

WINDY HILL ROSALIE BAY CATCHMENT TRUST



Windy Hill Sanctuary Newsletter #43 Dec 2022

Season's Greetings

A significant change for Windy Hill Sanctuary occurs at end of 2022 as we farewell Field Manager Kevin Parsons after 21 and a half years of amazing commitment and dedicated pest management fostering the healthy biodiversity of this area of Aotea. Over these years Kevin has led and trained a team of 22 different employees. The Trust is deeply indebted to Kevin for the extraordinary stability he has brought to our ecological restoration and the rigour of our monitoring. We are delighted that field team member Maxine Barrowman will take over as Field Manager leading a team of 6 field workers from January 2023.



Kevin Parsons



Maxine Barrowman



Rose Harland



Deb Badraun

We also farewell long time Trustee Rose Harland, with much appreciation for her contribution, and welcome to the Trust, Sanctuary landowner, Deb Badraun.

The remainder of this newsletter is written by Trustee Prof John Ogden and is focussed on Aotea birds and the outcomes of our long term bird monitoring.

Today I was out of bed at 4.30 AM and ready to head off to Glenfern Sanctuary to do 5-minute bird counts at ten points, as part of their long-term monitoring programme. It was dark, raining and windy and after an hour of indecision the job was called off and I crept back into a warm bed. But it made me reflect on the enormous amount of work carried out by the team at Windy Hill for over 20 years. The Windy Hill counts were done at up to 46 points in the sanctuary (the area managed by rat control) and at 12 points in the control (unmanaged) area, each point replicated six times, to give a total of up to 348 counts every December. These same points have been counted, mostly by the same team, since 2000, with the replicate counts spread over a week. Spreading them out like that allows for the occasional wet or windy day when the smaller birds, like me, are reluctant to sit up and sing – for it is their songs and calls that mainly identify their presence.

In 2018 I had been analysing and reporting on these bird counts for ten years. In reviewing that decade's data, I concluded that the objectives of the exercise had been fulfilled:

- (1) There was a consistent statistically significant difference in bird abundance between the managed and unmanaged areas. This unequivocal difference could be attributed to greater breeding success for most species in the managed area – where rat numbers were demonstrably reduced (in tracking tunnels) - compared to the control. Alternatively, one could say that more birds (eggs or nestlings) were being predated in the unmanaged area. The loss amounted to 4 or 5 birds for every hectare. This might not seem like much, one rat could do that in a night, but it amounts to saving c. 3500 birds every year in the 800 ha. Sanctuary. This has huge implications for the remainder of the island's (unmanaged) forest cover. Scaled-up extrapolation is really just informed guessing, but scaling-up the Windy Hill results implies that c. 85,000 birds are lost to rat predation every year on the Island! *Even assuming, arbitrarily,*



that the mortality figures are 10x too high, we still get 8500 birds lost per annum. The true figure must be far higher, and this explains why birds 'bounce back' so quickly when rats are eradicated from islands. 2) There was a gradual increase in abundance (or no decrease) in the 5-minute count data for most bird species in the rat managed area. Not only were the larger and more conspicuous birds such as tui increasing in the Sanctuary, they were also increasing in the control counts and even outside the area – that is, the extra birds are being exported and the rest of the island is benefitting. (The potential movement of birds about the island, and a justification for re-introductions of lost species, is exemplified by a banded robin from Windy Hill, and another from Glenfern, having moved to Hirakimata, where they have established a small breeding colony).

A consequence of these conclusions is that it is no longer necessary to keep monitoring – a week's work for a field team etc. – rather, resources can be spent on other conservation activities, maintaining the pest control, or expanding to other areas. While some monitoring of the same transect lines should continue it might be done every few years rather than annually. The Tu Mai Taonga (cat and rat control) programme in Te Paparahi is being expanded southwards, and the proposal to link Windy Hill with the Oruawharo/Medlands Ecovision project, represents a logical step in a wider perspective on resource allocation. Big money may be required to achieve final island-wide eradication of pests, but the benefits are clear from eradications on many islands worldwide, and from 20+ years of work at Windy Hill.

