Biodiversity

Action projects that return native plants to streams and school grounds

Quality for Life

greater WELLINGTON | Environment
THE REGIONAL COUNCIL

This booklet offers practical advice on action projects that increase the biodiversity of your local stream and around your school.

Biodiversity is the variety of life on earth – plants, animals, and micro-organisms, the genes they contain and the ecosystems they form. New Zealand's biodiversity is unique but it's being pushed out by plants and animals from other countries.

By planting native species around our streams and schools we can:

- increase native biodiversity (the plants and animals that are adapted to live in New Zealand)
- provide important habitats for New Zealand birds and insects
- make school grounds more attractive and interesting
- get students involved in environmental care that they will really love
- make life better for native fish by shading and cooling streams
- make the ecosystems that sustain us richer, stronger and more effective.

Environmental projects are excellent teaching tools that can enhance learning across the curriculum. More information about curriculum integration can be found at the end of this booklet.

The Greater Wellington Action Crew can help you and your class with stream and school based plantings and give you plenty of advice about their long-term care.

This booklet is one of a series for teachers to help students do practical and effective action projects as part of *Take Action for Water*.

Teachers can use the action projects described in the series to tailor *Take Action* to the school's environmental interests and circumstances. This series can also be used to support long term environmental education in schools.

Take action!

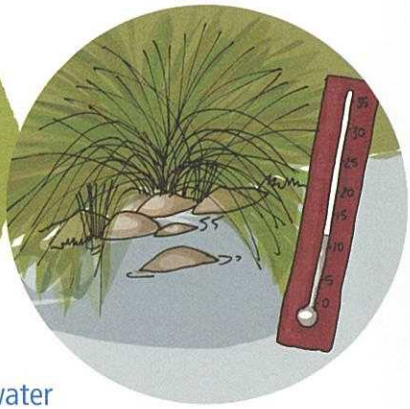
Why plant natives around streams?

Food for stream creatures

Some native stream creatures eat the leaves that fall into the stream from streamside plants. Others eat insects that fall into the water.

Homes for other creatures

Streamside plants are homes for many different birds and insects. Some birds like Tui and Woodpigeon live there all the time, while others use the stream bank plants for feeding and resting on their way to bigger areas of bush or wetland.



Cool water

Our special native fish and macro-invertebrates can only live in cool water. Trees on the edges of streams shade the water and keep it cool.

Clean water

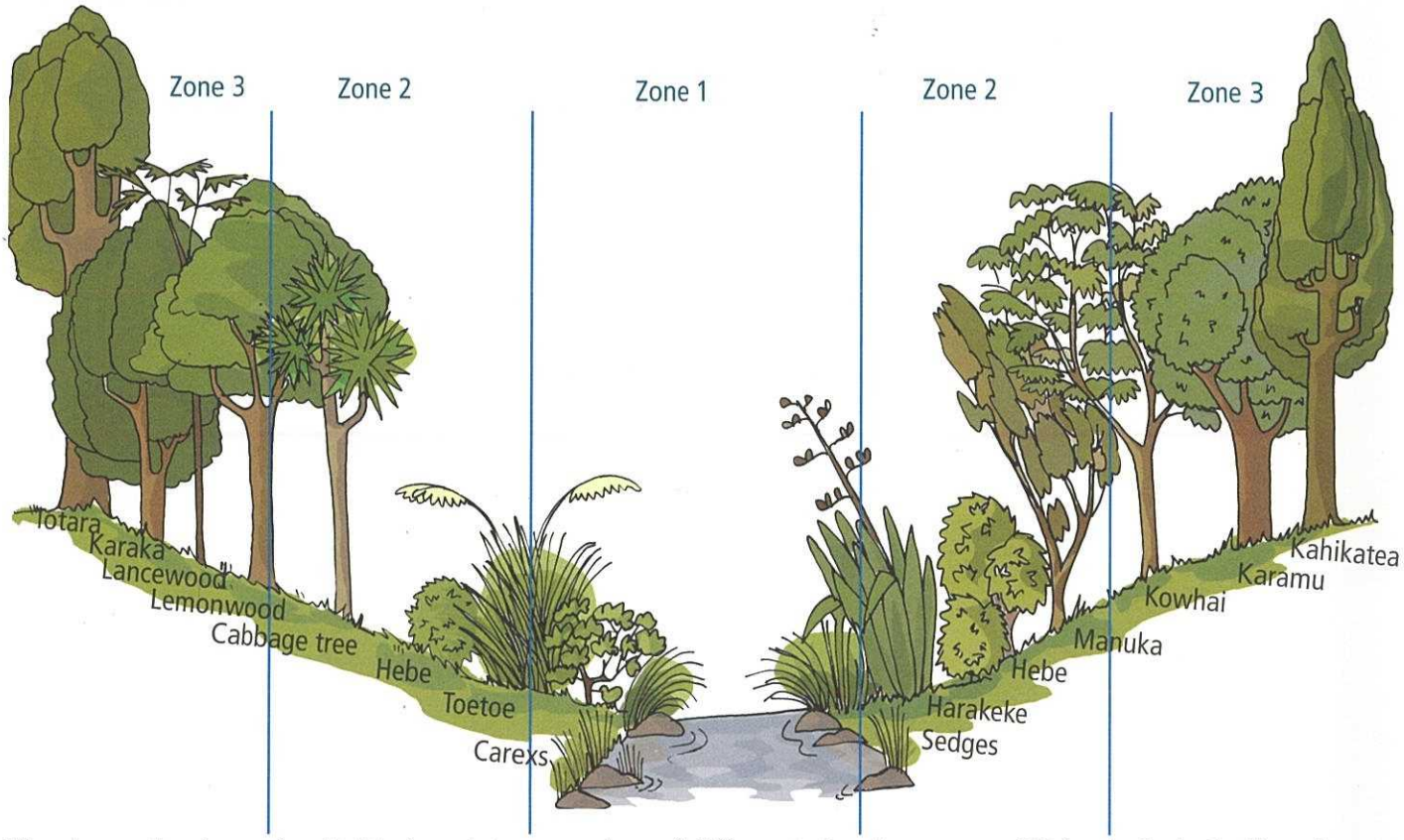
Plants help keep the stream clean. They hold the stream banks together with their roots which helps stop erosion. Plants sometimes suck up water containing pollution before it reaches the stream.

