

Turitea Stream Green Corridor Project

Planting Strategy



Introduction

Over 70% of New Zealand's indigenous forests and the majority of wetlands have been lost or heavily modified during some 1000 years of human occupation and particularly the last 150 years of intense human development. A disproportionate amount of the forest loss has been from lowland ecosystems. With the loss of forest habitat and introduction of invasive plant and animal pests a significant number of indigenous animal species have become extinct or threatened. The net result has been a significant loss of lowland indigenous biodiversity.

Manawatu Lowland Indigenous Biodiversity

The Manawatu is one of the most heavily modified ecosystems in New Zealand with most of the lowland indigenous forest that once covered the area having been cleared and most of the wetlands drained. Only a few fragmented remnants remain and these small areas are vulnerable to disturbance and browsing by introduced animals and invasion by weeds. These remnants are too small, too isolated, and often have too many predators to be able to sustain populations of most of our indigenous birds and other indigenous wildlife. Restoration of these areas requires active management to improve the habitat quality and extend the habitat area.

Ecological Restoration

Ecological restoration attempts to restore some of this lost biodiversity by revegetation, weed and pest removal, linking up fragmented forest remnants and other threatened habitats, and possibly reintroducing animal species lost from an area.

Riparian Corridor Restoration

Riparian margins are areas of land immediately adjacent to lakes, rivers and streams. There is a net benefit to river environments, including improved water quality, when riparian margins are retired or planted. Managed riparian buffers can substantially reduce inputs of nutrients and sediment from agricultural land, reduce water temperature fluctuations, help stabilise stream banks, and provide a more natural environment for indigenous aquatic life. Management involves maintaining appropriate vegetation and restricting stock access to rivers and streams. Riparian plantings of indigenous species can act as dual purpose areas that provide the above riparian management benefits as well as providing wildlife habitat and corridor linkages to other fragmented bush or wetland remnants. Corridors are particularly important for species that can not, or will not, travel over open pasture (eg. some birds, lizards and many invertebrates).

The Turitea Stream Green Corridor Planting Strategy

One of the aims of the Turitea Green Corridor project is to revegetate parts of the riparian corridor of the Turitea stream to restore some of the indigenous biological diversity and to link up some existing forest remnants by providing an ecological corridor linkage from the Tararua Range foothills down onto the river terraces of the city.

To achieve this aim the riparian corridor will be planted mostly with a diverse range of ecosourced indigenous species. Some appropriate exotic species may be planted in some areas and some areas will be left unplanted (kept in mown grass) to provide for passive recreation access and scenic view points.

The Principle of Ecosourcing

When planting with the aim to partly restore the natural indigenous biodiversity to an area it is important that the plant material used is from local stock, appropriate to the locality. This practise is referred to as ecosourcing and entails:

- only planting species within their natural geographic and ecological range
- only using local plant populations for propagation material (local genotypes)
- only planting species within their natural habitat type

Every plant community is different in its species composition and each species in that community may differ genetically from individuals in other areas (different genotypes). These genetic differences may cause visible differences in things like leaf shape and growth form and also affect growth rate and disease resistance. Locally sourced plants are usually better adapted to the local site conditions and consequently will grow better.

Planting Stages

Establishing a forest stand, that will hopefully become self perpetuating, requires facilitating regeneration by a staged planting of early successional species followed in later years by those species requiring sheltered establishment sites. Once an initial nurse cover of these early successional species has established other species will begin to regenerate naturally from bird and wind dispersed seed. This self regeneration will be augmented by planting of longer lived trees that, because of their current scarcity or lack of dispersal agents, do not have the opportunity to regenerate naturally.

The following is a list of some of the species that naturally occur in the Turitea catchment (or close to it) that could be planted. Some of these species will require sheltered sites afforded by existing trees and shrubs or will be planted several years after the more hardy species. The main early successional species that can be planted in exposed sites are marked with an asterisk. These early successional species will form the bulk of the initial plantings and many will, over time, be succeeded by longer lived species. Some of the listed species, especially ferns, will establish naturally once a protective canopy forms and therefore do not require active planting.

