



Right Plant Right Place

Designing a successful restoration project

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Talk Outline

- Purpose and Goals
- Site conditions
- Ecosourcing
- Choosing plants
- Threats and solutions
- Site preparation and maintenance
- Planting tips
- Involving your community
- Summary
- Sources of information



What is the purpose of your planting project?



Restoration

Restoration is recreating what was previously there with appropriate native plants for the site

Amenity

Planting to enhance an area using native and exotic plants which may or may not have been found originally in that habitat.



Other Objectives

- Recreate native habitat/ecosystems
- Buffer or enhance waterways
- Create ecological linkages & sequences
- Restore threatened plants
- Create or enhance habitat for native birdlife or other species
- Create a plant resource (e.g. flax for weaving)



What are your goals?

- Restoring an existing degraded habitat
- Creating a new habitat for birds or fish
- Improving water quality
- Aesthetics & Amenity
- A planting project to bring the community together
- A combination of these things

What kind of planting site do you have?

What are the environmental stresses of the site?

- Wind
- Frost
- Drought
- Salt
- High Water Table
- Other



What kind of soils do you have?

- Loam
- Sandy (prone to drying out)
- Gravel/rock
- Peat (waterlogged)
- Mineral
- Gleyed
- Other





Soil properties

- Soil depth
- Soil fertility
- Soil porosity/
drainage
- Soil moisture/
water table
- Stonyness



The kind of soils will determine the choice of plants that can tolerate those soils



What is already there?

- Existing biodiversity – DON'T INADVERTENTLY GET RID OF IT!!!
- It is easy to overlook - sometimes remnant biodiversity doesn't look as expected.
- Forests and Birds are only a part of the equation
- Uncultivated soils/surfaces/sites often retain important biodiversity.
- Are there ecological sequences – moisture, soils etc.
- Are there existing plants to build on or give shelter?
- Using gorse as a nurse crop





How do you start?

Find a Reference Site





Finding a reference site

- Maps and aerial photos
- Zones - Coastal, Lowland, Inland
- Look around for the nearest patch of native vegetation/similar habitat
- What are the regenerating species?
- What are the canopy species?
- What rare or notable species are there

Choose plants hardy to the environment and situation and plant in succession, colonizing species first (they will provide the conditions for canopy and other species to follow naturally)



Ecosystem Types

- Forest – podocarp, beech, mixed hardwood
- Riparian – kowhai/ribbonwood
- Shrubland – Coprosma, manuka, mixed
- Wetland – pond margin, swamp
- Tussock grassland – red tussock
- Sand dune/coastal