Homes for stream creatures

Some fish and stream macro-invertebrates breed in streamside plants. They may make their homes among the plant roots under the water.

What to plant around streams

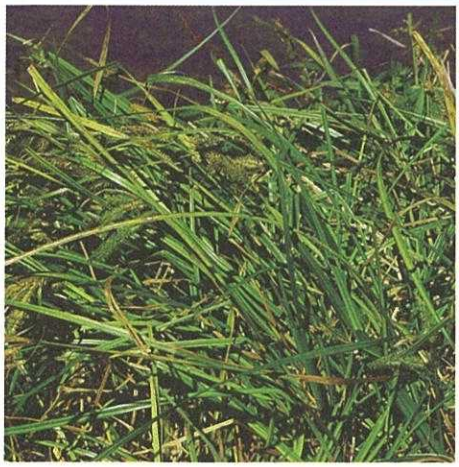
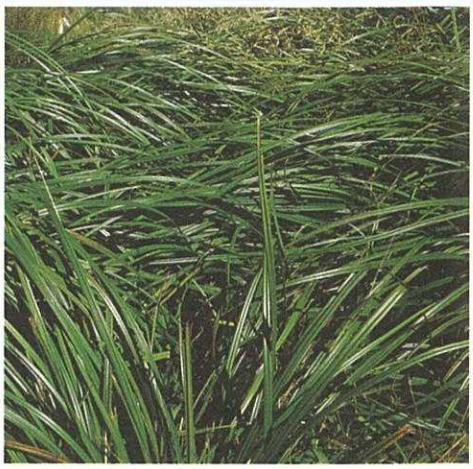
Planting zones



The stream bank can be divided up into a number of different planting zones. We've included a list of plants that we know will grow well in each of these different areas. This list is only a small selection of the plants that you can use. We have chosen them because they are tough, grow well and are relatively easy to get hold of.

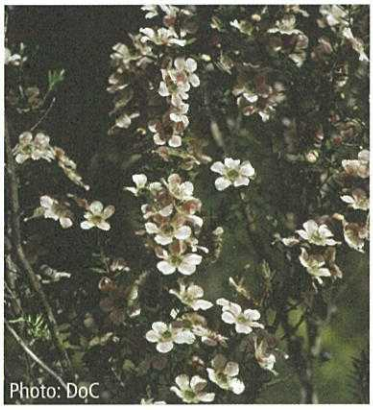
Zone 1: Water's edge

The water's edge can be wet and boggy. These native plants grow well in these conditions. They will filter out mud and stabilise the stream edges. Too much mud settling at the bottom of a stream means the macro-invertebrates that live there cannot survive.

