

PART TWO

Introduction to Sites on the Nature Trail/Te Ara o te Ngahere

To the teacher

Simple activities are built into these notes for each of the sites on the Nature Trail/Te Ara. Encourage students to 'read' the bush as if it were the internet or the whare wānanga o Tāne/ the place of learning of Tāne. There are many living things to notice. The bush is a living learning resource which is constantly changing - the closer you look, the more you notice.

He tirohanga matawhānui me he tirohanga matawhāiti/distant and close-up views

Encourage students to look at the overview of the bush and then to zoom in and look at the detail, to be aware of the broad views in the distance and to look closely at the nearby living things.

Gathering information

After a walk and meal break, we recommend that students return to specific sites to gather more information, to take photographs or to sketch. Good places for sketching are the Canopy Walkway and Cockayne Lawn area. Some of the closer posts are 1-4 and 9-12.

Recording information

Once your students have completed the Nature Trail/Te Ara and had morning tea, lunch or afternoon tea, ask them to review what they have learnt and observed, and then record it in their booklets (pages 23-24).

They could note a few key points about each of the sites and include a sketch as a trigger for more detailed work later.



Otari-Wilton's Bush is an ecological site teeming with life. How many species can you find in this picture?

Sites 1–20 on the Nature Trail/ Te Ara o te Ngahere

1 Entrance – Waharoa/carved gateway and map

Assemble in the area near the Waharoa and the map shelter at the car park on Wilton Road.

On this trip, you're going to step back in time to an ancient world. Otari-Wilton's Bush was originally covered with dense forest. Moa roamed the area. There are now about 100 hectares of forest here, made up of original bush, and forest that is growing back. This type of forest is found only in New Zealand. Not only that, but Otari is the only public botanical garden in New Zealand solely dedicated to native plants.

Waharoa/gateway

The Waharoa here was carved by Bryce Manukonga of Te Atiawa and Mahanga a Taiiri, tribal groups in Taranaki. The gateway represents the karanga, the call of women to welcome you to the marae of the bush.

The map

The map under the shelter shows you how widespread Otari-Wilton's Bush is. The bush covers the slopes formed by the Kaiwharawhara Stream and nestles at the bottom of the deep sheltered valley. You can see the forest, including Wilton's Bush, the special botanical gardens, and the Nature Trail/Te Ara o te Ngahere on the map.

Mamaku

There are half a dozen young mamaku here framing the entrance way to Otari. You can pick them out by their distinctive trunks with diamond or hexagonal patterns. Tree ferns are some of the oldest plants in the world and belong to the time of the dinosaurs.

To do

Look at the map to find some of the main features, such as the forest reserve which is coloured green with swirly patterns; the original Wilton's Bush, which is below the forest reserve and coloured dark green; and the Nature Trail/Te Ara. The trail is marked, meandering through native forest areas and gardens.

What's next?

There's a massive number of things living and growing here, so keep your eyes and ears open. On the way to the Information Centre/Te Marae o Tāne, look out for the young rimu on the right of the pathway. It's labelled. See how its foliage droops down as if it is weeping. Later during your trip, you'll meet a 400-year-old rimu.

When you reach the Information Centre/Te Marae o Tāne, put your bags down and have a seat.

Te Marae o Tāne/Information Centre

Te Marae o Tāne is named for Tāne, the god of the forest. At Otari, the marae encompasses the bush area. Before 1840, Māori regularly walked through this area, hunting birds in the forest. The name Otari is thought to mean ‘the place of bird snares’.

New Zealand has about 2,400 native species of plants such as conifers (trees with cones), ferns and flowering plants. You can find many of them here in the natural ecosystem of this forest. All the different species live together here, some competing and others depending on each other.

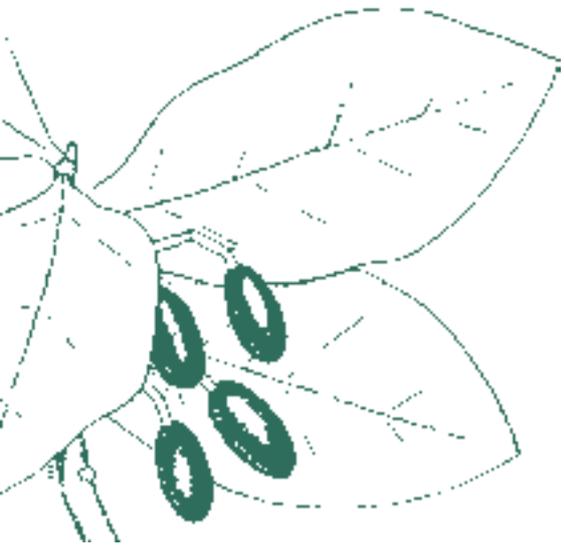
To do

Read and take photos of the two information panels: ‘From foraging to farming’ and ‘Time to protect’ so that you can view them later.

What’s next?

Your adult supervisor will lead the way, following the numbered trail markers (Posts 1-12). You have 20 sites to see. Stay within calling distance of your supervisor. The trail is steep and narrow in some places and has many steps, so play it safe and stick together. At the end of the trail, return here to Te Marae o Tāne/ The Information Centre.





