Monitoring of the Vegetation and Bird populations within the Pōhutukawa Project on Tiritiri Matangi Island (including a Student Project on "halo" vegetation plots)

Report of Activity 2017 – 2018

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This monitoring was previously done under Authority no. 34862-RES granted to Mel Galbraith of the Supporters of Tiritiri Matangi (Inc.) (SoTM) and is now being carried out under the general Authority no. 39910-RES granted to SoTM.

Introduction

Pōhutukawa were planted on Tiritiri Matangi in large numbers as a "nursery crop" to give shelter to other, slower growing trees. A large number of pōhutukawa were planted – approximately 90,000. The "strike rate" for the small trees was much higher than anticipated (between 60% and 90%). This led to significant areas of the Island being covered in pōhutukawa monoculture forest.

A project was initiated in 2010 to "thin" parts of the forest and to monitor the effect of that thinning on invertebrate, plant and bird populations. There are seven sites on the Island where areas have been:

- left as they are (control areas)
- thinned (taking out every second or third tree)
- had two to three trees removed to produce small "light wells"

Methodology

Until this year, counts of seedlings within fixed quadrats have been made to gauge the rate of regeneration. A decision was made this year (2018) not to survey these vegetation plots because regenerating trees have now shown little change, having reached a fruiting and flowering stage. It is anticipated that the plots will be surveyed again after 10 years (2020) and thereafter every 5 years, following standard practice for vegetation surveys.

Five-minute bird counts were begun in each area in 2013 to monitor changes in bird activity as the biodiversity (and food sources) within modified areas increased. Bird counts are conducted outside the breeding season, from April through July, to minimize disturbance. Invertebrate sampling was carried out 2012-2014, but has not yet been repeated given that the off-island analysis of invertebrate surveys is labour-intensive and a specialist activity.

In addition, during the 2017 summer months a student project was carried out to look at the relationship between quadrats and mature trees and regenerating seedlings in an area outside each quadrat (a "halo" plot).

This report is an update of general trends in the ongoing study. More detailed analysis will be available as it becomes clearer how this approach to "thinning" monoculture forest can be used to encourage greater diversity.

Figure 1. Tiritiri Matangi, showing 7 sites in which pōhutukawa have been cut to encourage greater diversity within the forest.

Results and Discussion

Ecological change may be evident only after an extended period of monitoring, and we are still at the early stage of analysis of the collective vegetation, bird and invertebrate data gathered for the Pōhutukawa Project. However, one conclusion that can be drawn at this stage is that microclimates within Tiritiri Matangi have a marked effect on the numbers of regenerating trees in a given area. Comprehensive data analysis should tell us more about the nature and extent of this effect.

No noticeable changes in bird activity have been seen, but regenerating trees are only just beginning to reach a stage where they are flowering and fruiting. More change is expected in the upcoming counts as these regenerating trees start to provide increased food resources.

Personnel and future surveys

We acknowledge the contribution of SOTM volunteers in the collection of data for the project. The project is ongoing, as longitudinal ecological surveys essentially require at least 10 years for data to be meaningful. Vegetation plots will be sampled again in 2020. Bird counts will continue annually up to 2020, at which point consideration may be made to pulse the counting in 3-year blocks. A further 3-year period of invertebrate surveys are being considered for a 2019 or 2020 start.