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Arowhenua Bush, the restoration project over 45 years

Fraser Ross

Arowhenua Bush is a South Canterbury podocarp forest remnant that stands next to the Opihi River just west of Temuka. In the 1970s there were open clumps of low trees, predominantly of narrowleaved ribbonwood (*Hoheria angustifolia*) and a smaller number of kowhai (*Sophora microphylla*), hung with a great deal of pōhuehue (*Muehlenbeckia australis*) (Fig. 1, p. 16) (Burrows 1984).

In 1975 a severe norwesterly gale struck Canterbury and blew down many trees and buildings over the whole plains of this area. This included many native trees in this last remnant of native podocarp bush on the lower plains at Arowhenua. My first visit there was made with the property owner Ray Lyon not long after the gale to see the devastation first-hand. Many hoheria trees, some plagianthus (*Plagianthus regius*) and two fine specimens of matai (*Prumnopitys taxifolia*) had sadly fallen to the force of the wind.

Following that visit advice was sought about what could be done for the bush from Dr Colin Burrows, Dr Brian Molloy, and the local Lands and Survey Ranger, all of whom were most helpful. Not long after the gale Colin Burrows visited the bush and made the first botanical list of the species found at the time (Burrows 1984).

Figure 1. A view of the south side of Arowhenua Bush taken in the early days of restoration on 2 September 1989.

Then seeds were collected from the bush, and plants propagated. Planting started back into the bush from the late 1970s (Ross 1984) and has been carried out since then. And now many of the species are regenerating naturally in the bush understorey. All the plant material has been ecosourced from the bush itself or close nearby.

An area of about 1 ha was fenced in 1981 to exclude sheep, and the interior of the bush has been mostly destocked since that time, allowing the native plants to grow unimpeded and regeneration to take place naturally. Some, like hoheria are now larger trees and flower regularly each summer.

Post the gale two kahikatea (*Dacrycarpus dacrydioides*) trees remained, one a medium sized specimen and one other. This second one was not seen initially but later found when a small branch was seen protruding out from a dense covering of muehlenbeckia. This vine was quickly cleared away and a small kahikatea tree was found beneath the vines. Later, this tree produced drupes and the following wet summer a number of small seedlings were found growing in the largely grass-covered ground. These seedlings were protected and many continued to grow, and some have now reached up to about 3 m tall. At the same time a number of kahikatea seedlings were transplanted out in the bush and most of these have done very well, including one fine specimen that is estimated to be up to 5 m tall. Kahikatea seedlings are still appearing naturally and recently nine were found scattered throughout an area of the bush.

Two other matai trees remained, although they were found only after the gale, both smothered in a covering of muehlenbeckia. When this was removed the two trees, both female, produced a large number of drupes. Many of these were propagated and planted back into the bush where they have grown well. When the matai trees were first found, cuttings were taken and Tom Gant, of the Ministry of Works Nurseries, propagated a number of these. Some were successfully rooted and planted back into an area of the bush. Natural matai seedlings have been appearing in the bush understorey from time to time.

When the bush was first visited only five specimens of kohuhu (*Pittsporum tenuifolium*) were found, including one with the mistletoe *Tupeia antarctica* on it. Later this host tree was blown down by another strong wind and this sole remaining specimen of mistletoe was completely lost to this bush. However, extensive plantings of kohuhu have been carried out and large numbers are growing well in the fenced bush area. Regeneration is also occurring naturally for this species outside the fenced area. Recently one such seedling was found growing in the grassy paddock, which was protected and is now about 1.5 m in height.

Many other species are now regenerating naturally except about two that remain as the sole survivors in the outer bush area. They are *Coprosma rubra* and *C. rigida*. Other species have been propagated by cuttings including *Melicytus micranthus*. One lancewood (*Pseudopanax crassifolius*) was found initially as a poor bent-over specimen that was propped up and aerial layering undertaken to produce three rooted plants. Two of these were planted back out into the bush and have produced fruit regularly. Their seed has been propagated and some saplings have been planted back into the bush.

Several species of native ferns have been arriving naturally into the bush including some not seen previously. And several large areas of the bush floor are now covered with a loose soft moss where not long ago there was mostly green grass.

Plantings have also been carried out in the outer bush paddock where stock are not excluded. These plantings include hoheria, plagianthus, kowahi, kahikatea and others, all of which are individually protected with wire mesh guards until they reach a height to withstand most stock browsing. Each summer this entire outer bush area is searched for natural seedlings that might have come up. Efforts are made to protect these, with guards, and many have survived in this more challenging environment.

Initially a big effort was made to eliminate problem weeds such as hawthorn and elderberry among others. Several large specimens of hawthorn were removed but seedlings continued to appear for some time. Now that is almost down to zero although there are such trees on nearby properties. Elderberry has now also been eliminated except for the occasional seedling that appears. Old man’s beard grows on the adjacent riverbed and occasional seedlings are found in the bush, which are promptly removed. But more worrying has been the recent arrival of

ivy as seed from plants on the nearby riverbed. The ivy plants are promptly removed when found and none has become established. Blackberry also occurs fairly regularly and it too is taken out when first seen. So, the bush area is now relatively free of most problematic weed species including male fern.

