

Vegetation and Flora of Waikereru Ecosanctuary

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Prepared for Waikereru Ecosanctuary

April 2022



Figure 1. Forest margin of Longbush Reserve/Waikereru.

INTRODUCTION

Waikereru Ecosanctuary/ is located 6.5 kms north of Gisborne. The Waimata River runs past the east of the property. Waikereru forms part of an extensive tract of hill country and lies within the Waiapu Ecological District (McEwen 1987). The riverside bush and the hills are protected by QEII National Trust covenants, with several other large QEII covenanted blocks nearby on neighbouring properties across the western ridge. The Gisborne area has been relatively little surveyed but supports a range of biodiversity (McEwen 1987; Smale et al. 2013).

Geology

The Waiapu Ecological District consists mostly of late Cenozoic (Miocene-Pliocene) mudstone-sandstone hill country with unstable Eocene, Paleocene and late Cretaceous indurated siltstone (McEwen 1987). Waikereru comprises mostly moderately steeply dissected hill country on undifferentiated, fossiliferous mudstone (papa) and tuffaceous sandstone (Smale et al. 2013) and on the valley floor, Quaternary fan gravels and alluvium with some tephra coverbeds on the more elevated and older surfaces that have not been inundated by flood deposits since European settlement (Smale et al. 2013; Mazengarb & Speden 2000).

METHODS

A vegetation and floristic survey was carried out at Waikereru over the period 24th – 28th January 2022. The site was traversed on foot, a list of vascular plant species recorded, a species list compiled, and vegetation types mapped.

RESULTS

Vegetation

Before European settlement, most of Waiapu Ecological District comprised hill country forest, mainly podocarp/broadleaved forest, with red beech and silver beech forest on higher land and local black beech at lower altitudes. Kahikatea-dominated podocarp forest was widespread on alluvial flats and semicoastal and coastal forest towards the coast (McEwen 1987). The ecological district has been highly modified, much of it now farmed (semi-extensive sheep and cattle) with increasing exotic forestry plantations on severely eroded country; only rare indigenous forest remains. Waikereru hosts a few remnant podocarp trees, a relatively large alluvial forest remnant and inland forest remnants in sheltered gullies. Other dominant vegetation types include exotic pasture, regenerating kānuka (*Kunzea robusta*) forest and inland semicoastal broadleaved remnants of ngaio (*Myoporum laetum*) and puriri (*Vitex lucens*) in gullies sheltered from frosts. Longbush/Waikereru Ecosanctuary has been retired from farming since 2000 and left to regenerate in natural vegetation, supplemented by some native plantings. As a result of mammalian browse, especially by feral goats (*Capra hircus*), some palatable native species including karamū (*Coprosma robusta*), hebes (*Veronica* sp.) and whauwhaupaku/five finger (*Pseudopanax arboreus*) are largely confined to cliffs out of reach of browsers. In total 277 vascular plant taxa have been reported from Waikereru, including 136 native (41) or endemic (95) plant species and 77 exotic plant species.