3 Post 1 – Canopy Walkway, Karaka

Karaka

Seek out the karaka trees, which you'll find at the orange-coloured start sign for the Canopy Walkway. They are big beautiful trees with large glossy leaves. The Nature Trail Post 1 is on the fence to your right.

The karaka tree grows to a height of 15 metres and its trunk can reach one metre in diameter. It produces flowers from August to November and the fruit takes a year or so to ripen. If you're here in summer or autumn, you'll see the trees weighed down with their large fruit. They start out as a vivid green and later turn a bright orange. They're poisonous until cooked and specially prepared. The pulp of the fruit is edible but the nut (the kernel) contains poison.

Karaka groves

Many karaka trees were planted by Māori in groves which they visited to collect the fruit. Records of plants show that karaka were originally brought from the Pacific Islands to the north of the North Island. There are many Māori oral traditions - songs and chants - describing how they were brought to different parts of Aotearoa, including Taranaki. They are an important food for Māori and people in the past travelled long distances to collect the berries. The hardy karaka tends to take over other plants and fast becomes dominant in a bush area. Wellington City Council staff here are culling it in places because infestations can cause havoc in the bush.

Karaka and Kererū

At certain times of the year, the smell of the karaka berries is very strong, attracting birds to them. Waxeyes/tauhou eat the orange flesh of the seed. Kererū eat the pulpy berries, digest the pulp and excrete the one hard seed. The kererū is the only bird with a bill big enough to wrap around the berries and swallow them whole. The moa used to share that job with the kererū.

To do

Look over the side of the Canopy Walkway to the left. Locate the multiple trunk of the big karaka. What stage are the berries and flowers at?

What's next?

Set off along the zigzag Canopy Walkway footbridge, which soars 18 metres above the forest floor and crosses over a deep gully. On the way to Post 2 you'll see a panel named 'The lie of the land' with a map showing the Wellington Peninsula. Find Otari on the map and take a photo of the display panel. The Nature Trail Post 2 is on the right by the first seat.

4 Post 2 – Canopy Walkway, Tawa and Rewarewa

You'll come to a seat opposite a view of the forest floor and see a panel called 'Learning to survive'. Post 2 is on the right fence to the right of the seat, heading up the Canopy Walkway.

Tawa

The trees here are mostly tawa, which means 'purple' in te reo Māori. You can see tawa close-up, beside the 'Learning to survive' information panel. It has big dark purple-blue berries shaped like olives. It was important to Māori both as a food source and as a medicine. The kererū like the fleshy fruit of tawa and they help to spread the tree by eating the ripe fruit and passing the seeds back into the environment.

Tropical rainforest

New Zealand's climate is neither very hot nor very cold, yet much of our forest has a tropical feel about it. Many of our plants look as if they belong in a jungle. Look over the Canopy Walkway to see layers of plants growing over and around each other. Vines like supplejack and kohia/New Zealand passionfruit are common in the forest.

Rewarewa

The rewarewa tree is behind the seat. In spring its flowers are deep red and unusual because they grow straight from the hard, woody branches. The relatives of the rewarewa, the protea family, live in South Africa and South America. According to scientific theories, the lands of New Zealand, Australia and Africa were at one time connected as Gondwanaland. That could explain why many of our plants, such as the rewarewa, have close relations overseas.

Possums and rats

Possums and rats were until recently a major threat to bird populations here and could be so again, except for the vigilance of Wellington City Council staff and volunteers who keep putting out poison. Possums and rats climb trees, feed on eggs and young birds, eat seeds and seedlings and destroy new forest growth.

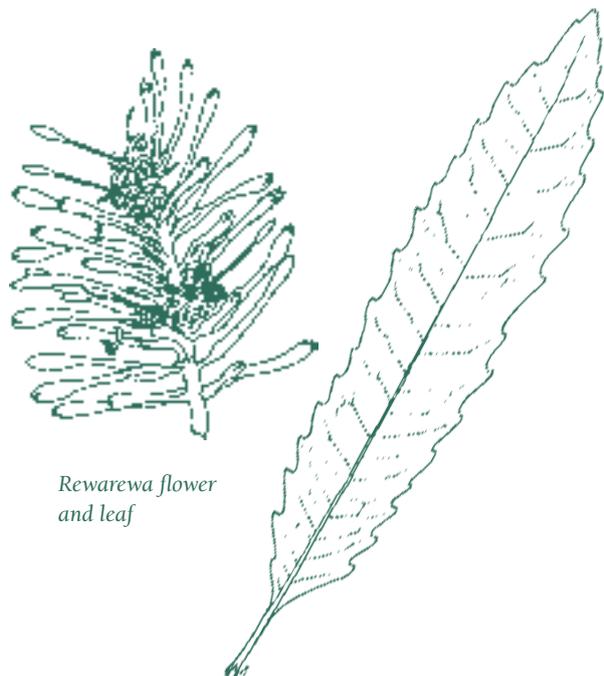
Possums have been drastically reduced in this forest. Killing off the rats and possums in this and other areas in New Zealand has made a huge difference to the regrowth of the forests and brought the birds back.

To do

Listen to the stream here. Later you'll walk beside it when you descend into the bush. Check out tawa berries on the 'Learning to survive' panel.

