Revegetation and Forest Management: Otari - Wilton's Bush

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A brief overview of Otari

Otari was gazetted as a Forest Reserve in1906. It included cut over bush, reverting pasture and 7 ha of mature forest protected in 1860 by Job Wilton, a local pioneer farmer.

In 1926 with the efforts of Leonard Cockayne an eminent botanist and native plant advocate, Otari was officially established as a botanical garden.

The Reserve covers an area of approx 90 ha, 2ha of which are devoted to plant collections and the remainder made up of regenerating and mature Podocarp / Northern Rata forest association and coastal kohekohe forest association.

Leonard Cockayne's aim back in the 1920's was, *" the forest of the museum be brought back as far as possible to its original form."* It is our job to carry this aim on today.

In the early years emphasis was on replenishment, by planting species known to have diminished e.g. podocarps that had been logged. Today the strategy is more holistic with the emphasis on the removal of modifying factors such as animal and weed pests and the planting of revegetation plants. The idea is that the subsequent increase in seed viability and bird distribution will bring about forest restoration in a more natural way.

Dracophyllum Garden

The Dracophyllum Garden is located in a portion of the 7 ha of mature forest set aside by Job Wilton and was opened up by the Wahine storm in 1968. These cultivated gardens, (the Chatham Island Forget-me-not and the Wild garden) were developed in the damaged section.

Today the management plan we have in place at Otari restricts the expansion into the forest of such cultivated areas and even in the event of major storm damage, the policy now requires regeneration to take place.

Plant and tree removal from the forest is also restricted under the management plan. It can only be done if certain criteria are met for instance, essential track maintenance, or if an unstable tree poses a danger to the public.

Any material felled is left in the forest to decay; the exception is where it may be wanted for Maori cultural purposes e.g. carving.

An interesting aspect about the forest here is the change in forest association over time. Stan Reid carried out the first botanical survey in 1934 and he followed this up with another in 1982. He showed that the kohekohe forest association was increasing while the tawa dominated canopy was not.

He believed this was due to the removal of neighbouring forest for housing subdivisions and sports fields, which left Otari exposed to a more coastal influence.

Yvonne Margot resurveyed Reid's grids in 1992 and showed this trend was continuing. She also noted the absence of juvenile podocarps, even in the mature areas and attributed this to low seed viability, low bird numbers and possums.

Possums

The Rata tree in the Wild Garden is a site for one of our possum bait stations, We have approximately 80 stations spread throughout the reserve on a grid system at 150 m intervals and use Brodifacoum which is an anti-coagulant poison.

From the early years up until 1993, possuming at Otari was done on an ad hoc basis. Staff trapped in the vicinity of the cultivated areas and more extensive trapping in the bush only took place in periods when skins commanded good prices e.g. in the 1978 / 79 season in excess of 800 possums were taken. When prices dropped however, possum numbers rose, with all the consequences for the bush.

In 1993 WCC commissioned Landcare Research to report on possum density and their impacts on Otari. They found that possum damage on the vegetation was high overall and that control was necessary.

In November 1993 a two month long control operation was initiated in conjunction with WRC, using brodifacoum, cyanide paste and soft-catch leg-hold traps. This was followed up between July 1994 and June 1996 with 50 bait stations being set up along the ridges and gullies and poisoning with brodifacoum.

It was calculated that with these two operations 1000 possums had been removed. Trees had been tagged before and after the operations to check impact on the crowns of indicator species and the results were as good as those attained on off shore Islands, where similar operations had been carried out.

The last control operation at Otari was started in September 1997 and continued through to November 1998. Bait stations were set up on cut lines in a grid at 150-meter intervals. Again brodifacoum was used. A survey after this operation (January 1999) found just 5

possums in the 100 ha. This was a post-operation trap-catch rate of 1.7%, well below the 5% threshold aimed for.

Part of this success is attributable to the fact that in conjunction with this last control operation the Wellington City Council and Regional Council undertook a poisoning programme on adjacent reserves and this has reduced possum invasion from neighbouring land.

Control is ongoing, the bait stations stay in place and are filled every 6 months (pulsed) to keep possum numbers down.

It is evident by increased bird life, more abundant fruiting, greater seedling growth on the forest floor and the improving health of species such as fuchsia, rata and kohekohe that the possum programme has been extremely successful.

Revegetation

In 1934, 15 plant pest species were identified at Otari. Today there are in excess of 30. The more prevalent are convolvulus, willow, blackberry, broom, gorse, bamboo, and honeysuckle while those that pose a serious threat to the natural value of the Reserve are *Berberis darwinii*, *Tradescantia flumenensis* and *Clematis vitalba*.

Stan Reid first noted *Berberis darwinii* in the 1920's as a small patch on Johnstons Hill, which neighbours Otari to the south. Warnings were given then about its potential to become a problem. Nothing was done over the years and now it's a major problem, especially on the Southwest boundary where it has established in large tracts as the major component of plant reversion.

It grows in full sun and tolerates shade, and unlike gorse does not act as a nurse crop. We are attacking it in a piecemeal way using Escort which is effective, but a long term strategy to deal with it on a large scale needs to be worked out.

Tradescantia is also a big problem at Otari. It's found mostly in deep and semi-shade along path edges through parts of the bush and along the Kaiwharawhara stream. We have been using Grazon on it effectively. However it is persistent and requires follow-up spraying.

Clematis vitalba is present in parts of the bush at Otari, and the Council employs contractors to eradicate it on all Council owned land. A programme of eradication has been underway for the past two years with follow-ups planned over a 7-year period after which time we can safely assume it has been eliminated.

Native plants can also pose problems e.g. on our revegetation sites *Muehlenbeckia australis* without control can quickly smother out young reveg plants. Unsourced revegetation material can also be a problem e.g. Tasmanian Ngaio that was planted years ago on a revegetation site has to be removed and Karo has also been introduced and self seeds.

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