

Weed control:

Two groups of plants will threaten the success of your restoration project,

1 Grass, dock and other broadleaf weeds.

These weeds will compete with your young plants. They do have benefits, such as improving soil structure, preventing soil loss and silt pollution to streams and retaining moisture. They can be kept but need to be regularly cut back below the height of your growing nurse plants to reduce competition and smothering. Once your nurse plants are established these weeds will die out due to shading.

2 'Environmentally damaging' or invasive weeds.

These weeds will grow your plants as well as invade vegetation on the stream sides and forest. They need to be **eradicated** before planting. Because some seeds will already be in the ground and some naturally dispersed seed will continue to germinate, you will need to keep an eye out for new growths of these weeds and eradicate them before they become well established.

There are about 200 environmentally damaging weeds in Waitakere. They include; Kikuyu, Ginger, Pampas, Privet, and Monkey Apple as well as climbing weeds such as Jasmine, Climbing Asparagus, Moth Plant and Japanese Honeysuckle. For a full list of environmentally damaging weeds refer to the Invasive or Environmental Weeds of Waitakere brochure.

Maintenance:

Maintenance will be critical to ensure that your plants become established. The following timeline sets out a typical maintenance programme for the first two years of a forest restoration project.



Year One:		
<i>Objectives: Eradicate 'environmentally damaging' weeds. Reduce competition from other plants. Establish native nurse cover plants.</i>		
1	Eradicate environmentally damaging plants	Spring and Summer
2	Cut back grass and broadleaf weeds to reduce competition	Spring and Summer
3	Plant	Autumn and Winter
4	Weed around plants	Spring and Summer
Year Two:		
<i>Objectives: Native nurse cover plants now out-compete weeds. Maintain eradication of 'environmentally damaging' weeds.</i>		
5	Weed around plants: eradicate environmentally damaging weeds	Autumn and ongoing
6	Replace dead plants	Autumn
Year Three and Onwards:		
<i>Objectives: Canopy closure by planted native nurse cover. Enhancement planting of native canopy species can begin.</i>		
7	Eradicate any environmentally damaging weeds	Year round
8	Plant appropriate forest canopy species into native nurse cover	Autumn and Winter

Further information:

- "A guide for Planting and Restoring the Nature of Waitakere City" Waitakere City Council (WCC) brochure.
- "Ecosourcing – Growing Waitakere's Green Network" WCC brochure.
- "Invasive or Environmental Weeds of Waitakere" WCC brochure
- "Living in the Waitakere Foothills", WCC brochure.
- "The Green Network" WCC brochure.
- Pest Fact Sheets available from the ARC phone 366 2070.
- "Plant Pests of the Auckland Region" - ARC phone 366 2070.
- Waitakere City Council's web site: www.waitakere.govt.nz

For Waitakere City Council brochures ring the Call Centre ph. 839-0400.

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Oratia Catchment Planting Guidelines



This pamphlet is a guide to planting on your property in Oratia and will help you to successfully establish a naturally functioning forest ecosystem. This can be done in a way that is low maintenance and self-sustaining and that will also create a place for native wildlife such as native birds, lizards and insects.

How to go about forest restoration:

Mature indigenous forest develops in several steps, with each step providing the conditions that will suit the next group of plants. Your first step in forest restoration is to plant nurse species that cover the site quickly shading out grass and weeds. Nurse species are hardy and fast growing. They are good at colonising open areas because they grow well in exposed conditions enabling them to suppress weed species and shade out grass.

Once the nurse cover is established your next step is to either plant forest canopy species or to allow forest species to regenerate naturally from seed distributed by wind, birds and water.

Most common mistake – planting tall forest trees too early.

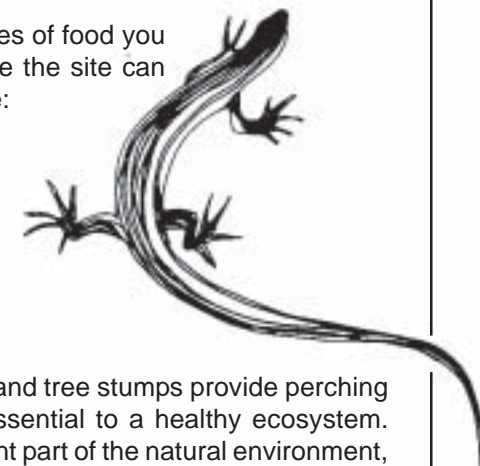
Tall forest trees such as puriri, kauri and totara need the conditions created by earlier nurse species. Without these conditions tall forest trees will need a lot of maintenance - or they will die.

Most people will get a lot of pleasure - and visual enjoyment - from creating their own forest. While forest areas are important to help with the natural management of stormwater, they also provide shade for streams and waterbodies helping to create healthy streams with improved water quality. Plants also provide habitat and food sources for wildlife including birds, skinks, geckos and insects.

Creating habitats for native fauna:

By choosing plants that belong in your area and that provide year round sources of food you can make your planting a local habitat for native wildlife. This helps to ensure the site can maintain itself. Plants to consider for year round food sources in Oratia include:

- | | | |
|---------------------------|----------|--|
| Spring and Summer: | Flowers: | Kowhai; Kanuka; Harakeke |
| | Fruit: | Titoki; Kotukutuku; Ti Kouka; Karaka; Puriri |
| Autumn and Winter: | Flowers: | Hoheria; Kohekohe; Puriri; Whauwhaupaku |
| | Fruit: | Karamu; Miro; Taraire; Puriri |



Among plantings and at the edge of streams and ponds rocks, dead branches and tree stumps provide perching sites for birds and habitats for skinks, geckos, insects, bacteria and fungi essential to a healthy ecosystem. Smaller pieces of dead wood and natural leaf fall - humus - also form an important part of the natural environment, don't rake or tidy it away as it helps to build up the soil, assist natural regeneration and create homes for wildlife.