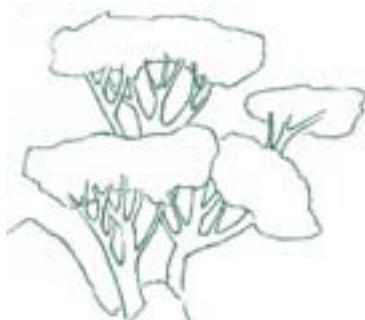
What's next?

Continue on the Canopy Walkway and enjoy the magnificent views over the valley and forest. You'll find Post 3 on the fence on the right side of the walkway, to the left of the information panel 'Dining out on the town'.



Rewarewa flower and leaf

5 Post 3 – Canopy Walkway, Valley view, Rimu and Northern Rātā



Rimu and rātā

The rimu-rātā combo is a unique pairing of trees. You can see the rimu, with a rātā towering above it, really well from here. In the middle distance you can pick out several massive, billowy, rimu crowns with the smaller, umbrella-like rātā crowns standing above them. They look like two trees growing as one.

The rimu is a different green from the other trees. The other trees are silvery. The rimu and the northern rātā together make a dark olive green shape because their little leaflets and leaves don't reflect as much sunlight as the other trees.

Kōwhai

The kōwhai to your left here often has kererū feeding on its leaves, completely defoliating it (stripping it of leaves). The kōwhai grows back again, recovering from its kererū attack! Tūi, waxeyes/tauhou, the bellbird/korimako and other nectar-feeding birds pollinate the kōwhai flowers when they are searching for the nectar deep within the flowers. They do the same for rewarewa.

Vines

You can see a tall rewarewa almost totally covered with vines – the native passion vine and supplejack. In spring you can see the slender, curved, sensitive tendrils that the native passion vine uses for climbing.

Kahikatea

Kahikatea is an emergent tree, the tallest native tree in New Zealand. You can see one opposite the 'Dining on the town' panel. It usually has a very slender trunk and often dwells in swamps. Kahikatea was used by Māori as an important food source, to make spears for bird hunting and was highly prized for its soot from burnt branches as a pigment for tā moko/traditional tattooing.

To do

Find the map on the 'Dining out on the town' display panel. It shows the forest cover of New Zealand before human occupation and the forest cover today. What does the map tell you about the changes that have occurred?

What's next?

On the way to Post 4, look at the top of the tree fern over the side of the Canopy Walkway. At Post 4 you'll see another Waharoa and lancewoods/horoeka. You'll find the Nature Trail Post 4 just beyond the Canopy Walkway, on the left, on the same side as the Waharoa information panel.

6 Post 4 – Waharoa (gateway), Lancewood/Horoeka

Waharoa/carved gateway

Go through the hand-carved Waharoa and look back at it. In the middle, you can see Tāne Māhuta, the guardian of the forest, representing respect for nature. On the left are the kararehe, the insects and other animals of the forest. On the right you can see ngā manu, the birds of the forest, and the dotted pattern is rongoā, the seeds or medicines of the forest. Ngā hau e whā are the swirly wavy patterns on the sides of the Waharoa. They are the four winds of the forest and represent all of the iwi/ tribal groupings.

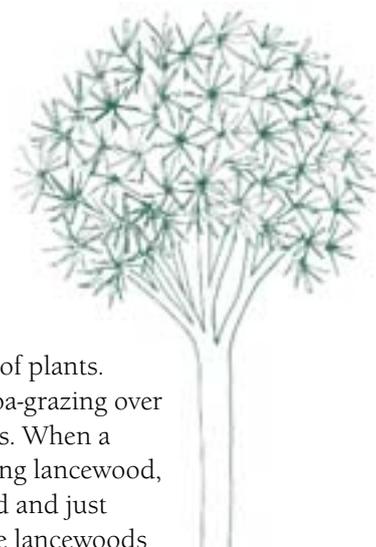
Lancewood/Horoeka

You can recognise one species of lancewood or horoeka here by its long, thick, hard leaves with large teeth. The young tree can resemble a collapsed or broken umbrella.

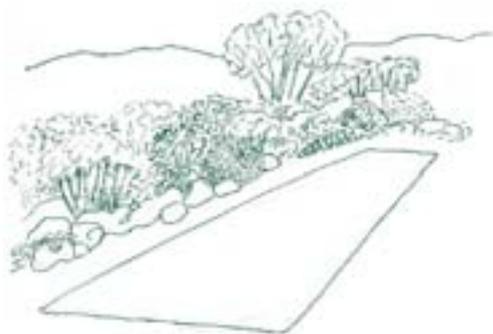
At this site we can see three stages in the life of the common lancewood. This tree looks very different in its adult stage compared with its younger stage. When two botanists on Cook's first voyage collected these two stages of the lancewood, they described them as different species. Why do they look so different? Botanists still argue about these ideas. Some botanists, like Otari's botanical advisor, Dr John Dawson, are tending towards the 'moa' explanation.

