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Tiromoana Bush measures up in latest research

Thirteen years after the first trees were planted as part of an ambitious restoration project at Tiromoana Bush in Waipara's Kate Valley, the lowland forest is now successfully regenerating.

That's one of the findings from the latest research conducted by a postgraduate restoration ecology class from the University of Canterbury's Te Kura Ngahere | School of Forestry, who have been measuring and recording tree growth at several sites around the bush.

The students are taught by Dr David Norton, Professor of Forestry at the University of Canterbury, and the author of *The Tiromoana Bush Restoration Management Plan* first written in 2004. Norton has been bringing groups of students to Tiromoana Bush over the past twelve years. In the early years students assisted with tree planting, while now the focus has shifted to measuring forest growth.

"We measure tree growth to better understand how different species of tree are performing which is important for deciding which trees we should plant in the future", says Dr Norton. "We're also looking for evidence that the planting is enabling the bush to regenerate on its own. That involves searching for new trees and shrubs we haven't planted but have established into the plantings and are now growing unassisted."

One restoration area by Kate Pond, and visible from the public walkway, has been particularly successful. These trees are now 4-6 metres tall and their canopies are closing over. The restricted sunlight discourages the growth of pasture (the bush was used to graze sheep and cattle when it was a farm) and encourages the growth of native forest plants and trees.

"As the native trees grow they're providing a cool, shady habitat for other native species to flourish", says Dr Norton. "We're seeing ferns, five-fingers, mahoe, coprosma's and other species that weren't planted, but are returning to the forest floor because the conditions are right. Native bird species, such as the korimako (bellbird), tūi and kererū (pigeon) are also flourishing in this restored and regenerating habitat."

The successful regeneration is a validation of the planting approach taken, though the measuring process has highlighted issues elsewhere in the bush. Tōtara trees planted on the bush fringe and in gaps in kānuka forest are growing well, while seedlings planted under the dense kānuka canopy have struggled.

"Tōtara trees need light to grow so we need to open up the forest canopy to ensure they receive the necessary sunlight to get them off to the best start possible", says Dr Norton. "Some species like the shade more than others. As the forest canopy matures, the kānuka dies back and is replaced by mahoe and other species. We need to intervene to ensure the forest has a healthy mix of species and doesn't become dominated by just one or two trees. That's why regular measuring and monitoring is so important for the long-term restoration and regeneration of Tiromoana Bush."

Dr Norton's students will take the data and information they collected, analyse and interpret it and write a report explaining the significance of the restoration. The report will be available to read on Transwaste Canterbury's website. Transwaste Canterbury, who operate the Kate Valley Landfill, are funding the restoration of Tiromoana Bush and the maintenance of the public walkways through the bush. Dr Norton says many people are interested in the restoration project.

"Lowland native forest is a very rare ecosystem in North Canterbury", says Dr Norton. "The Tiromoana Bush restoration project is important because it is successfully bringing native forest back into this area that can be enjoyed and appreciated by everyone."

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