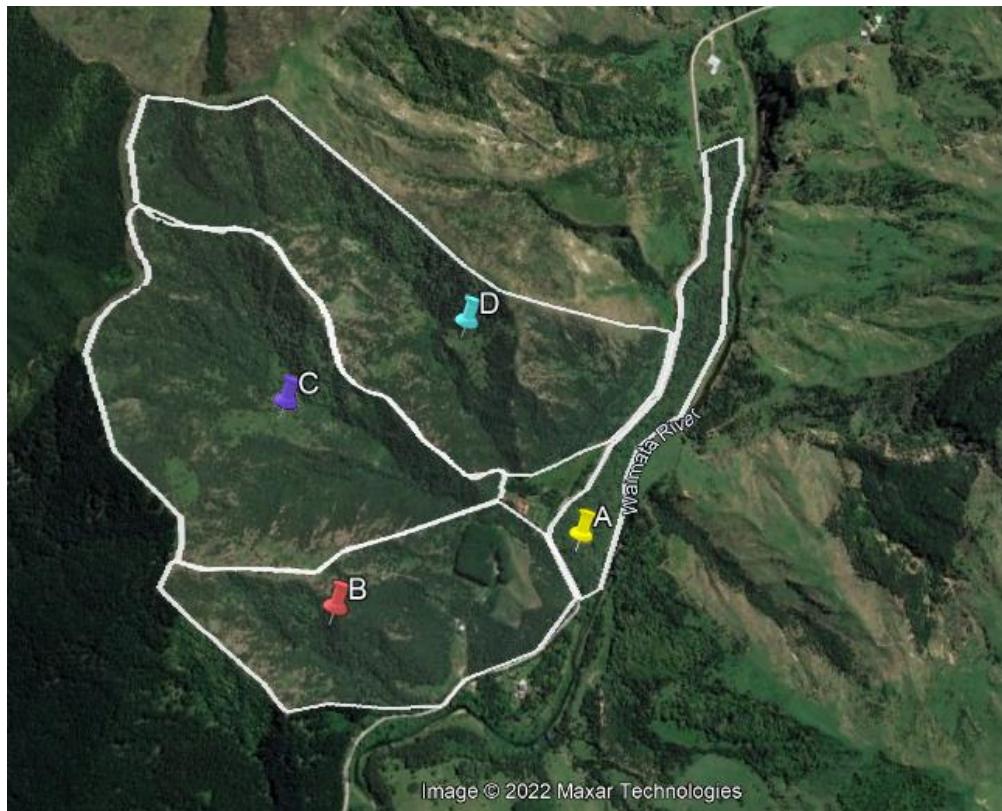


Figure 2. Vegetation map of Waikereru with alluvium (A) and three catchments (B-D) (Google maps, 2022).

Mycorrhizal communities

Three different mycorrhizal communities are prominent at Waikereru, the first being the arbuscular mycorrhizal community of the exotic pasture. This is being outcompeted by the natural succession into the kānuka forest which hosts ectomycorrhizal relationships, grading into the expanding native podocarp/broadleaved forest remnants which host arbuscular mycorrhiza relations, historically the most common mycorrhizal community in the North Island.

Longbush/Waikereru Alluvial Forest (A)

The alluvial forest of Longbush is a regionally significant remnant (polygon A of Figure 2), as similar forest has been mostly cleared in the district. The forest consists of 1.16 kms of remnant forest along the Waimata River. The broadleaved species tawa (*Beilschmiedia tawa*) dominates most of the forest canopy with occasionally kohekohe (*Didymocheton spectabilis*) (Figure 3). The understorey is thick with kawakawa (*Piper excelsum*), indicative of regrowth after the removal of cattle grazing. The forest floor has localized patches of the fern *Lastreopsis microsora* subsp. *pentangularis* (Figure 4), mokimoki (*Dendroconche scandens*) and other ground ferns.

The northern end of the forest hosts a podocarp forest remnant of kahikatea (*Dacrycarpus dacrydioides*) (Figure 5) with a ground cover of both the exotic grey sedge (*Carex divulsa*) and the endemic *Carex lambertiana* (Figure 6). A very large potentially record-breaking cabbage tree (*Cordyline australis*) is present in the alluvial forest, estimated to be around 17.5m tall (Figure 7). A large hinau (*Elaeocarpus dentatus* var. *dentatus*) occurs beside the fenceline.

There are a few small invasive weed infestations in the forest including sycamore (*Acer pseudoplatanus*) and large-leaved cotoneaster (*Cotoneaster glaucophyllus*) along the margin. Horsetail (*Equisetum arvense*) was noted on a neighbouring property and a large infestation of tradescantia (*Tradescantia fluminensis*) on the stream banks at the southern end of the block where Waikereru meets the neighbouring unfenced forest remnants.



Figure 3. Forest structure through a light well.

Figure 4. Large patch of the fern *Lastreopsis microsora* subsp. *pentangularis* on the forest floor.



Figure 5. Forest margin of alluvial kahikatea forest on road edge.

Figure 6. Understorey of kahikatea forest dominated by *Carex*.