It seems likely that the young, hard form of lancewood would not appeal to moa as food. One theory is that years ago, the moa lived here and liked to eat lots of plants. The plants adapted to moa-grazing over tens of thousands of years. When a moa came across the young lancewood, it would think it was dead and just pass on. The very juvenile lancewoods are completely brown. We'd think they were dead, so presumably the moa would too. Another suggestion is that the tough, very long and narrow leaves look like swords and would have been difficult for moa to swallow. Imagine how difficult it would be to swallow a sword! In effect, it's like a security system for the lancewood.

In its adult form the tree starts branching from the top of the trunk and grows green adult leaves. It can grow up to about 13 metres. You can see the tall adult lancewood to the right of the seat. It would probably look more appetising than the young plants but, to eat the leaves, the moa would have to reach up like a giraffe to get at them. Not many moa could easily reach that height, so it's likely that they wouldn't bother. There'd be plenty of other tucker down below.



7 Cockayne Lawn, Ngaio and Forest lookout



Ngaio

Walk onto the Cockayne Lawn where you can see the tall rounded ngaio tree. The ngaio has rough rugged bark and brilliant white flowers in spring. The ngaio has male and female parts in the same flower - a stamen and a pistil - one producing pollen and the other an ovule. The ngaio has poisonous oil glands as a defence mechanism. Hold a ngaio leaf up to the light and you can see the oil glands. Because early British settlers didn't know much about New Zealand's plants, some of their sheep and cattle died from eating ngaio.

Dr Leonard Cockayne

Leonard Cockayne was born in England in 1855. During his childhood he developed a keen interest in plants. He moved to New Zealand and studied Darwin's ideas about evolution and applied them to New Zealand plants. In the 1920s he came up with the idea of making an 'open air plant museum' here at Otari. He created a five-hectare garden containing a wide variety of plants from all the different habitats around the country.

Plant collections

There are approximately 1,200 species in the plant collections here, all raised from cuttings or seeds from all over New Zealand. The City Council staff and volunteers look after them. This is New Zealand's most extensive collection of native plants and they are all recorded on a computer data base.

Forest lookout

You can see both original and regenerating forest from this lookout. The rimu trees to the left have been there for hundreds of years. One of them is 800 years old. Job Wilton's farm was over to the right and, in the area he fenced off, you can pick out the rātā growing, especially when it flowers and is covered in lots of red blooms. Directly in the middle you can see 100 years of regrowth of native trees. It's amazing what we can do if we want to replace the forest.

To do

Take photos of the ngaio, lancewood/horoeka, the Waharoa and the forest lookout. You'll be able to compare this Waharoa with the one at the entrance to Otari-Wilton's Bush.

What's next?

As you make your way down the path, pick out the lancewoods/horoeka with their brown colouring and yellow brush-stroke markings.

8 Goliath Harakeke/Flax

There are two main species of New Zealand flax – harakeke and wharariki or mountain flax. The Goliath harakeke is the biggest in New Zealand. It can grow up to three metres high. Māori grow harakeke plants especially for weaving and they used to make ropes with them.

The harakeke form clumps as you can see and their leaves fan out like sets of swords or whānau/families.

To do

Stand beside the Goliath harakeke. How much taller than you are they? How would you describe the colour? What does Goliath mean?

What's next?

Walk downhill to the kānuka, a short distance from here. You'll find Post 5 to the left of the steps, where the path makes a steep downwards turn.



9 Post 5 – Kānuka

In many places in New Zealand when the land is cleared, either by man or by natural processes, the plants soon start to recolonise – to spring up in the area. Colonisers are tough and adaptable plants like this kānuka. It's a plant that can cope with the wind and sun in exposed places. These shrubs will eventually provide shelter for other forest trees to grow.

To do

Estimate how tall these kānuka are now, compared with your own height. Can you see what makes them such tough plants?

What's next?

Next you'll plunge into original bush and make your way through trees tangled with vines and supporting epiphytes. Notice the hound's tongue fern carpeting both sides of the steps. At Post 6, you'll see layers of many different plants growing on a hīnau tree. Post 6 is on the small platform beside the hīnau.

10 Post 6 – Hīnau with epiphytes



Hīnau

The tree with many plants growing on it is called a hīnau. It can grow up to 25 metres tall, in the roof of the forest. When the flowers are pollinated, they turn into purplish fruit which kererū love to eat. Many different plants are living together here in a small space on the hīnau.

Epiphytes

The hīnau has many epiphytes or perching plants nestled in its forks and along its branches. Epiphytes are plants that live and grow on trees. They use their host tree as a ladder to reach the light. Epiphytes aren't parasites. Parasites pull the nutrients out of a tree that they grow on and can eventually kill it, whereas epiphytes live together with the tree.

You might be wondering how the epiphytes got onto the hīnau. There are two possible ways - either a bird ate its seed and pooped it out on the tree or the wind blew the seed up into the tree. It would depend on the type of epiphyte.

Epiphytes have no contact with the ground. They create their own compost heap and get the nutrients they need by collecting up dead leaves and other plant waste. As their leaves and roots die off, the leaf mould collects beneath them and wind-blown dust adds to the pile.

You could think of this tree as an 'apartment building' or a 'garden in a tree'. The epiphytes that live on the 'apartment building' include different types of rātā, orchids, mosses and lichen, lots of types of climbing ferns, astelia/kōwharawhara, kahakaha, hound's-tongue fern and the broad-leaved puka, which is the thick vine with long-lined marks on it.