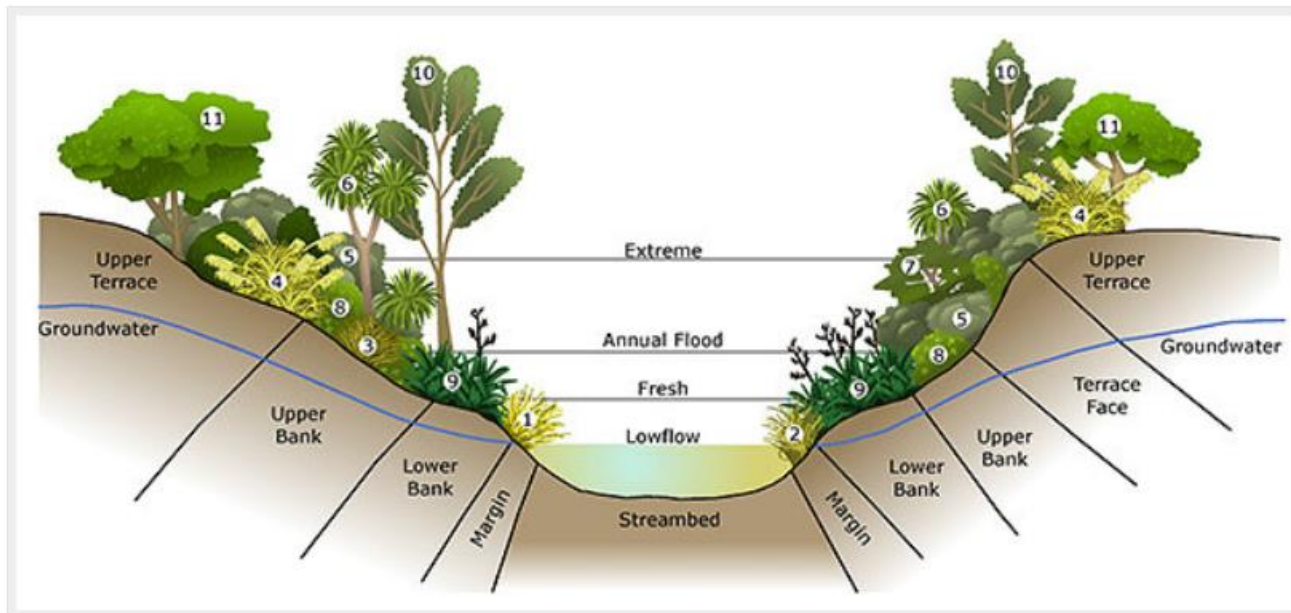




Choosing Plants

Choose plants that will tolerate wet conditions.

The diagram below illustrates the position of the native plants recommended for planting. It is important that species such as *Carex* and flax are planted closest to the water level as they can tolerate being totally inundated by water in times of very wet weather. The profile is equally useful for streamside plantings.



Vegetation profile for streams, rivers and ponds.











































Find out more about the plants illustrated above in the table below:

<https://www.southlandcommunitynursery.org.nz/restoring-your-patch/planning-your-project/creating-ponds/>



Find out more about the plants illustrated above in the table below:

Native pond plants

Common name	Botanical name	Plant type	Wet	Dry	Sun	Shade	Frost
1. Carex	<i>Carex secta</i>						
2. Carex	<i>Carex virgata</i>						
6. Cabbage Tree	<i>Cordyline australis</i>						
9. Flax	<i>Phormium tenax</i>						
10. Lowland ribbonwood	<i>Plagianthus regius</i>						
7. Manuka	<i>Leptospermum scoparium</i>						
5. Mingimingi	<i>Coprosma propinqua</i>						



Ecosourcing – What is it?

Ecosourcing refers to the propagation of native plants from local areas and the planting of them back within the same region.

Eco-sourced plants help to preserve the ecological distinctiveness of an area, and ecosourced plants fare better and are adapted to survive in the local conditions.



Ecosourcing – Does it matter?

- Choosing plants that will survive best at your site eg plants from the coast will be more salt tolerant, plants from inland areas more frost tolerant.
- Choosing plants appropriate for the habitat you are trying to create
- Retaining and enhancing the vegetation that is special to Southland or your local area



Ecosourcing tips

If you decide to ecosource and some funding sources will require it

Ask nurseries:

- Are these plants grown from seed?
- Are they from wild (not planted) populations?
- Was the seed collected from multiple parent plants?
- What Ecodistrict was the seed sourced from?

If the nursery or supplier cannot satisfactorily answer any of these questions then find another nursery or supplier or consider growing your own plants



Morphology of manuka

- We currently know that manuka in different locations has different forms
- We suspect that there are several distinct species (taxa)
- Local variation - forms and genetic diversity
- Kanuka research resulted in an increase from 2 to 10 different species
- Planting manuka for the honey industry may result in hybridization and thus the loss of viability of local species.





Where to get plants from

- Local Nurseries that use ecosourcing principles
- Beware of internet buying
- Collect seed from wild plants in wild areas away from gardens (and pass on to nursery if ecosourced plants are not available).
- Do not dig up seedlings from the wild.
- Grow your own plants (the Community Nursery can help)
- Do not collect without permission!



Beware of non-local species!

- Some non-local native species that grow well can displace local species and so should be avoided.
- Examples in Southland –
 - Karamu (*Coprosma robusta*)
 - Taupata (*C. repens*),
 - Large leaved coprosma (*C. grandiflora*)
 - Northern Lacebark (*Hoheria sexstylosa*)
 - *Pseudopanax laetus*



Calculating Plant Numbers

- $N = S^2 \times 0.866 \times A$
- **N** No. of plants to be planted
- **S** Spacing (in metres)
- **A** Area to be planted (m²)