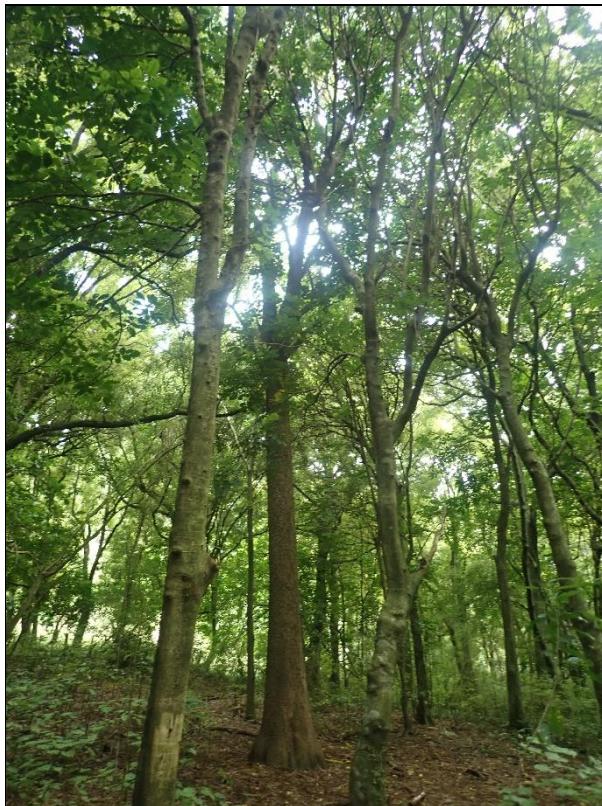


Figure 7. Large cabbage tree in the centre of the image.



Figure 8. Infestation of *Tradescantia* on stream bank.

Longbush/Waikereru Southern catchment (B)

The southern catchment of Waikereru consists mostly of kānuka regeneration with some kohekohe, tawa and tītoki (*Alectryon excelsus* subsp. *excelsus*) forest remnants. Kānuka is common on ridge faces (Figure 9) where it is outcompeting rank pasture. On drier ridges, the introduced grass *Rytidosperma racemosum* dominates the understorey with the native weeping bush grass/patiti (*Microlaena stipoides*) in more shaded areas. Also covering the ground are the mosses *Acrocladium chlamydophyllum*, *Breutelia pendula*, *Hypnum cupressiforme* and *Ptychomnion aciculare*. In more sheltered gullies, kānuka forest has an understorey of māhoe (*Melicytus ramiflorus*), hangehange (*Geniostoma ligustrifolium* var. *ligustrifolium*) and kawakawa (Figure 10), with occasional kohekohe seedlings (Figure 11).

Remnant forest stands include titoki and tawa with kohuhu (*Pittosporum tenuifolium*) on the margins. Small stands of kohekohe are present with a sparse understorey (Figure 12), with some large trees (Figure 13). Nīkau (*Rhopalostylis sapida*) and miro (*Pectinopitys ferruginea*) are also present in some of the deeper gullies

Some infestations of invasive weeds are present. Patches of old man's beard (*Clematis vitalba*) were noted in flower on the upper slopes, patches of blackberry (*Rubus armeniacus* and *R. ulmifolius*) are present in the rank pasture (Figure 14) and occasional pine (*Pinus radiata*) seedlings are present along the southern fence line.



Figure 9. Kānuka regeneration dominating ridges.



Figure 10. Understorey of kānuka forest in sheltered gullies.



Figure 11. Dense kohekohe seedlings under kānuka.

Figure 12. Sparse understorey of kohekohe remnant.



Figure 13. Large remnant kohekohe tree on sheltered slope.



Figure 14. Patch of blackberry in rank pasture.

Longbush/Waikereru Middle catchment (C)

The middle catchment is dominated by kānuka on north-facing slopes (Figure 15) and native broadleaved scrub on south-facing ones (Figure 16). Lower slopes are covered by a canopy of kānuka with an understorey of kawakawa. Native ferns line the stream edge with the moss *Achrophyllum dentatum* and *Hypopterygium* sp. (Figure 17). Occasional mature titoki occur along the stream edge, remnants of broadleaved riparian forest. The kānuka forest ground layer grades into weeping bush grass up the slopes. A variety of nitrogen-fixing cyanobacteria lichens such as *Peltigera* sp. carpet the ground. The shrubby gullies are mostly made up of tree tutu (*Coriaria arborea* var. *arborea*) and mahoe with a kawakawa understorey (Figure 18).