The widow maker story

One of the epiphytes on this hīnau was given the name 'widowmaker' when the early European settlers were cutting down the trees. These kahakaha or *Collospermum* nest epiphytes would occasionally fall on a bushman, killing him and thus making his wife a widow.

To do

Lie down on your back and look up into the canopy to get a better look at the hīnau and epiphytes.

What's next?

Next you'll walk alongside a streamlet as it makes its way to join the Kaiwharawhara Stream at the bottom of the valley. It's a chilly but sheltered pocket of bush housing lush New Zealand ferns. You'll see Post 7 to your right at the streamlet. Continue down the steps.

11 Post 7 – Stream and Tree ferns

Water power

Moisture is an important part of our bush. Plants, such as our ferns, thrive in damp areas. It rains here for about 125 days of the year. That's about one rainy day in every three, which suits many of the plants here just fine.



Tree ferns

There are six species of tree fern in the New Zealand forest and you can find three of them here. You can recognise kātote by its old fronds that hang down like a skirt. It's growing on the banks above the stream. The ponga with its silver undersides is behind the Post 7 sign. And the tallest tree fern of all, the mamaku, is labelled on the side of the track. The bulges at the base provide support so that it doesn't fall over, despite its massive height.

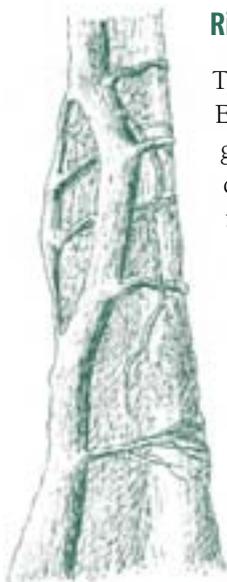
To do

Look up to the sky and the light, to see where mamaku and other ferns are reaching. Get a feeling for the moisture in the air, the water flowing downhill and the dampness of the ground. Notice the effects of the water on the rock face. Otari has very steep hill slopes and you can see that the stream has gradually gouged out the rock, as the water has poured down the hill. What else is growing here and enjoying the cool, damp conditions?

What's next?

Make your way uphill to see a rimu tree that was a youngster in the 17th century. That was over 400 years ago! Look out for epiphytes as you walk up to the rimu and head to the seat at its base. You'll see a labelled rimu on the way. It's a good one to hug. Post 8 is right beside the 400 year old rimu.

12 Post 8 – The 400-year old Rimu



Rimu from the seat below

This is a rimu and it's big! Every 10 years, the trunk grows 25 millimetres in diameter. It's about one metre now, so it's around 400 years old. The circumference (the distance around the trunk) of this tree is quite extensive. It would take three or four children holding hands to wrap their arms right around it. It will reach up to 60 metres high and is known as an emergent tree, which means it

sticks out of the top of the layers of trees.

Before European settlers came to New Zealand and started cutting down trees, the rimu trees commonly lived for many hundreds of years throughout New Zealand's lowland and lower mountain forests. There's one here at Otari that is thought to be 800 years old.

You can see a reddish-coloured northern rātā vine on the side of the rimu. It has thickened up to the size of an adult's leg, widened and spread itself against the rimu. The northern rātā started its life on this mature rimu tree. The wind blew a rātā seed into a branch of the rimu many years ago and, over a very long period of time, the root came down and wrapped itself around the rimu tree. It has stayed up there, wedged in the bark or on a branch – far from the soil on the ground.

Nest epiphytes

If you look up, you'll see that the rimu is home to more perching epiphytes. They are fed by the build-up of humus, a massive black bundle of soil, fallen leaves and bark which holds lots of water.

Walk up the steps past the rimu and look back down at it from further up the steps.

Rimu from the steps above

You can see the rātā roots going around the rimu. The roots gradually grow down the rimu tree as if they are wrapping their arms around the tree. They are finding their way to the bottom of the tree. Eventually, the rātā will take over the rimu, which will die and rot away, leaving a hollow space at the base. The rātā does not actually kill the tree or feed (parasitise) off it.

You can also see a puka vine with its long ridges, growing down the rimu.

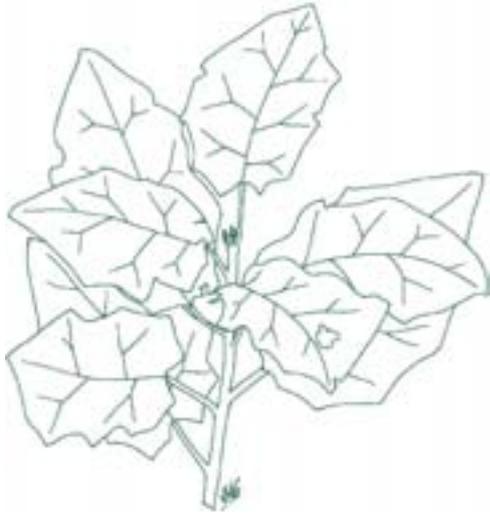
To do

To get a sense of scale, work out how many generations this one 400-year-old rimu tree represents. When did Europeans arrive in Aotearoa? When did Māori arrive? What else has happened in the 400-year-life of this rimu?

What's next?