Weed control will be critical throughout the revegetation process. Initially rank grass will be the main weed competition on open sites and in later years invasive woody species will require constant surveillance and control.

see over for: Planting Guide to Species

Turitea Streamside Planting Guide

(for select species only, this is not a complete list)

Key numbers refer to the stream profile diagram which shows the preferred planting location in relation to the stream. An asterisk (*) denotes early successional species planted in large numbers in initial stages.

Key	Common Name	Botanical Name	Planting Conditions
Canopy Trees			
1	titoki	Alectryon excelsum	moist or free draining soil, in shade (protect from frost).
2	tawa	Beilschmiedia tawa	moist or free draining soil, in shade (protect from frost).
3	* cabbage tree, ti kouka	Cordyline australis	Plant anywhere except in dense shade.
4	kahikatea, white pine	Dacrycarpus dacrydioides	moist to seasonally wet soil, in semi-shade.
5	rimu	Dacrydium cupressinum	moist soil, in semi-shade or the open.
6	hinau	Elaeocarpus dentatus	moist soil, in semi-shade or the open.
7	pokaka	Elaeocarpus hookerianus	moist or seasonally wet soil, in the open or in semi-shade.
8	kapuka, broadleaf	Griselinia littoralis	moist soil, in the open or in shade.
9	* houhere, lacebark	Hoheria sexstylosa	moist to dry soil, in the open.
10	rewarewa	Knightia excelsa	moist or free draining soil, frost tender when young.
11	* kanuka	Kunzea ericoides	free draining soil, in the open.
12	pukatea	Laurelia novae-zelandiae	moist to wet soil, in semi-shade, frost tender.
13	mahoe	Melicytus ramiflorus	moist or free draining soil, in semi-shade (protect from frost).
14	northern rata	Metrosideros robusta	moist to dry raised sites, in open but frost tender.
15	black maire	Nestegis cunninghamii	moist to dry soil, in semi-shade to open.
16	white maire	Nestegis lanceolata	moist to dry soil, in semi-shade to open.
17	* tarata, lemonwood	Pittosporum eugenioides	moist to dry soil, in the open.
18	* kohuhu, black matipo	Pittosporum tenuifolium	wet or dry soil, in the open or in shade.
19	* manatu, lowland ribbonwood	Plagianthus regius	moist to seasonally wet soil, in the open.
20	totara	Podocarpus totara	moist or free draining soil, in semi-shade.
21	miro	Prumnopitys ferruginea	moist soil, in semi-shade.
22	matai, black pine	Prumnopitys taxifolia	moist soil, in semi-shade.
23	kamahi	Weinmannia racemosa	moist soil, in open, likes moist banks.
Sub-canopy trees and shrubs			
27	makomako, wineberry	Aristotelia serrata	moist or free draining soil, in semi-shade (protect from frost).
28	rangiora	Brachyglottis repanda	moist or free draining soil, in semi-shade.
29	putaputaweta, marbleleaf	Carpodetus serratus	moist free draining soil, in semi-shade.
30	kanono	Coprosma grandifolia	moist or free draining soil, in semi-shade.
31	karamu (shining)	Coprosma lucida	free draining soil, in open or semi-shade.
32	mingimingi	Coprosma propinqua	wet or dry soil, in the open.
33	* mingimingi	Coprosma rhamnoides, Coprosma areolata	moist soil, in semi-shade
34	* karamu	Coprosma robusta	wet or dry soil, in the open or in shade.
35	round-leaved coprosma	Coprosma rotundifolia	moist soil, in semi-shade.
36	swamp coprosma	Coprosma tenuicaulis	moist to wet soil, in semi-shade.
37	tutu	Coriaria arborea	moist soil, in the open (nitrogen fixing).
38	silver fern	Cyathea dealbata	moist soil, in shade (protect from frost).
39	wheki, hard treefern	Dicksonia squarrosa	moist soil, in shade (requires protection from frost).
40	akeake	Dodonaea viscosa	dry soil, in semi-shade - open, but frost free
41	kotukutuku, tree fuchsia	Fuchsia excorticata	moist or free draining soil, in semi-shade (protect from frost).
42	hangehange	Geniostoma rupestre	moist or free draining soil, in semi-shade.
43	* koromiko	Hebe stricta	moist soil, in the open.
44	pigeonwood	Hedycarya arborea	moist soil, in the shade (requires protection from frost).
45	narrow-leaved lacebark	Hoheria angustifolia	moist to dry soil, in the open.
46	* manuka, tea tree	Leptospermum scoparium	dry to wet soil, in the open.
47	rohutu, NZ myrtle	Lophomyrtus obcordata	moist to free draining soil, in the open or in semi-shade.
48	poataniwha	Melicope simplex	moist soil, in semi-shade.

