Maukahuka

PEST FREE AUCKLAND ISLAND

OUTCOME:

MONITORING to Track Success

Saving our island biodiversity from introduced pests

The Auckland Islands (57,000 ha), in the New Zealand Subantarctic Islands, are a Nature Reserve, World Heritage site, and home to some of the world's most extraordinary natural heritage. There are over 400 plant and animal species here that are restricted to the New Zealand subantarctic region and more than 100 species of endemic flora and fauna.

Auckland Island (46,000 ha) has populations of feral pigs, cats and mice that have inflicted severe ecological damage over the past 150–200 years. After more than 25 years of conservation effort, it is the last island in the New Zealand subantarctic region where mammalian pests remain.

What's the problem?

Pigs, cats and mice have caused extensive damage to the ecological values of Auckland Island and have significantly reduced the abundance and diversity of native species found there. Thirty-eight native bird species breed on the archipelago. Only 12 species still breed on Auckland Island itself, and only one of the nine endemic species.

- Ridding the island of mammalian pests requires a targeted monitoring plan to measure the benefits of the removals and to help inform other similar projects.
- Previous island eradications have shown that some methods used may have short-term negative impacts on native species. These may require monitoring and/or active management to minimise the risks.

Department of Conservation
Te Papa Atawhai

Te Rūnanga o NGĀI TAHU

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Work already completed

Island explored to determine the feasibility of proposed monitoring methods.

22 pig exclosure plots installed to investigate likely recovery rates following pig removal.

Preliminary surveys of possible indicator species including skua, gulls/tarāpunga, northern giant petrels/pāngurunguru and falcons/kārearea.

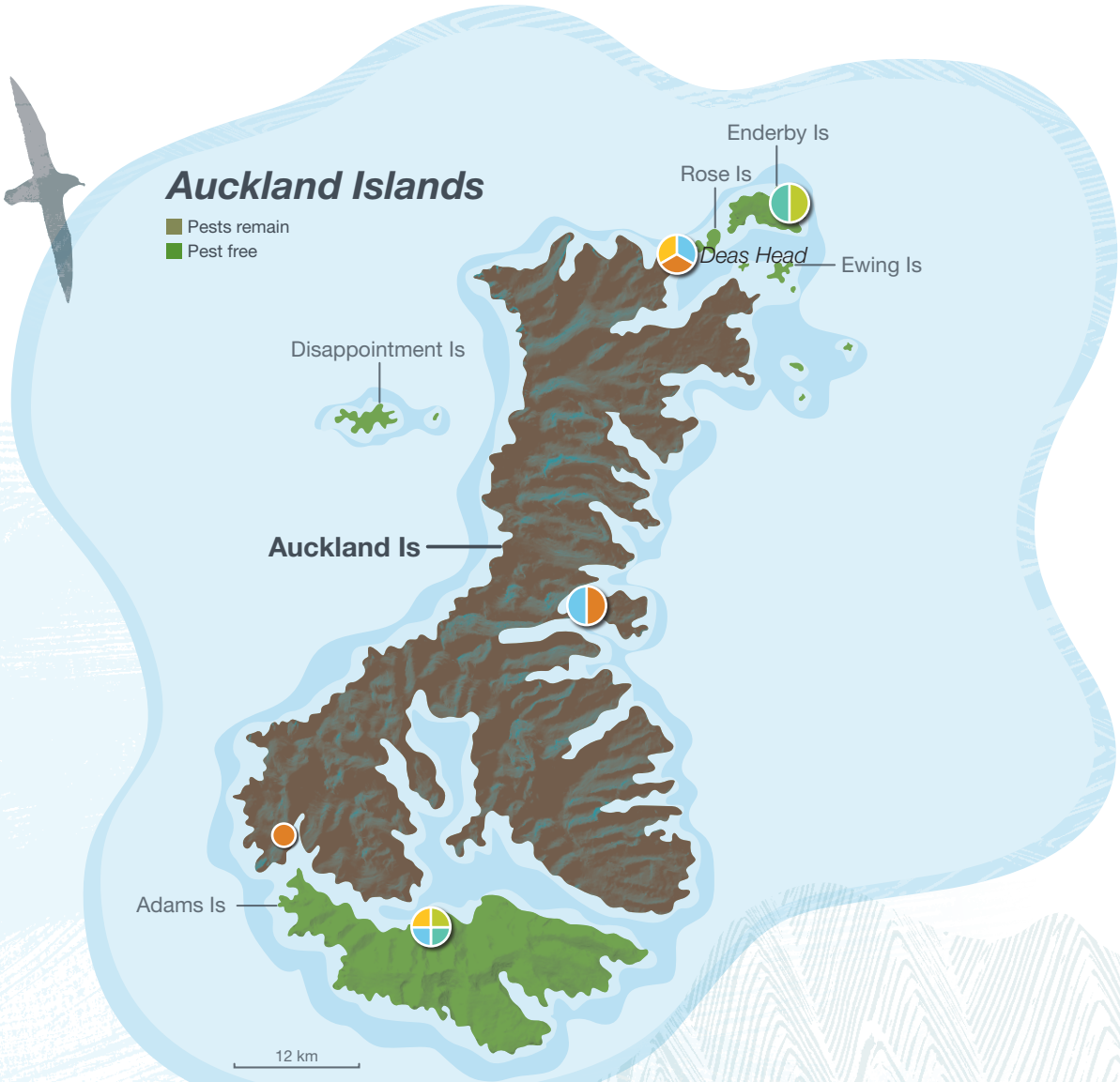
Subset of falcons/kārearea banded to provide a population estimate for unique group, and DNA sampling to aid understanding of their relationship to mainland population.