Make your way up to Post 9, which will be on your left near rangiora shrubs.

13 Post 9 – Rangiora



Rangiora is a tree daisy. Look for its distinctive large, broad leaves - the largest of all the tree daisies.

To do

Once at Post 9, catch your breath and wait for everyone to catch up. Admire the rangiora at Post 9. People call it bushman's toilet paper. It's also been used as writing paper or track markers. Why do you think it has such large leaves?

What's next?

Once everyone has reached the Post, head uphill and turn left onto the bridge leading to the Wilton's Bush Viewing Platform. You'll see the big Nature Trail sign on the right.

14 Wilton's Bush Viewing Platform

Here at the Viewing Platform you are standing within the original protected Wilton's Bush. Job Wilton was unusual for his time because he protected this bush area.

Job Wilton arrived in Wellington at the time that the Treaty of Waitangi was being signed (1840). The land here was in the care of Taranaki Māori. Before their kaitiakitanga (guardianship), the Wellington area was inhabited by Ngāi Tara, Ngāti Ira and others. Job bought land here in 1860 and began farming. At the same time he fenced off a bush area the size of seven rugby fields.

Job married Ellen and they had 11 children who grew up on the family farm here. Job and Ellen taught their children to love the bush and to look after it well. The family made sure the fencing was secure and they patrolled the place in the evenings to see that the picnickers' fires were out. Fire would have been disastrous.

To do

Look at the panel 'The podocarp forest'. A podocarp forest is made up of a family of many of the evergreen conifers that evolved long before flowering plants. The panel shows the five layers of plants in the forest. They are: the emergent layer, the canopy layer, the sub-canopy layer, the shrub layer and the forest-floor layer.

What's next?

Walk back along to the end of the bridge walkway. Turn left and you'll see the main green sign for the Nature Trail. Look out for the nikau palm with rings around its trunk. It will be on your left on your way to the rātā tree at Post 10.

15 Nīkau Palm



This tropical beauty is native to New Zealand and is our only palm. Palms usually live in warm climates, but this one copes with the cold and is common in our coastal forests. The trunk has no branches and it grows up to 10 metres tall. The base of the trunk is wider – a bit like an elephant’s foot. It’s smooth, green and ringed with scars where the leaves have fallen off.

The nīkau has a crown of enormous leaves and, when you are here during summer, you’ll see masses of small pink flowers hanging from the trunk at the base of the leaves. These become red berries, which can take a year to ripen. The kererū feasts on the nīkau and so spreads the single large seed from each berry.

To do

The nīkau is fun to sketch or paint. Return later with your sketching materials or take a photo now to use for drawing later. Can you think of any reasons for the shape of the leaves?

What’s next?

You’ll find the ancient northern rātā just around the corner to your left.

16 Post 10 – Northern Rātā

Continue along the Nature Trail until you reach the northern rātā. You'll see the orange Nature Trail sign on your left and you'll find Post 10 to the left of the sign-posted northern rātā.

Just as you saw on the 400-year-old rimu at Post 7, the rātā started life as a vine. Long, long ago, a rātā seed landed in an ancient rimu and sent its vine-like roots down the tree. As they worked their way down, they wrapped around the rimu trunk. Eventually the rātā vine developed its own kind of trunk, a 'pseudo' or fake trunk and its crown grew into an umbrella-like shape, reaching for the light above the rimu. You can see the gap at the foot of the rātā tree where the rimu fitted when it was alive.

The northern rātā flowers are like those of the pōhutukawa, but smaller and daintier. You see them at Christmas time. The rātā tree has always made good medicine and the flower nectar has been used in the past for sore throats. Today rātā honey is very popular.