Sourcing plants:

Forest restoration doesn't mean that you will have to buy all your plants. Other ways of getting plants for your restoration project include:

Harvest seedlings from the understorey of existing native vegetation on your property. You can remove about 10% of the seedlings that are regenerating naturally. The best place to harvest seedlings is at the edge of the forest as these seedlings are better adapted to sunnier and more open conditions. Pot seedlings into bags or containers and acclimatise them by growing them on at the edge of the forest and then in the open before planting.

Grow plants from seed. Most native plants such as karamu and kanuka grow easily from seed. There are books that give guidance on the best way to grow different native species from seed such as 'The Propagation of New Zealand Native Plants' by L.J. Metcalf.



Eco Sourcing:

You will have more success with your restoration project if you use 'ecosourced' plants - collected locally from a range of the naturally occurring vegetation in your area. Harvesting plants or seeds from nearby bush is ecosourcing. Plants or seeds collected from different parts of the city, region or country are not ecosourced and not as well adapted or appropriate for your local environment.

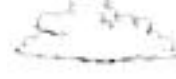

Plants in local nurseries are not necessarily ecosourced. If you are buying plants from a nursery look for Waitakere City Council's 'eco sourced' label. The Waitakere City Council Ecosourcing brochure has further information and a list of nurseries that stock Waitakere ecosourced plants.



Nurse Crop Species

(The first species to plant for establishing successful restoration)



Open Pasture	Stream Bank	Regular Flood Zone	Stream Bank	Forest Extension	
Gahnia setifolia Coprosma robusta Hoheria populnea	Gahnia setifolia Phormium tenax Coprosma robusta Melicytus ramiflorus	Cortaderia fulvida Carex flagellifera Carex virgata Cordyline australis	Gahnia setifolia Phormium tenax Coprosma robusta Melicytus ramiflorus	Gahnia setifolia Coprosma lucida Hoheria populnea Melicytus ramiflorus	Shady Sites 
Cortaderia fulvida Coprosma robusta Kunzea ericoides Leptospermum scoparium Hoheria populnea	Cortaderia fulvida Phormium tenax Coprosma robusta Melicytus ramiflorus	Cortaderia fulvida Carex virgata Carex flagellifera Cordyline australis	Cortaderia fulvida Phormium tenax Coprosma robusta Melicytus ramiflorus	Cortaderia fulvida Coprosma robusta Aristotelia serrata Melicytus ramiflorus	Sunny Sites 

Forest Trees for Oratia (planted after nurse crop established ~ 3 years)

Common Name	Forest Canopy	Growth	Spacing	Comments
Kauri	Agathis australis	slow	8m	
Titoki	Alectryon excelsus	med	5m	Food source for native birds
Tawa	Beilschmiedia tawa	med	8m	Food source for kereru
Karaka	Corynocarpus laevigatus	slow	8m	Fruit are poisonous
Kahikatea	Dacrycarpus dacrydioides*	slow	8m	Likes damp ground
Rimu	Dacrydium cupressinum*	fast	8m	Food source for native birds
Kohekohe	Dysoxylum spectabile	fast	10m	Needs possum control
Kotukutuku	Fuchsia exorticata	fast	5m	Needs possum control / Food source for native birds
Lacebark	Hoheria populnea	fast	5m	Nectar source for native insects and birds
Rewarewa	Knightia excelsa	fast	5m	Food source for native birds
Pukatea	Laurelia novaezelandiae	slow	8m	Likes damp ground
Tanekaha	Phyllocladus trichomanoides*	slow	8m	
Totara	Podocarpus totara	slow	8m	
Nikau	Rhopalostylis sapida	slow	5m	Food source for native birds
Kowhai	Sophora microphylla*	fast	5m	Plant in groups 5 ÷ 7 Food source for native birds
Swamp maire	Syzygium maire	slow	5m	Likes damp ground
Puriri	Vitex lucens*	fast	10m	Food source for native birds

* Common canopy species for Oratia.

Site preparation and planting:

Good ground preparation and weed control is essential!

Second most common mistake – planting too sparsely.

Nurse plants need to be able to touch each other within the first year of planting. This blocks sunlight at ground level and prevents weed invasion, moisture loss and lessens competition from grass, dock and other broadleaf weeds (see weed control).

Plan the layout of your nurse cover species so that spacings are correctly set out. Most nurse species should be planted no more than 1 metre apart and smaller growing plants such as Carex and Astelia should be planted 50cm apart. Revegetation areas also look better and more natural if plants of the same species are grouped together in groups of 3, 5, 7 or 9.

April to September is the best time for planting. Dig a hole deeper and wider than the root ball of the plant, place the plant into the hole fill with compost and press gently around the plant. After planting the soil level against the stem should be the same as before planting. A slow release fertiliser pellet can be placed with each plant, to the manufacturer's specifications.

Good nurse planting will usually prevent the need for mulch.