Ridges are covered in grassland (Figure 19) dominated by plume grass (*Dichelachne crinita*), *Rytidosperma* sp. and sweet vernal (*Anthoxanthum odoratum*) with the weedy herbs Mexican daisy (*Erigeron karvinskianus*) and yellow flax (*Linum trigynum*) (Figure 20). The moss *Hypnum cupressiforme*, apple moss (*Philonotis tenuis*) and multiple *Cladonia* species. (Figure 21) cover exposed ground. Other slopes host rank pasture dominated by browntop (*Agrostis capillaris*), cocksfoot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*) and creeping buttercup (*Ranunculus repens*), with lotus (*Lotus pedunculatus*) abundant on damper sites.

The upper reaches of the middle catchment are dominated by broadleaved shrubs with forest remnants of kohekohe, horoeka (*Pseudopanax crassifolius*) and kohuhu (Figure 16 & 22), horoeka being prominent on the forest margins. Occasional titoki occurs in the canopy with an understorey of kawakawa and shieldfern (*Polystichum neozelandicum*) and maidenhair (*Adiantum cunninghamii*) on the ground (Figure 23). A large ngaio tree is also present (Figure 24). Upper ridge kānuka forest has an understorey of putaputāwētā (*Carpodetus serratus*) and *Coprosma rhamnoides* with patches of tree tutu in full sun (Figure 25). Patches of blackberry are present throughout (Figure 26).



Figure 15. North-facing – middle catchment covered in kānuka regeneration.

Figure 16. South-facing – middle catchment covered in regenerating native broadleaved scrub.



Figure 17. Exposed mudstone in lower streams.



Figure 18. Shrubby gullies dominated by tree tutu.



Figure 19. View south from main ridge showing exotic grassland amongst kānuka regeneration.



Figure 20. Dry grassland on north-facing ridge.



Figure 10. Moss and lichen covered dry ridge with small patches of grass.



Figure 11. View over gully towards Motukeo.



Figure 12. Forest understorey of remnant.



Figure 13. Large remnant ngaio.



Figure 25. *Coprosma rhamnoides* under kānuka on ridges.



Figure 26. Large blackberry patch in gully.

Longbush /Waikereru Northern catchment (D)

The south-facing slopes of the northern catchment of Waikereru host broadleaved shrubland (Figures 27 & 28). Two large mataī (*Prumnopitys taxifolia*) where noted in the gully (Figure 29) as well as a small tawa remnant (Figure 30) with a sandstone fern-lined stream (Figure 31). The upper area is dominated by kanuka with an understorey of ponga (*Cyathea dealbata*) and mamaku (*Cyathea medullaris*) (Figures 32 & 33).

There are local weed infestations in the lower reaches of the northern catchment, including a large patch of old man's beard (Figure 34), scattered blackberry and isolated patches of Japanese honeysuckle (*Lonicera japonica*). Tutsan (*Hypericum androsaemum*) is local along the stream and a few plants of pampas (*Cortaderia* sp.) where noted in the gullies.



Figure 28. View of broadleaved shrubland on a north-facing slope.



Figure 29. Mataī (dark green in the centre) in gully.

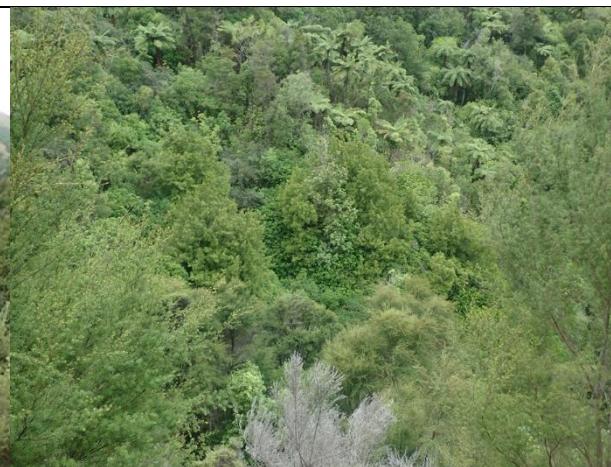


Figure 30. Tawa remnant in gully.