49	swamp mahoe	Melicytus micranthus	moist to wet soil, in semi-shade to shade.
50	ngaio (possible use)	Myoporum laetum	moist to dry soil, in the open, somewhat frost tender
51	* mapou	Myrsine australis	moist to free draining soil, in semi-shade. (protect from frost).
52	weeping mapou	Myrsine divaricata	moist to seasonally wet soil, in the open.
53	myrtle	Neomytus pendunculata	moist or free draining soil, in semi-shade to shade.
54	heketara	Olearia rani	moist to dry soil, in semi-shade to open.
55	coastal tree daisy	Olearia solandri	moist to dry soil, in semi-shade to open.
56	twiggy tree daisy	Olearia virgata	moist to wet soil, in semi-shade to open.
57	kaikomako	Pennantia corymbosa	moist to seasonally wet soil, in semi-shade.
58	perching kokohoku	Pittosporum cornifolium	Plant as an epiphyte in semi-shade.
59	five finger, whauwhaupaku	Pseudopanax arboreus,	free draining deep soil, in semi-shade.
60	lancewood, horoeka	Pseudopanax crassifolius	moist to draining soil, open to semi-shade.
61	horopito, pepper tree	Pseudowintera colorata	moist to seasonally wet soil, in shade.
62	nikau	Rhopalostylis sapida	moist to seasonally wet soil, in shade
63	pate, 7 finger	Schefflera digitata	moist soil, in semi-shade.
64	kowhai	Sophora microphylla	free draining soil, in the open.
65	turepo, milk tree	Streblus heterophyllus	moist to seasonally wet soil, in semi-shade (protect from frost).

Ground Cover and Other Plants

67	kakaha, bush lily	Astelia fragrans	moist soil, in semi-shade.
68	kiokio	Blechnum chambersii, & B. fluviatile	moist soil, in shade.
69	pukio, tussock sedge,	Carex secta, Carex virgata	wet soil, in the open.
70	toetoe grass, toitoe	Cortaderia toetoe, C. fulvida	moist soil, in the open.
71	umbrella sedge	Cyperus ustulatus	moist to dry soil, in the open.
72	spike-sedge	Eleocharis acuta	semi-aquatic conditions, in the open.
73	mata, water-fern	Histiopteris incisa	moist soil, in shade.
74	rough pigfern	Hypolepis ambigua	moist soil, in shade.
75	tussock rushes	Juncus pallidus	moist to wet soil, in the open.
76	NZ iris, mikoikoi	Libertia ixioides	moist to dry or free draining soil, in shade.
77	* harakeke, NZ flax	Phormium tenax	wet to moist soil, in the open.
78	hounds tongue fern	Phymatosorus pustulatus	moist soil, in shade.
79	pikopiko	Polystichum richardii	moist to well drained soil, in shade.
80	puniu, prickly shield fern	Polystichum vestitum	moist soil, in shade.

Typical Stream Profile

This stream profile shows a gentle bank on the left and a moderately steep bank on the right, with low flow conditions. The scale is exaggerated.