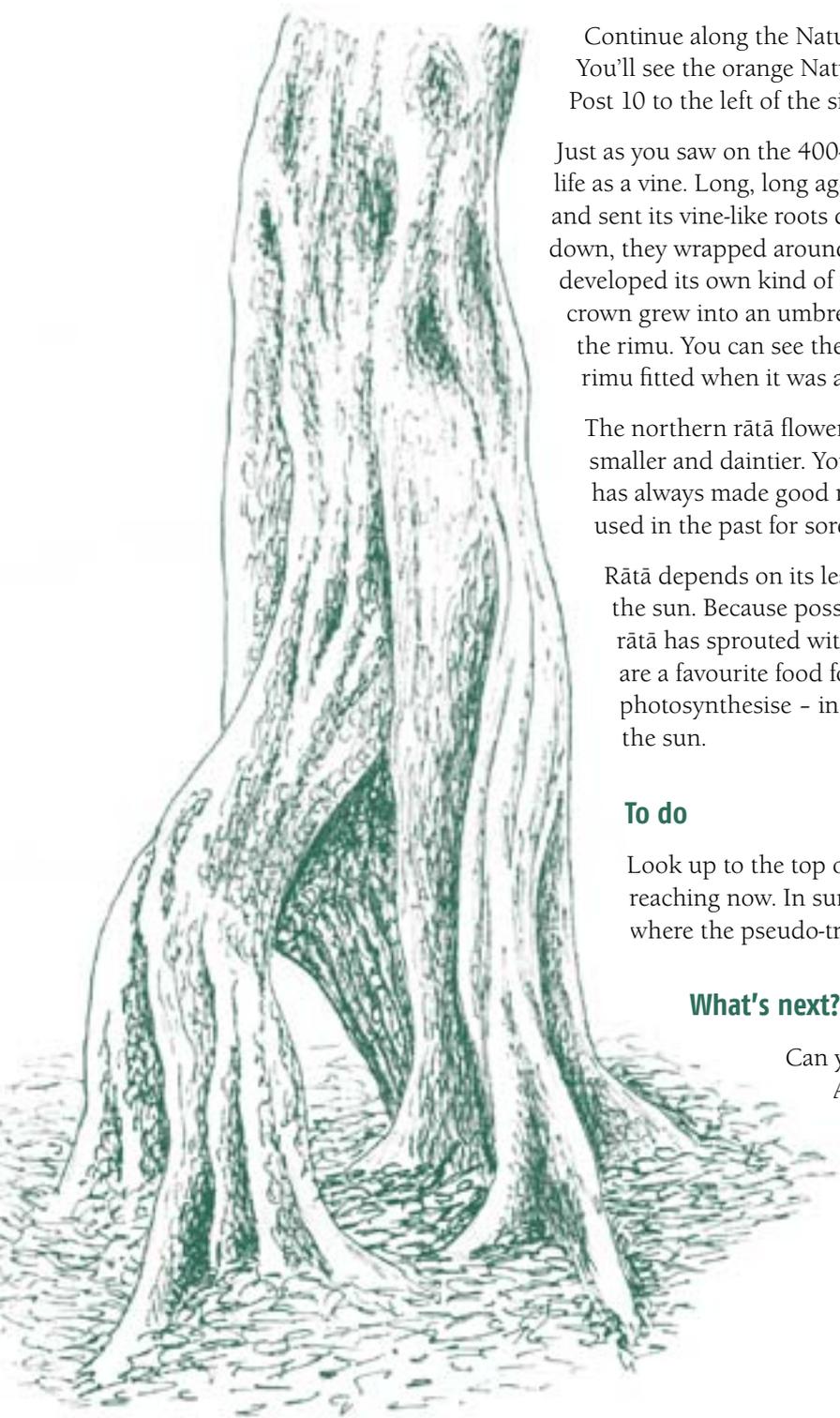
Rātā depends on its leaves to make its food with the energy of the sun. Because possums have been killed off in this area, the rātā has sprouted with luscious new growth. The rātā leaves are a favourite food for possums. Without its leaves it can't photosynthesise - in other words, it can't make food from the sun.

To do

Look up to the top of the rātā to the sky to see how far it is reaching now. In summer, look for the flowers. Can you see where the pseudo-trunk started from?

What's next?

Can you see a large kawakawa near this rātā?
At Post 11 you'll see some more kawakawa.
There are also large-leaved Whau in this area.



17 Post 11 – Kawakawa

You'll often find kawakawa growing in clearings and at the edges of forest areas like this. The heart-shaped leaves usually have masses of holes caused by small native looper caterpillars. The caterpillars feed at night but sometimes you can find them in the late afternoon on an overcast day.

The leaves of the kawakawa plant have long been used as medicine. Traditional Māori practitioners still use them today for preparing rongoā/medicine. Kawakawa beer is also growing in popularity.

To do

Look at the holes on the kawakawa leaves. Hunt for caterpillars. What layer of the canopy do kawakawa live in? Notice their interesting stems. Think about how you'd draw the whole plant. Take a photo to use as a guide for sketching later.

What's next?

Next, just around the corner, you'll find an alcove sheltering lush New Zealand ferns. There's no numbered post in the Fernery. (You'll find Post 12 later at the Information Centre.) Follow the big green signs to find the Fernery Viewing Platform. Stop at the Fernery information panel on the boardwalk.



Kawakawa leaves

18 Fernery Boardwalk

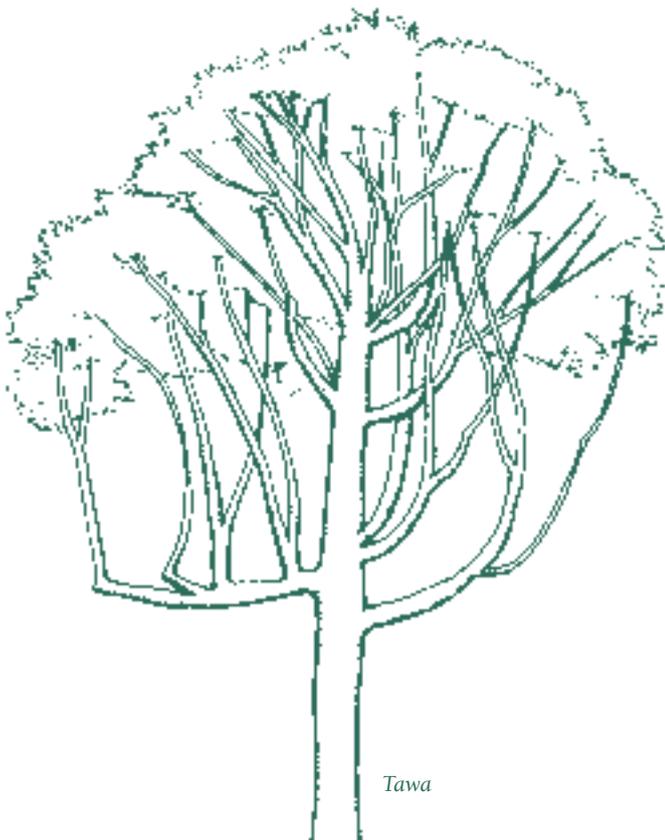
New Zealand ferns

This fernery was created in 1968 after the Wahine storm – a cyclone that sank a ferry at the entrance to Wellington Harbour with loss of life. The super strong wind damaged many very old trees here, making an opening in the forest canopy and creating a perfect setting for a fernery.