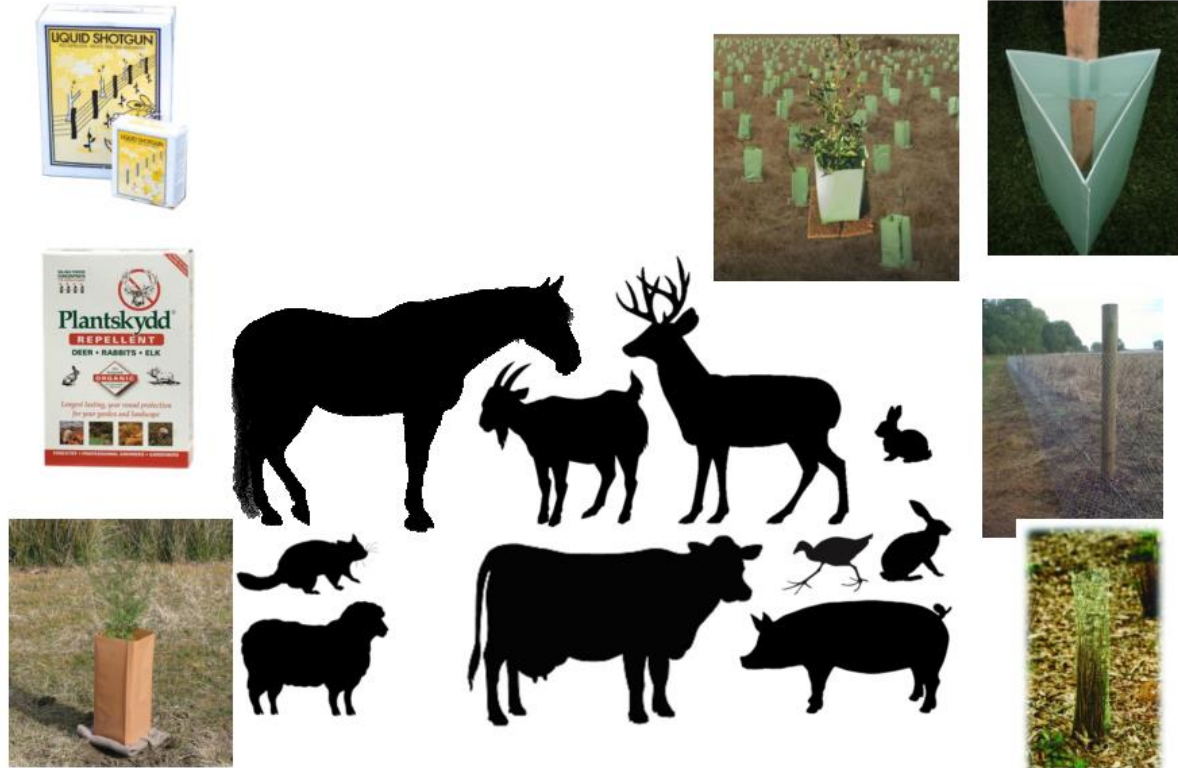
This is closer spacing than that funded by Billion Trees funding which is 1 plant every 2.5 metres



Threats and Solutions



- **Stock** – to be permanently excluded
- **Pest Animals** – **browsers**, rabbits, hares, possums, deer
- **Pest animals** – **predators**, mustelids, rodents
- **Pest Plants** – grass sward, gorse and broom, sycamore, holly, elderberry, hawthorn





Site Preparation and maintenance

- Make the planting area stockproof with permanent fencing
- Either blanket spray or spot spray at least 4 weeks before planting (mainly for exotic grasses)
- Use combi-guards or other protectors (for rabbits, wind etc) and mulch
- Release spray at least twice a year in October/November and February/March





How Long Will it Take?

It's a long term commitment

Take pleasure in each stage

Its intergenerational

New techniques are required for larger scale



Stages of forest development over time (image by Lloyd Esler).

Record your work



Before and after photos of Rance's pond.

Involve your local community or school



Planting techniques, timings and tips

Tip 1: “Do the preparation” – planning, preparation and maintenance - the planting is the easy bit!

Tip 2: “Don’t bite off more than you can chew” – only plant what you can maintain. Stage planting. Generally plant in discrete areas

Tip 3: Order/grow plants 18 months to 3 years in advance!!!!

Tip 4: Planting time – avoid the worst stress time- seasonal waterlogging, drought or times of heavy frost

Tip 4: If the site is very dry plant a little deeper.





Sources of Information

- Books and websites eg NZPCN
- DOC, Local and Regional Councils
- Southland Community Nursery website
- Nurseries
- Local environmental groups
- Fish and Game
- Mana whenua (local iwi)



Summary

- Planning and Preparation
- Why? - What do you want to achieve?
- What? – ecosystems, zones, species
- Where? – Site conditions and constraints
- When? – Timeframes, lead in time
- How? – Techniques, preparation, maintenance
- How Much? – Size of area, how much per year

Questions?

