

A Guide to the Vegetation of Waikaremoana

Introduction

Visitors arrive at Lake Waikaremoana (at 582m above sea level) either from the northwest after a one hundred kilometre journey through the forest tracts of Te Urewera National Park or from the south when they crest a rise and the vista of the lake suddenly opens out before them. Initially, apart from the expanse of the lake itself, the overwhelming impression of the land cover is of tall forest but when a few short walks have been undertaken the forest can be seen to vary in its components and additional types of vegetation cover become apparent. These include areas of secondary forest, scrub (or shrubland), grasslands and of wetlands which are dominated by rushes, sedges and herbs.

The plants that occur in an area make up the 'flora' of that area whereas the way the plants are grouped together makes up the 'vegetation' of that area. When vegetation types are named it is common practice to just refer to those plants that dominate the uppermost levels (or canopy) of the vegetation type.

Many factors determine what vegetation types occur and where. These factors include soils (composition, depth, drainage), geography (underlying rocks and processes), topography (slope and the direction the slope faces otherwise known as aspect), natural disturbance (such as slips), pest mammal browse, human impacts (such as fires and lake level management) and climate (on both a small and larger scale). The interactions between these different factors can be quite complex so that no two places are exactly alike.

Forest Types

The four main forest types in the Lake Waikaremoana Catchment are: (red or silver) beech forest, rimu-broadleaved species forest, mixed beech/rimu-broadleaved tree species forest and secondary forest dominated by kanuka and other broadleaved species.

Beech Forest

(variations include; red beech forest, rimu-red beech forest, silver beech forest and black beech forest).

Beech forest dominates much of the lake surrounds. The beech trees referred to here are the characteristically small leaved southern hemisphere genus of *Nothofagus*. In this forest type the canopy may be dominated by either red beech (tawhairaunui, *Nothofagus fusca*,) or silver beech (tawai, *Nothofagus menziesii*), or a mixture of the two. These species are sorted altitudinally with pure silver beech forest occurring at higher altitudes (above 1000m) than pure red beech forest. Walkers pass through red beech forest on their way up to both Ngamoko Trig and Lake Waikareiti. Silver beech comprises the "goblin forest" (squat, bent trees covered in moss and lichen as a result of wind exposure and snow falls, prevailing high humidity and frequent cloud and rain) found on the summits of Panekiri and Manuoha.



Black beech forest is found in small patches and strips on sunny dry well-drained sites along the lake margin. It is encountered along the Black Beech Track and Onepoto Caves Track.

In rimu/red beech forest, rimu (*Dacrydium cupressinum*) tower over a lower canopy of red beech trees. This forest type can be seen when traveling the Waikaremoana Great Walk particularly when crossing headlands between arms of the lake.



Red beech foliage

Rimu/tawa-kamahi-hinau forest and northern rata-rimu/tawa-kamahi-hinau forest.

The ancient 'podocarpaceae' family includes the largest of the trees that emerge from the forest canopy around the lake. They include rimu predominantly but also miro (*Prumnopitys ferruginea*), matai (*Prumnopitys spicata*), totara (*Podocarpus hallii*) and kahikatea (*Dacrycarpus dacrydioides*). Another common canopy emergent of the rimu-broadleaved species forest is rata (*Metrosideros robusta*). This tree is not in the podocarpaceae however but is a member of the Myrtaceae (myrtle family).

Tawa (*Bielschmiedia tawa*) is the main broadleaved tree in the canopy but kamahi (*Weinmannia racemosa*), hinau (*Eleocarpus dentatus*) and the various tree ferns are also commonly seen. Forest dominated by red or silver beech tends to be less diverse in its understorey composition compared to forest dominated by rimu and other non-beech species. This rimu/tawa broadleaved species forest type might be best seen from State Highway 38 to the west of Whaitiri Point at Aniwanuiwa and by walking the Lake Kaitawa track on the southern edge of the Park.

Both beech forest and rimu/broadleaved forest are mature "climax" forests. In the absence of human induced or natural catastrophe or climate change they will continue to maintain themselves much as they are at present.

Kanuka forest, broadleaved secondary forest and kanuka-manuka forest and scrub.

These forest types are the result of natural or human induced destruction of the original forest cover. Large areas of kanuka (*Kunzea ericoides*) are the result of clearance by burning and occupy what were historically farmed areas around the lake and in time, in the absence of further disturbance, the original beech or rimu/tawa-broadleaved species forest cover will return.

Much of the Great Walk passes through secondary vegetation as it follows the Lake Waikaremoana margin from Waiopaoa to Waiharuru. In these areas the track is on lake bed now permanently exposed when the lake was lowered five metres in 1946 as part of its hydro-electric utilisation.

Rusbland, sedgeland and herbfield turfs

In contrast to forest there are significant areas of wetland, rush, sedge and herbfield both on the margins of Lake Waikaremoana itself and as wetland tarns encountered around the Ruapani walk and the “Tundras” north of Lake Waikareiti. Under the broad vegetation type label there may be many sub-types all depending on the physical nature of the wetland and therefore which plants are dominant. The herbfield turfs and rushlands-sedgelands around the Lake Waikaremoana margin tend to occur in semi sheltered areas and are intermittently submerged and exposed by the fluctuating lake levels that occur as a result of the needs of hydroelectric power generation.