This area is now home to ferns from all around New Zealand. There are 12,000 fern species worldwide and 150-200 species in New Zealand. Sixty of the New Zealand species of fern live in this area of Otari-Wilton's Bush.

Tawa

The tree with strange-looking branches is a tawa. It looks like a candelabra (a fancy candlestick).



Tawa

Climbing ferns

You can usually see a species of climbing fern here on the tawa that changes its looks depending on where it is living in the forest. This fern – *Blechnum filiforme* – crawls along the forest floor looking for a tree trunk. Then it changes its appearance as it climbs the trunk. As it reaches further into the light, it transforms once again. So you can see three versions of the same fern in this one small area.

Ponga/kaponga or silver fern

You can pick out the ponga opposite the information panel by the silver-white undersides of its fronds. It's regarded by many as a symbol of New Zealand. It's probably the slowest growing New Zealand fern and prefers shade and drier slopes. It can reach up to 10 metres. The All Blacks and other sports teams wear this fern symbol on their jerseys.

To do

Take photos of each fern for your reference later. Take special note of the patterns on the trunks and the way the old fronds hang down.

What's next?

Walk along the boardwalk towards the Wilton's Bush Viewing Platform, then go left, down into the Fernery. Make your way to the green seat in the Fernery near the 'hen and chickens' ferns.

19 The Fernery and Kauri Lawn

Mamaku/Black tree fern

The mamaku is the tallest tree fern in New Zealand and is one of the tallest tree ferns in the world. You can locate the mamaku fern here in the Fernery by its height – it's the tall black one and can reach up to 20 metres. There is one behind the green seat. Its trunk and stems are black and it has lacy bright green fronds. It grows quickly up to the light and prefers to live in moist gullies. Notice how it has angled itself at the base to reach the light.

King Fern/Para

The king fern/para is the largest ground fern in New Zealand. It grows naturally in dense, shady moist forest in the northern half of the North Island. You can find it here behind the green seat. The starchy root of this fern was a food source for Māori. It was cooked and then pounded to make flour. You can see a type of fruit called sporangia underneath its glossy leaves. Sporangia contain spores that are spread by the wind.

Hen and chickens fern/Mouku

Another special fern here is the 'hen and chickens' or mouku. The tiny little ferns you can see are called the chickens. These tiny bulbils grow on the mature leaves, the 'hens'.



The fern has a second means of reproduction – sporangia. Look under the leaves to see if you can find the sporangia.

Walk out of the Fernery on the track to the right of the green seat onto the Kauri Lawn.

Kauri Lawn

In fine weather, this is a good spot to sit down and chat, to watch for birds and to take in the surrounding kauri, tree ferns and other native plants.

To do

Rest and relax on the lawn. See if you can find the very young rimu and the young kauri.

What's next?

At Post 12, you'll see the cone trees, the conifers of the New Zealand forest.

20 Post 12 – Native conifers (cone trees) – Kauri

Head along the path leading to the Information Centre/Te Marae o Tāne. You'll see a grove of native conifers, which were mostly planted about 80 years ago. They include rimu, kahikatea, tōtara and kauri. Conifers produce separate male and female cones on the same tree. They don't have flowers. Conifers are very old trees in evolutionary terms.

Kauri

The kauri is one of the world's largest trees. It's the biggest of the few native New Zealand conifers. It has a trunk that can grow to a massive 11 metres in diameter and it can reach up to 60 metres in height. The largest surviving kauri is Tāne Māhuta in Northland's Waipoua Forest. Kauri are not natural dwellers at Otari - they have been planted here.



Juvenile kauri

The kauri trees in this conifer grove are still young, but they've been reproducing for some years. They have pollen cones like little fingers and perfectly round seed cones that are like small, green tennis balls. When the seeds are ready to spread, they burst out of the cones with some force - like little shot guns.

The young kauri behind the information panel was planted in 1933 and it will take a few hundred years before it grows into a giant. It can live for many centuries. Some have been estimated to be 2,000 years old.

You'll find the Post 12 sign on the fence opposite the Information Centre/Te Marae o Tāne.

To do

Look for signs of seeds or cones on the ground. Depending on the season, the kauri will be at a different stage of development. Look for green cones on the trees in summer.

What's next?

Reassemble at Te Marae/the Information Centre. After some refreshments, fill in your booklet with notes and sketches from each of the sites you visited on the Nature Trail/Te Ara o te Ngahere.

Reflect on what you have learnt during your tour. Capture the information you've gleaned by reading, listening, watching, smelling and viewing.