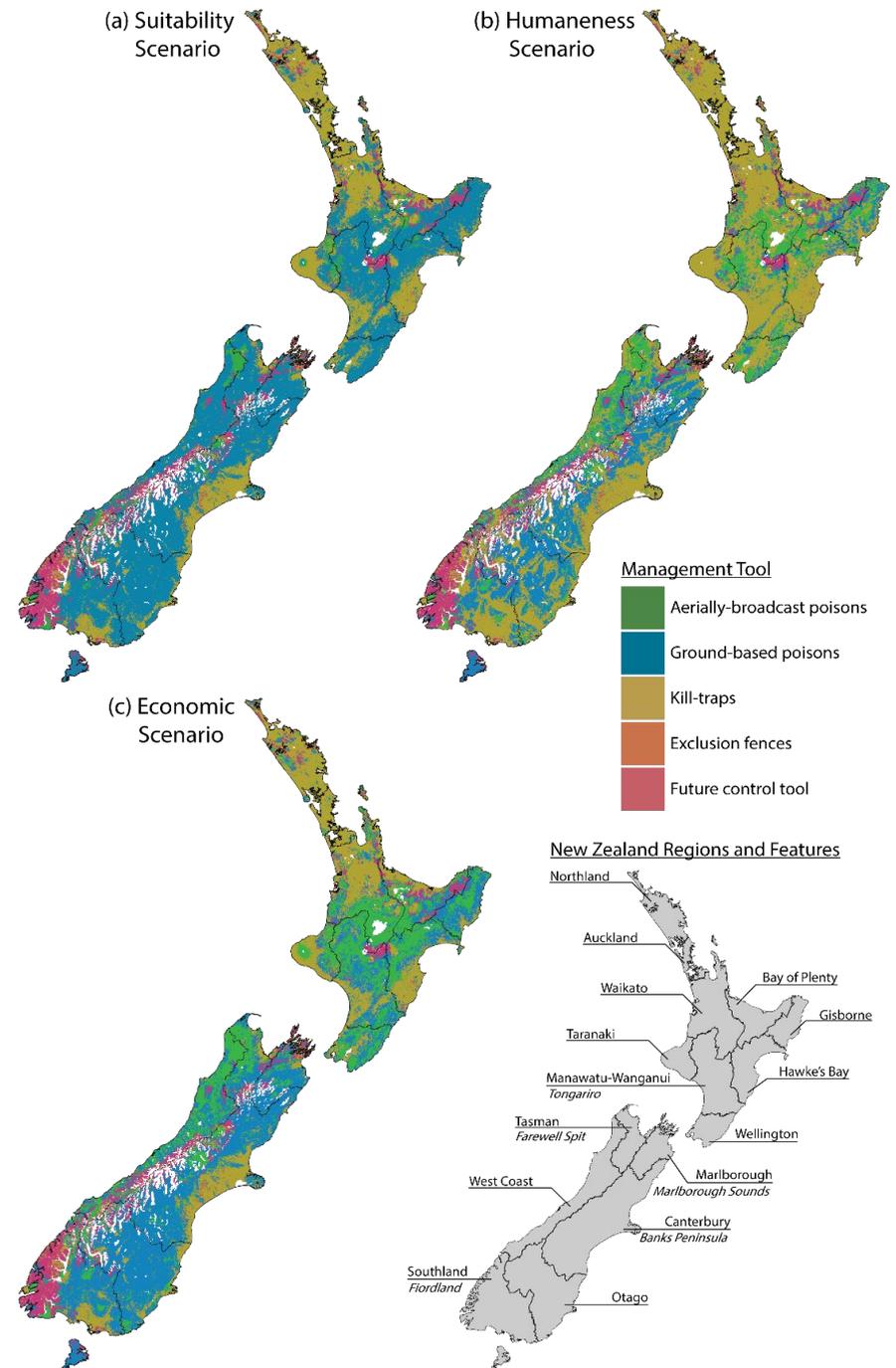


PF2050 Ltd



Suppression

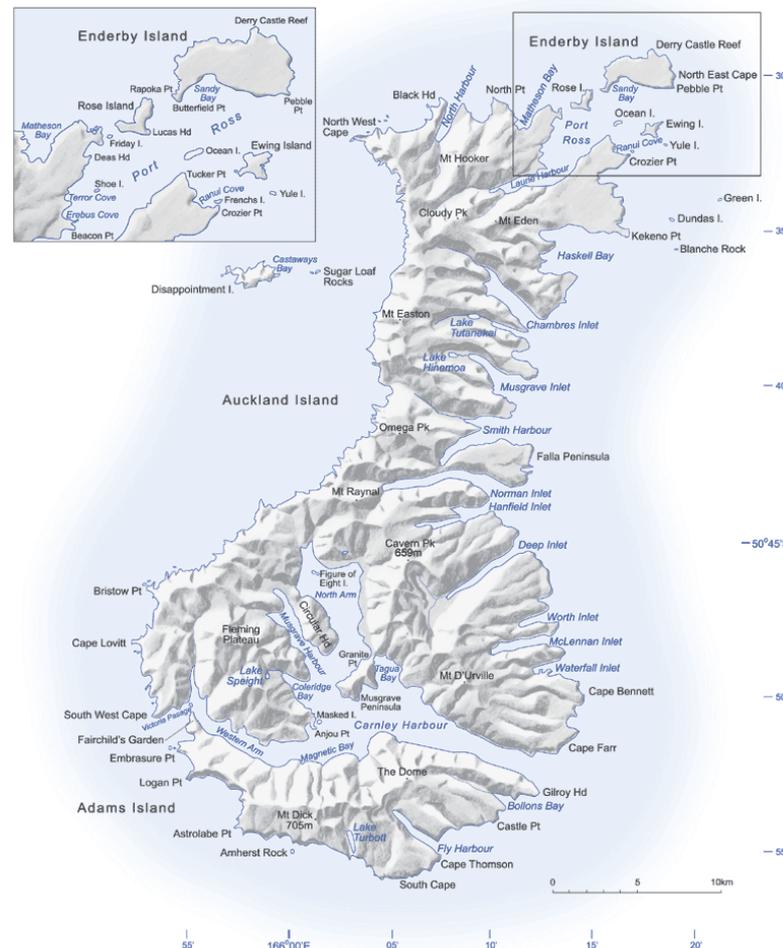
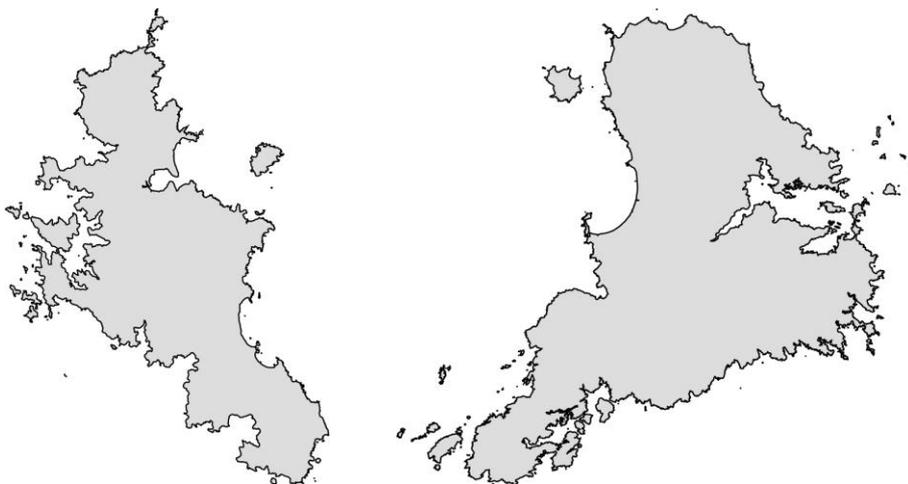
- A nationally contiguous network of management tools to suppress populations of invasive species over the next 10-15 years as an interim step to achieving Predator Free 2050
- 26 years of pest management history and 23 biogeographic and land-tenure based predictor variables in gradient boosted decision trees
- Some locations (11%) unsuitable for any existing management tools, indicating that future transformative approaches and technologies will be required



Eradications

Auckland Island (46,000 ha) –
cleared of pigs, cats and mice

Great Barrier (26,000 ha) &
Stewart Island (176,000 ha) –
cleared of feral cats and invasive rodents



Possoms – eradicated from the entirety of New Zealand (26,800,000 ha)

Elimination



- The space between suppression and eradication
- Currently being contested in New Zealand
- Eradication units were historically readily defined by **spatial boundaries** delimited by strong physical barriers (such as the ocean or a pest-proof fence) that reduced **reinvansion rates** to manageable levels. **Survivors** could be easily distinguished from reinvaders based on ecological circumstance and population genetics.
- Eradication has therefore previously been considered a definition of type, rather than one of degree. However, a new generation of projects challenge this.
- The state of eradication may no longer be binary, indeed it may never have been except when considering and contrasting extreme states. This is therefore not a new problem but simply one that must finally be confronted.

Outcomes



Lessons



- Identify what is (and is not) at stake
- The challenge is social as much as biological
- Aspirational policies can be socially transformative
- Build social movements not institutions
- Socially network projects
- Embrace dissent to test resilience
- Ecologists are technical (but not political nor social) experts
- Undertake scoping and feasibility planning first
- Risk tolerance will distinguish attitudes
- Frame the problem as a biodiversity cost-benefit optimization
- Fast-fail on new tools
- Ensure scientists are outcome (not output) focused
- Don't rely on nor expect 100% public support
- Ratchet victories
- Define success and failure
- Carefully craft your messaging
- Regionally aggregate outcome monitoring



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NEW ZEALAND'S
BIOLOGICAL
HERITAGE

Ngā Koiora
Tuku Iho



National
SCIENCE
Challenges