But, while rats are being reduced in number and some key bird species are increasing, other changes are also occurring in the Aotea forest (and in gardens, but that is another topic!). At Windy Hill and Glenfern change in forest composition is mainly due to native conifers and broadleaf species spreading out from their remnant patches in gullies or damp south-facing slopes and establishing seedlings under the tall dying kanuka. In publications in 2010 and 2015 George Perry and others¹, demonstrated that the future vegetation cover in these sanctuaries could be predicted by identifying the potential replacement of any tree species, by counting the established seedlings of all tree



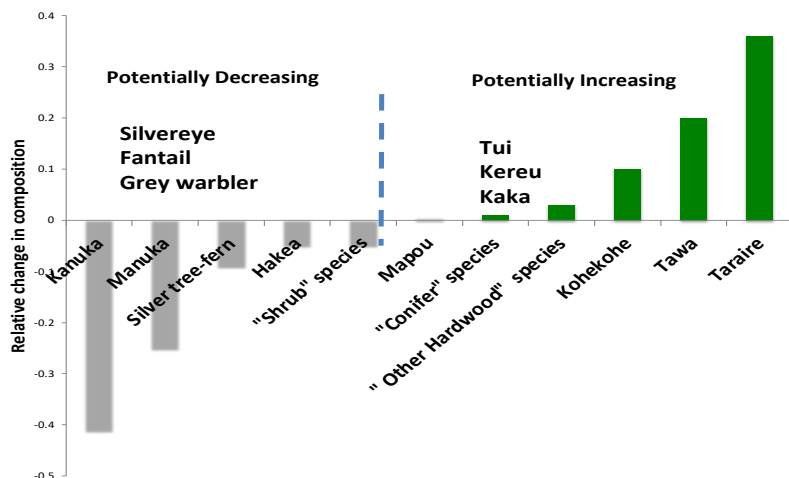
species close to it. This lead to the conclusion that some tree species will decrease in abundance, while others will increase. Moreover, modelling showed that this successional process is speeded up if rats (important consumers of tree seed and seedlings) are reduced. The figure below illustrates which tree species are decreasing (kanuka and manuka, left of figure) and which are likely to increase (tawa and taraire, right of figure). From other studies carried out by the (now) Aotea Great Barrier Environmental Trust, we know that the kanuka forest is preferred habitat for mainly insectivorous birds, such as fantail and grey warbler, while the broadleaf forest is preferred by the larger frugivorous species such as tui and kereru. So, looking to the longer term and assuming that fire can be excluded from most of the forest, the bird fauna will potentially shift in the relative abundance of species as the forest changes. Another set of arguments suggest that the introduced

¹ Perry, G.L. W., Ogden, J., Enright, N. J. & Davy, L. V. 2010. Vegetation patterns vand trajectories in disturbed landscapes, Great Barrier Island, Northern New Zealand. *New Zealand Journal of Ecology* 34(3):311-323.

Perry G.L.W.; Wilmshurst, J.M.; Ogden, J.; Enright, N.J. 2015. Exotic mammals and invasive plants alter fire-related thresholds in Southern Temperate forested landscapes. *Ecosystems*. DOI: 10.1007/s10021-015-9898-1 Springer Science.

species, such as finches and thrushes, will not invade the native forest much, but will be progressively more restricted to the exotic vegetation of gardens and farmland.

I conclude that both the vegetation and the birds – and by inference, all components of the native forest ecosystems – are changing. They will shift to become more stable and predictable than at present, but with the ever-changing climate we should not strive for some primaevial ideal, because there never was one. Our goal should be simply to create areas of Aotea where native species of plants and animals flourish in the absence of alien competitors and predators. That is not a remarkable conclusion, but it is based on two decades of work by many people, not least the dedicated field workers at Windy Hill.



Many thanks to our Sanctuary landowners and sponsors – we look forward to reporting back on our successes and challenges in 2023.

And a huge thank you to our field team – Kevin Parsons, Maxine Barrowman, Cory Hardstaff, Kate Clapshaw, Travis Munday, Tim Andrews for their commitment to the mahi. Thanks also to volunteer Dean Medlands for a solid year of feral pig management – a record number of culls this year.

Enjoy the festive season

John Ogden & Judy Gilbert

On behalf Windy Hill Rosalie Bay Catchment Trustees Deb Badraun & Derek Bell



Scott Macindoe Education Fund
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