Rautaha Cutty grass *Carex geminata*	Purei *Carex secta*	Rautahi *Carex lessoniana*
		

Zone 2: Lower stream bank

These plants will grow on the sloping sides of the stream that may get flooded several times a year. Plantings here hold the stream bank together.

Harakeke Flax *Phormium tenax*	Manuka Teatree *Leptospermum scoparium*	Koromiko *Hebe stricta*	Toetoe *Cortaderia toetoe* or *Cortaderia fulvida*
	 Photo: DoC		

Zone 3: Upper stream bank

Higher up on the stream bank you can plant bigger shrubs and trees to attract birds and shelter the smaller plants closer to the stream.

Ti Kouka Cabbage tree *Cordyline australis*	Mingimingi *Coprosma propinqua*	Whauwhaupaku Five-finger *Psuedopanax arboreus*
 Photo: DoC		
Kohuhu *Pittosporum tenuifolium*	**Karamu** *Coprosma robusta*	**Kowhai** *Sophora microphylla*
		

Mahoe
Whiteywood
Melicytus ramiflorus

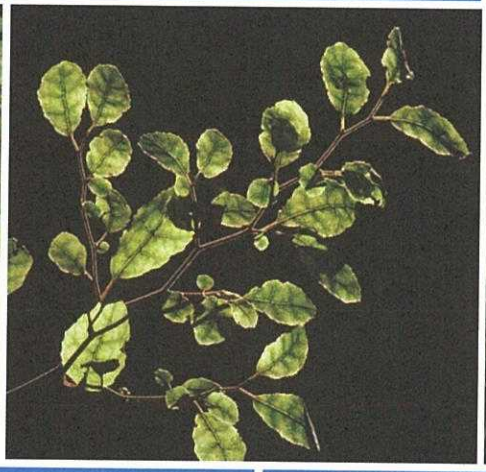

Photo: DoC

Kapuka
Broadleaf
Griselina littoralis

Tarata
Lemonwood
Pittosporum eugenioides

Rangiora
Bushmans toilet paper
Brachyglottis repanda

Putaputaweta
Marbleleaf
Carpodetus serratus



Pate
Seven-finger
Schefflera digitata

Totara

Kahikatea
White pine
Dacrycarpus dacrydioides


Photo: DoC

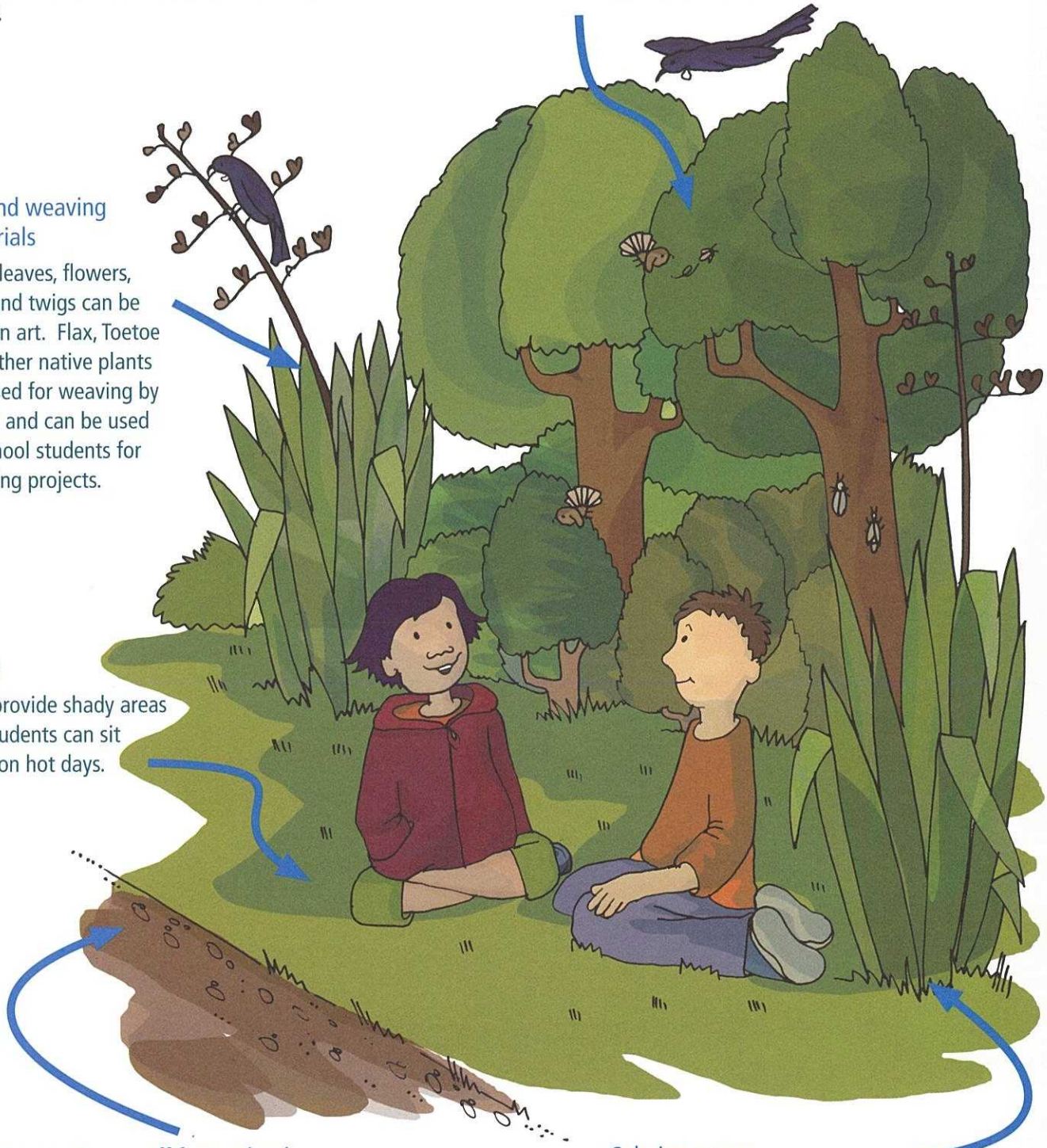
Why plant natives around school?