Baseline monitoring of invertebrates at Deas Head and Adams Island.

Tussocks monitored to understand how mast events influence mice populations.

Collaborated with Te Papa to **produce database cataloguing historical records** of population trends of native and introduced animal species.

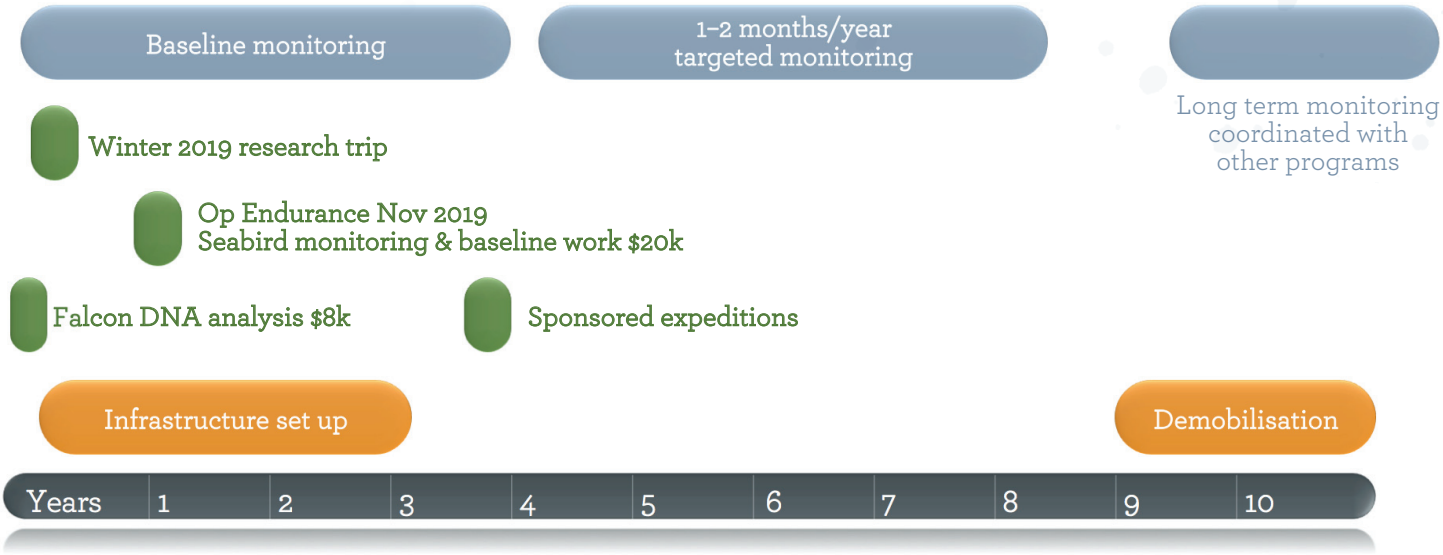
Collaborated with Birds New Zealand and Te Papa to produce an **Auckland Islands Birds special edition issue.**



Key findings

- Clear differences in native species groupings between the northern and southern ends of the island and between the main island and adjourning pest-free islands.
- Mast year resulted in higher than expected native bird and insect abundance.
- Falcon/kārearea appear to be behaviourally distinct from mainland populations.
- Hoiho/yellow-eyed penguins are breeding on Auckland Island in higher than expected numbers.
- Existing pig exclosure plots indicate that mice are inhibiting the recovery of megaherbs and other ground cover plants.
- Initial pitfall trapping results show that invertebrate diversity and abundance is very restricted on Auckland Island compared with neighbouring pest-free islands.

Where to from here?