The bush and adjacent wetlands were surveyed in 2008 by the ecologist for the Timaru District Council and an area of about 8 ha was found to easily meet the *Significant Natural Areas* criteria for protection. This will be formalised when the revised District Plan becomes operative in the near future. Efforts to have the bush and wetlands protected by other means have not yet been successful in spite of efforts to do so.

Other reports have also been undertaken, including that of moths, butterflies and insect fauna, by Dr Brian Patrick (Patrick 2016). The plant list was revised recently, and new species found have now been included in that report (Table 1, p. 19).

The restoration of the bush has been undertaken by many helpers over the years and Ashley Pierce is the most recent main helper (Fig. 2). He now has a high level of understanding of what needs to be done for the care and continued restoration of this special remnant bush of South Canterbury.

The Canterbury Botanical Society has also visited Arowhenua Bush on at least two occasions. Individual members have also made visits to see this rare stand of native bush and trees, from time to time.

Figure 2. Ashley Pierce looking up at the south side of Arowhenua Bush on 21 December 2018.

Arowhenua Bush is on private property and permission to visit the bush must first be obtained from the owners. Contact details can be obtained from the current helpers for Arowhenua Bush care and restoration: myself,

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Table 1. Arowhenua Bush indigenous and weedy plant (and some fungal) species list progressively updated April 2012, 11 Nov 2015, and 10 February 2019. Central map ref. K38: 704-596. Species are listed that have been stated as present in various reports or have been identified as present by the writer and compiler of this list. The identity of some might require confirmation by a botanist.

TREES AND SHRUBS	
Coprosma crassifolia	coprosma / mikimiki
Coprosma propinqua	mingimingi
Coprosma rigida	coprosma / mikimiki
Coprosma rubra	coprosma / mikimiki
Cordyline australis	cabbage tree/ti rakau or ti kouka
Dacrycarpus dacrydioides	kahikatea/white pine
Elaeocarpus hookerianus	pokaka
Hebe salicifolia	koromiko/hebe
Hoheria angustifolia	narrow-leaved lacebark/houhi
Lophomyrtus obcordata	rohutu
Melicope simplex	poataniwha
Melicytus micranthus	shrubby mahoe / manakura
Melicytus ramiflorus	mahoe / whiteywood

Myrsine divaricata	weeping mapou
Phormium tenax	native flax
Pittosporum tenufolium	matipo/kohuhu
Plagianthus regius	lowland ribbonwood
Podocarpus totara	totara (stump with decayed centre)
Prumnopitys taxifolia	matai/black pine
Pseudopanax crassifolius	lancewood
Raukaua anomalus	raukaua
Sophora microphylla	kowhai
Streblus heterophyllus	turepo/milk tree
CLIMBERS	
Clematis foetida	clematis
Clematis marata	clematis
Parsonsia sp.	native jasmine
Rubus schmidelioides	lawyer
Rubus squarrosus	leafless lawyer
Muehlenbeckia australis	pōhuehue
Calystegia tuguriorum	native bindweed
FERNS	
Microsorum pustulatum	hounds tongue fern
Asplenium flabellifolium	necklace fern
Polystichum vestitum	prickly shield fern
Asplenium terrestre	ground spleenwort
Pteridium esculentum	bracken
Pellaea rotundifolia	tarawera
OTHER INDIGENOUS PLANT SPECIES	
Hydrocotyle moschata	hydrocotyle
H. novae-zelandiae	hydrocotyle
Dichondra sp.	dichondra
Cardamine sp.	cardamine
Ranunculus glabrifolius	buttercup
Microtis unifolia	onion orchid

Juncus gregiflorus	rush
Juncus pallidus? (MH)	rush
Carex secta	carex
Urtica linearifolia	swamp stinging nettle
Azolla filiculoides	azolla
Korthalsella lindsayi	dwarf mistletoe
Tupeia antarctica	tupeia
Poa imbecilla	poa
Oxalis exilis	native oxalis
FUNGI	Note: several other fungi have been seen but not identified
Aseroe rubra	stinkhorn fungus
?*Weraroa erythrocephala*	pouch fungus
Ileodictyon cibarius	basket fungus
Geastrum pectinatum	earth star fungus
Agrocybe sp. aff. *cylindracea*	agrocybe sp.
WEEDY SPECIES	
Marrubium vulgare	horehound
Dryopteris felix-mas	male fern
Ulex europaeus	gorse
Rosa rubiginosa	sweet briar
Crataegus monogyna	hawthorn
Acer pseudoplatanus	sycamore
Rubus fructicosus	blackberry
	scotch, Californian, nodding and winged thistles
Solanum dulcamara	bittersweet
Clematis vitalba	old man's beard
Hedera helix	English ivy
Sambucus nigra	elderberry
Arctium minus	burdock
Digitalis purpurea	foxglove
Verbascum thapsus	woolly mullein
Ranunculus spp.	buttercups