Teaching resources

Having plants at school that students can see and touch makes learning about them much easier.

Native birds and insects

Many native birds and insects use native plants for food and to make their homes.



Art and weaving materials

Plant leaves, flowers, fruit and twigs can be used in art. Flax, Toetoe and other native plants are used for weaving by Maori and can be used by school students for weaving projects.

Shade

Trees provide shady areas that students can sit under on hot days.

Less stormwater runoff from school

Areas of native plants and trees absorb more rainwater than areas of grass. Hard surfaces like concrete don't absorb any water. Less rainwater going down stormdrains means our streams are less likely to flood or be polluted.

Calming spaces

Trees and plants can be used to provide relaxing spaces where students can go to have quiet time out.

What to plant around school

These plants have been chosen because they are all easy to grow and maintain, and they grow naturally in this region.

Mahoe/Whiteywood
Melicytus ramiflorus
10m tree with white patches on the bark. Native birds eat fruit.

Manuka/Teatree
Leptospermum scoparium
8m tree with small, green leaves and pretty flowers. Native birds eat nectar.

Harakeke/Flax
Phormium tenax
Grows about 3m tall. Native birds eat nectar. Used for Maori weaving.

Ti Kouka/Cabbage tree
Cordyline australis
Distinctive 17m tree. Birds eat seeds.

Toetoe
Cortaderia toetoe or fulvida
Big 2-3m grass with distinctive, fluffy seed heads. Good for art projects.

Karamu
Coprosma robusta
5m shrub with shiny, dark green leaves. Attracts native birds.

Whauwhaupaku & Pate/Five-finger & Seven-finger
Pseudopanax arboreus & Schefflera digitata
Large shrubs. Attracts birds. Hand shaped clusters of leaves (Pate shown below).

Koromiko
Hebe stricta
Up to 2m. Very hardy shrub. Attracts birds. White to lilac flowers.

Tarata/Lemonwood
Pittosporum eugenioides
10m tree with bright green glossy leaves. Good shade tree. Birds eat nectar.

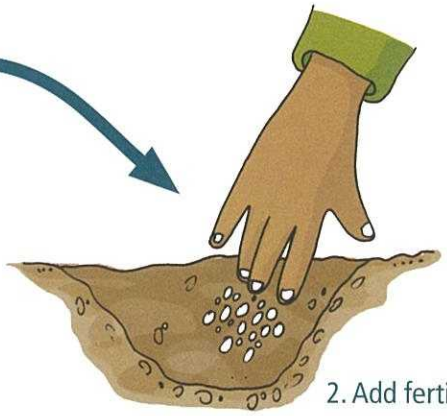
Mingimingi
Coprosma propinqua
1-5m bushy, tangled shrub. Small leaves. Attracts birds. Important for native insects.