- Regular qualitative and quantitative data from formal surveys, opportunistic observations and citizen science.
- Encounter rates, plot and transect surveys for birds, plants and invertebrates.
- Predictive habitat and population modelling for whole-island responses.
- Photo point surveys.
- Surveys to take place approximately annually, prior to, during and following eradication operations, at three key sites that are representative of key ecotypes, indicator species and climatic ranges, as well comparative control sites.

Data collection

Challenges and risks

- Need strictly timed, repeated measures both before, during and after operations for monitoring data to be of value.
- Long-term commitment to monitoring is necessary.
- Well trained observers are required to ensure consistent measures.
- Auckland Island falcon/kārearea may require a captive management programme.
- Monitoring locations and activities need to be generally accessible by foot and repeat feasible, with small-vessel supported expeditions of 2–3 weeks.

Remaining uncertainties

- Unknown risk to kārearea; captive management may be required.
- Whether recovery is possible if only one or two pest species are removed and how risks to native species would change as a result, e.g. leaving mice as sole predator could result in evolution of seabird predation as seen on other subantarctic islands.
- Whether tussock seed mast can be predicted to inform timing of mouse eradication attempt.

Benefits

Ability to measure and report on short-term and long-term effects of eradication and provide measurable outcomes to partners.

Baseline data that can be used as comparative measures for other research programmes, e.g. climate change.

Improved understanding of the impacts and benefits that multi-species eradication can deliver.

Capacity for collaboration with a wide range of partners.

Will provide data and information for education, advocacy and outreach resources.

Front Cover Map Supplied by:
Google Earth
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
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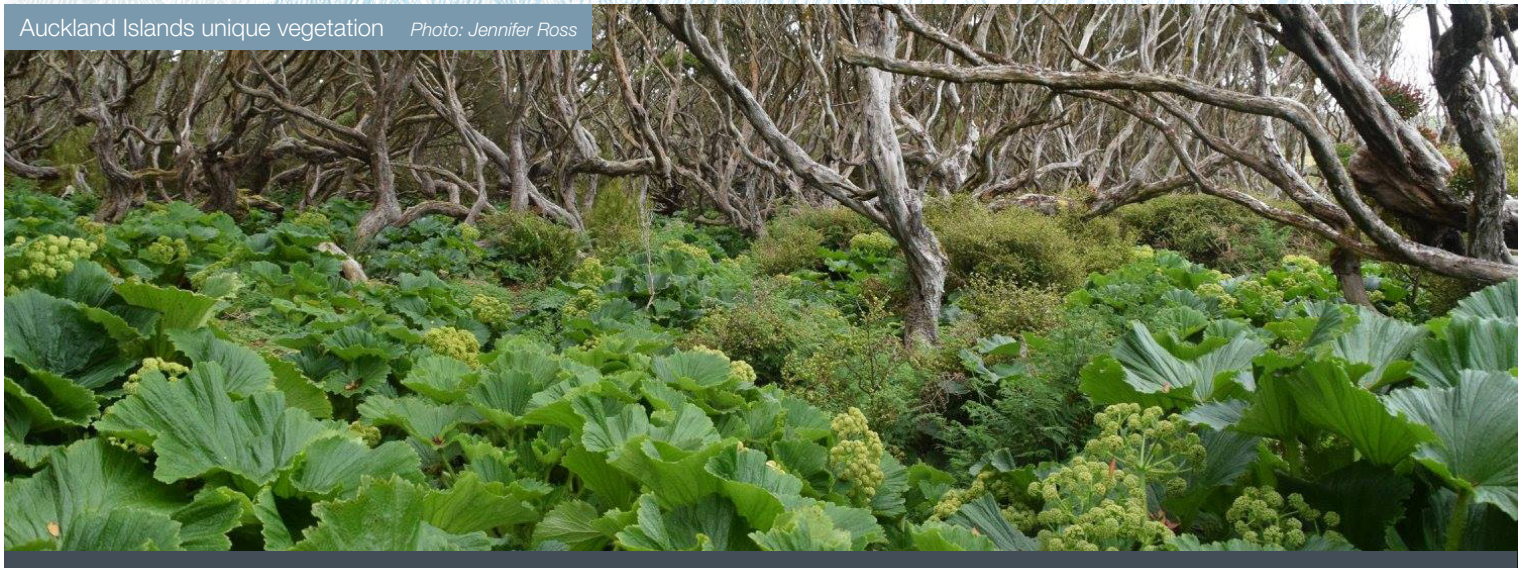
Image U.S. Geological Survey
Image PGC/NASA

Auckland Islands unique vegetation *Photo: Jennifer Ross*



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