

Optimising habitat connectivity

Milestone: develop a template for future projects on optimizing habitat connectivity between public and private land.

Introduction

This report is based predominantly on the findings of habitat connectivity research undertaken by Olivia Burge at Manaaki Whenua. The 2017 report *Habitat availability for native New Zealand bird species within the Cape to City footprint: a preliminary assessment* forms a template for process and methodology to determine habitat enhancement priorities in restoration projects. From our experiences in Cape to City, we recommend for any new restoration project starting that this kind of assessment is undertaken in the early stages of the project, and work priority areas identified.

The methodology used in Olivia's report forms a practical start point for projects, with the addition of ground-truthing key areas to confirm any conclusions drawn.

Habitat availability for native New Zealand bird species within the Cape to City footprint: a preliminary assessment

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The authors quantify the amount of habitat remaining in the Cape to City area for native forest birds, and considers whether these bird species can move between areas of habitat. It highlights the importance of choosing suitable target species for conservation efforts; and that sometimes habitat connectivity can only be improved if the amount of habitat is increased. Native forest is the most important habitat for native forest birds but little of this habitat remains in Cape to City. The next most important habitat type is mature plantation forestry; however, that is currently being harvested. Our most important finding is that small forest birds such as toutouwai/robins cannot cross the pasture that surrounds the existing native and non-native forest remnants. More mobile birds, such as tūi and kākāriki, can move between forest fragments but need more high quality habitat. The key management implications are that the Cape to City landscape requires targeted habitat restoration before it would be worthwhile attempting the restoration of small forest obligate bird species, and that the value of the landscape for larger birds could be improved by planting seasonal food resources (including exotic species) to supplement native forest habitat.

Objectives

- To determine the amount of habitat for native forest bird species within the Cape to City footprint.
- To assess habitat quality and functional connectivity (species-specific connectivity) within the Cape to City footprint.
- To identify areas for increasing connectivity for native forest bird species within the Cape to City footprint.

- To characterise the habitat requirements, dispersal ability and predation vulnerability for bird species that are present within the Cape to City and Cape Sanctuary area, or that may be present in the future: these factors will influence the likelihood of these species successfully establishing.

The report concludes that;

- It will be very difficult to facilitate the spread of some forest-obligate species (such as toutouwai) within the Cape to City footprint because they cannot disperse further than c. 110 m across non-forested habitat.
- Tūī and kākāriki can reach existing habitat patches but lack habitat, particularly high quality habitat.
- Exotic forest plantations are a substantial portion of bird habitat in the footprint. If these forests were harvested at around the same time, this would greatly reduce total bird habitat and connectivity within the footprint.
- Given the extent of pasture within the footprint, native bird species that can use pasture as habitat should be considered in further research.
- All habitat quality assessments assumed predation had negligible effect on bird populations. This condition is unlikely to be met at present within the Cape to City footprint, and we have assumed a 'best-case' habitat scenario.

Recommendations;

In light of the unsuitability of the pasture-dominated landscape for birds such as toutouwai, and the importance of plantation forestry as habitat for some species, the following recommendations are made.

- Retain mature forestry plantations in the northern portion of the footprint, if possible, or at least stagger harvesting to retain some mature plantation forest over time.
- Encourage private landowners to increase seasonal food resources available to far-ranging species like tūī, bellbird and kākāriki through planting trees at all available sites across farms and around existing ponds (and households).
- Maximise the benefit of riparian plantings by selecting species that will provide food for native birds.
- Consider whether it is possible to facilitate the use of the Cape to City footprint by non-forest bird species, such as wetland birds, and birds that use pasture as habitat. Consideration of this possibility was outside the scope of this work.

Spatial assessment of proposed area

An accurate and detailed spatial assessment of the project area, as well as an idea of the habitat surrounding is an important first step. This assessment should include

- Habitat – vegetation and land type
- How connected is the habitat
- Species present – fauna and flora
- Predators present
- Social context
 - Community groups
 - Historic relationships with landowners

Decide on priorities

As identified in Burge's report, individual projects priority areas for restoration will differ depending on specific desired outcomes, or a particular species protection and enhancement. Each project and community is unique and will have different desired outcomes which will influence any work programme design.

For example, in Cape to City, the dominance of pasture limits the amount forest bird species can recover. Therefore, focusing on species, such as wetland birds (that can utilize pasture habitats), can increase biodiversity and therefore, increase impact from work programmes.

Identifying specific priorities from all groups and individuals involved in projects can potentially be a lengthy process, but is also essential to drive buy-in and a shared vision. It is helpful if the habitat assessment is used in this prioritization as it can inform which species potentially can benefit from the programme in that particular area. For example in Cape to City, even though toutouwai and miromiro/tomtit reintroduction was prioritized for the Maraetōtara Plateau, their range and population size is probably limited by the lack of connected forest areas.

Based on habitat assessment, what is required to make priority species flourish?

Once the detailed vegetation surveys have been completed, and key priority species identified, specific actions can be planned and implemented. Both these parts are crucial for maximum impact from resource input.