Kaikomako
Pennantia corymbosa
12m tree. Large, green, glossy leaves. Good shade tree. Attracts birds.

Kohuhu
Pittosporum tenuifolium
5m shrub with crinkly, green leaves. Birds eat seeds.

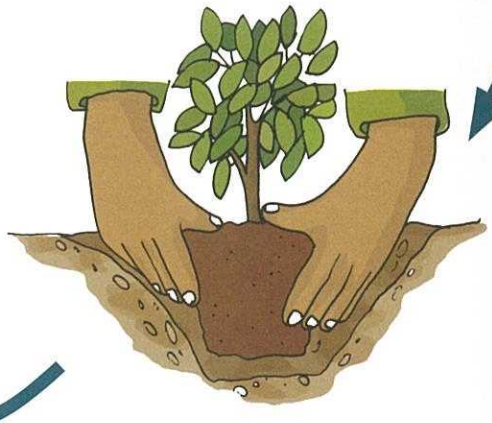
How to plant natives

1. Clear weeds from the area you wish to plant. Dig a hole big enough to fit the plant.

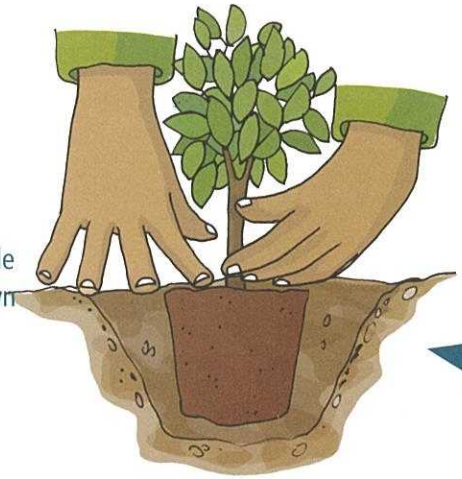


2. Add fertiliser.

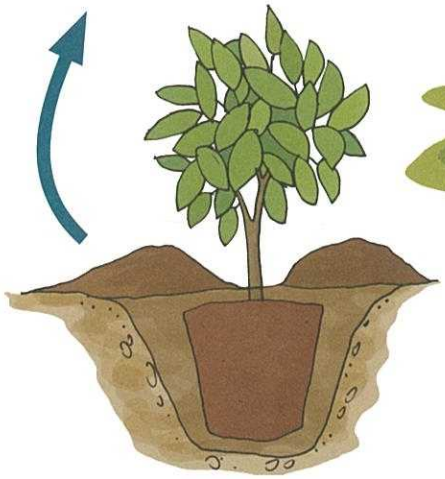
3. Remove the plant bag or pot (being careful not to harm the plant).



4. Gently loosen the roots and place the plant in the hole.



5. Fill in the rest of the hole with soil, and press it down firmly around the plant.



6. Water the plant and mulch around it to prevent evaporation. Continue to look after your plants by weeding, watering and mulching.

Things to consider

When is the best time to plant at school?

Winter is the best time of the year to plant because:

- there is lots of rain to water the plants.
- the plants have stopped growing and are dormant, so they are not as prone to the stress brought on by planting.

January
February
March
April
May
June
July
August
September
October
November
December

Red	Worst months for planting. Don't plant during this time.
Orange	Planting can be done in April, the beginning of May, September and the beginning of October only if: - it has been an unusually wet month, or - you are able to water the plants regularly.
Green	Best months for planting. Plant during this time.

Who will prepare and maintain the planting site?

Before you plant, the site needs to be prepared by removing or spraying weeds. After the plants have been put in, you will need to help them grow by controlling the weeds. Students should develop a plan for how this will be done.

If you are planning to plant beside a stream, ask the Action Crew for advice. Ask if they can help you arrange for the landowner or local Council to prepare and maintain your planting area. Your school could develop a long-term partnership with the landowner to help maintain the site.