For a good comparison visit the herbfield tarns of the Ruapani walk, the wire rush (*Empodisma minus*) dominated wetlands of Kaipo Bog and the *Carex gaudichaudiana* sedge-dominated Lake Kiriopukai at the Onepoto end of the Great Walk.

Take care when visiting any wetlands as they are all ecologically sensitive areas and are under enough pressure from deer browse without our heavy boots adding to their destruction.

Shrubland/ flaxland

Low shrubs often occupy the boundary between the low wetland vegetation and forest margins. Shrubland also dominates more recently cleared areas now reverting back to forest (such as in the upper reaches of the Aniwaniwa Valley). Manuka and mingimingi (*Coprosma* species) dominate these shrubland areas.

Permanent subalpine shrubland (above 1340m) is also to be found on the summit of Mt Manuoha, the northern most extent of the Lake Waikaremoana catchment and the highest point in Te Urewera National Park. Two plants dominate this area, leatherwood (*Olearia colensoi*) and the otherwise rare *Olearia capillaris*, here reaching its northernmost limit.



Tui feeding off flax flowers.
Photo: Paul Schilov

New Zealand vegetation is distinctive in having a large number of shrub species with dense twiggy branches, small leaves and very wide angles between branches (this is known as a divaricating habit). This habit has been attributed to either a response to browse by the now extinct flightless moa bird or alternatively is a response to a cold drying climate,

Mountain flax (wharariki, *Phormium cookianum*) is also particularly common mixed in with shrubs on steep open slopes and ridges around the lake margin and the lake shoreline. It is very hardy and can withstand the northwesterly gales that sweep across the lake.

Grassland

Another distinctive vegetation type seen around the lake margin is grassland. Like secondary forest much of the grassland areas around the lake including the camping areas at Hopuruahine and Mokau was formed as a result of lake level lowering. Grass cover is primarily made up of introduced species with the notable exception of the pampas-like toetoe (*Cortaderia fulvida*) grassland most visible at the head of Home Bay between the Waikaremoana Motor Camp and the Aniwaniwa Visitor Centre.

Rare plant species

Some plants of the forest are uncommon either because of natural rarity or because the population of that species is under some pressure from an external source such as browsing by red deer (*Cervus elaphus scoticus*) or the Australian possum (*Trichosorus vulpecula*). Some plants that are naturally rare in the Lake Waikaremoana catchment may be more common elsewhere where perhaps conditions are better suited to their growth.

There are no rare plant species that we are aware of that are endemic to the lake catchment, that is, that only occur at the lake. However because of prolonged isolation some rare plants are genetically different from their neighboring populations. Rare plants in the lake catchment include ngutukaka (kakabeak *Cliantbus maximus*), pua o te reinga (dactylanthus, *Dactylanthus taylorii*), Kirk's tree daisy (*Senecio kirkii*), raukawa (*Raukawa edgerleyi*), the mistletoes; scarlet mistletoe (*Peraxilla colensoi*), red mistletoe (*Peraxilla tetrapetala*), yellow mistletoe *Alepis flavida*, and kouorangi (tupeia, *Tupeia antarctica*). There are also a rare swamp stinging nettle (*Urtica linearifolia*), a swamp orchid, (*Spiranthes novae-zelandiae*) and a sedge (*Carex cirrhosa*).



Ngutukaka (kakabeak) flower

Rare plants cover the range of vegetation types from deep forest (red, scarlet and yellow mistletoes, Kirk's tree daisy and raukawa), regenerating forest (tupeia, dactylanthus) shrubland/flaxland (ngutukaka) and wetlands (spiranthes, swamp nettle and *Carex cirrhosa*).

The majority of the rare plants mentioned above are being actively managed by the Department of Conservation. Management action includes the banding of trees and possum control to low levels in the case of some mistletoes; caging of plants and translocation of seeds onto new hosts for other mistletoes; caging and possum, rat and wasp control in the case of dactylanthus; caging to keep deer away from swamp nettle and ngutukaka and so on. As an example caged tupeia plants can be seen along the Whaitiri Point walk, west of the Lake Waikaremoana Motor Camp.

The Department and Lake Waikaremoana Hapu Restoration Trust are working together so that through our management efforts the forest and other vegetation types of Waikaremoana continue to exist in as close to a healthy state as possible, that no other plants join the list of rare species and that, where possible, rare species are returned to healthy numbers.

Further reading and information

Some of the main forest vegetation types are shown on the 'Urewera Parkmap' available from the Aniwaniwa Visitor Centre. For more information on the plants of Waikaremoana please refer to the other pamphlets in this series particularly those specifically describing the plants of the various walks in the Lake Waikaremoana Catchment. Where plant descriptions are required for your reference the Department recommends the pocket guides on sale in the Aniwaniwa Visitor Centre.

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