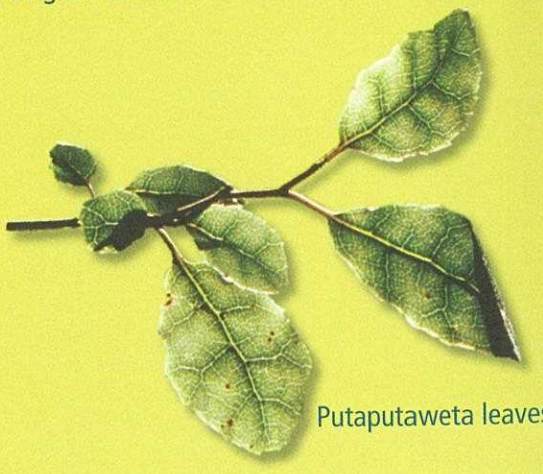
You will need to consider:

- ownership of the land
- health and safety – working alongside streams can be dangerous
- how to prepare the site for planting
- how to keep the weeds under control
- controlling stock and vandalism
- if the planting will change the way the stream flows, especially after heavy rainfall. Could it cause flooding?

If you are planning to plant around your school, you may have to arrange it with your Board of Trustees. Your caretaker might be able to help out. The Action Crew can provide gloves and equipment for your students.

Did you know?

The caterpillars of the Puriri moth make holes in the Putaputaweta, and when they leave the holes are taken over by wetas. This is how the tree got its name.



Putaputaweta leaves

Where to get native plants and eco-sourcing

Many nurseries have a selection of native plants. Ask if they are 'eco-sourced' plants (i.e. grown from seed collected from plants in your ecological district). Eco-sourcing is important to retain genetic biodiversity. Local natives are adapted to grow in our weather conditions, making them better than plants from other parts of the country. If plants from other regions are grown here , they will interbreed with our natives and may 'dilute' the features that make our local natives unique.

Monitoring biodiversity

To see if your planting is increasing the local biodiversity you will need to do bug and/or bird counts before you start. These counts can then be repeated at six monthly intervals to see what effect the plantings are having at the site.

Did you know?

The Tarata is called Lemonwood because the leaves smell of lemon when they are crushed.

Support material

Organise before the planting day

- [ ] Decide when and where you will plant. Choose the plants for your site - aim for ones that will attract native birds. You will need a planting plan or adults who know where to plant each plant.
- [ ] Make sure you have permission from the people who own or look after the land.
- [ ] Work out how you are going to stop people getting hurt during the planting day. All hazards that you are likely to meet should be identified, then eliminated, isolated or minimised. For example – warn students about nearby roads, safety when working near water and how to how to handle equipment safely. **Great care must be taken when working near streams.**
- [ ] Decide on a postponement date in case of bad weather, and work out how you will let people know if the day is postponed (including adult helpers and journalists).
- [ ] Write permission slips to send home to the parents of students doing the planting.
- [ ] Ask parents or adults that you trust to come and help on the day (7:1 student to adult ratio).
- [ ] Ask journalists from the local community newspaper if they want to write an article on your project and take photos.
- [ ] Work out who's going to look after the plants when you are finished.
- [ ] Organise the collection and delivery of the equipment and materials you need (see list below).
- [ ] Develop a maintenance plan.

Take to the planting day:

- plants
- spades
- planting plan or adults who know where to plant
- fertiliser and mulch (if required)
- first aid kit (and someone who knows how to use it!)
- camera and film (and someone to take photos!)

During the planting day:

- postpone the planting if it is raining heavily, or if you are planting by a stream that might flood
- don't forget to tell people how to keep themselves safe and have lots of fun!

After the planting day

- say a big thank you to everyone for coming along and helping out at your planting day.
- give yourself a big pat on the back – you deserve it!
- at a later date, students can develop signs to tell others about their plantings. These could be placed along a walkway that the students design.

Did you know?

Manuka honey is an effective anti-bacterial agent and was used by Maori to make medicines.

Sterilised honey is being used to treat wounds in some hospitals in New Zealand, Australia and the UK.

Manuka flowers

Curriculum integration

You can use environmental projects such as these to enhance learning across the curriculum. Please refer to page 6 of the *Take Action for Water* teachers' book for information relating to curriculum links and learning opportunities for students doing action projects. The curriculum links below are a few of the more specific achievement objectives that relate to native planting action projects.

Health and physical education

Healthy communities and environments

- Level 3 – students will plan and implement a programme to enhance an identified social or physical aspect of their classroom or school environment.

Science

Making sense of planet earth and beyond

- Level 3 – students can justify their personal involvement in a school or class-initiated local environmental project.

Social Studies

Resources and economic resources

- Level 3 – students will understand how and why people manage resources.

Water, air, earth and energy: elements in Greater Wellington's logo combine to create and sustain life. Greater Wellington promotes **Quality for Life** by ensuring our environment is protected while meeting the economic, cultural and social needs of the community.

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