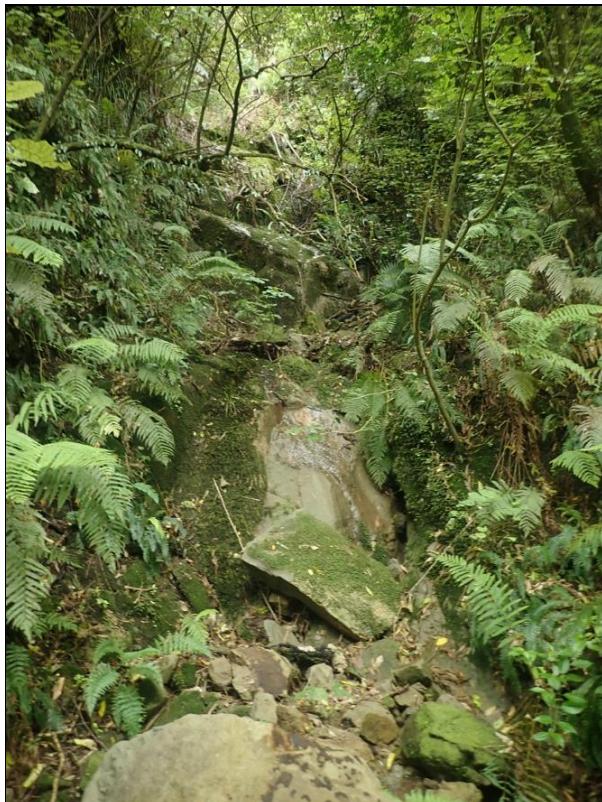


Figure 31. Sandstone stream with ferns.



Figure 32. Sparse understorey of kānuka forest looking down into gully.



Figure 33. Understorey of upper kānuka forest.



Figure 34. Large vines of old man's beard covering tree.

Plants of interest:

- One plant At Risk species – Naturally Uncommon Wairoa koromiko (*Veronica tairawhiti*) was found cliff side with a patch of *Jovellana sinclairii* (Figure 35). Wairoa koromiko is a localised endemic of East Cape region.
- The At Risk – Declining native herb *Jovellana sinclairii* was locally common forming large patches, competing against the aggressive Mexican daisy (present in catchments C & D in Figure 2) (Figures 36 & 37). A few late flowers were noted.
- The Data Deficient vine *Muehlenbeckia complexa* var. *grandifolia* was locally present on steep slopes, occasionally in flower (Figure 38).
- The At Risk – Naturally Uncommon fennel-leaved pondweed *Stuckenia pectinata* was a common water weed submerged in the Waimata River (Figure 39).

All six members of the Myrtaceae family recorded at the Waikereru are classified currently as Threatened or At Risk because of the threat of myrtle rust (*Austropuccinia psidii*) (de Lange et al. 2018a).

- Mānuka is classified as At Risk-Declining.
- Three members of the genus *Metrosideros* (rātā) and kānuka/rawirinui are classified as Threatened-Nationally
- Rōhutu (*Lophomyrtus obcordata*) is classified as Threatened – Nationally Critical. A few trees were seen in the alluvial forest (A) and some large plants in catchment C (Figure 40). Some of the planted rōhutu trees close to the dwelling were noted with infections of myrtle rust (Figure 41).



Figure 35. Wairoa koromiko growing on steep face, mostly finished flowering.



Figure 36. A patch of *Jovellana sinclairii* competing against Mexican daisy.



Figure 37. A few flowers of *Jovellana sinclairii*.



Figure 38. Flowers of the vine *Muehlenbeckia complexa* var. *grandifolia*.



Figure 39. *Stuckenia pectinata* growing submerged in the Waimata River.



Figure 40. A large specimen of rōhutu.



Figure 41. A planted rōhutu infected with myrtle rust on the new growth.

Lichens

Waikereru hosts a diversity of habitats for lichens. Of the 80 lichen species recorded, many species are ‘At Risk’ (de Lange et al. 2018b). These include:

- The three Data Deficient species: *Chrysotrix xanthina*, *Cladonia polycarpoides* and *Hypogymnia pulchrilobata*.
- Nine Naturally Uncommon species: *Crocodia poculifera*, *Gabura fasciculare* var. *fasciculare*, *Leptogium coralloideum*, *Heterodermia casarettiana*, *Parmotrema subtinctorum*, *Pseudocyphellaria bartlettii*, *Pseudocyphellaria haywardiorum*, *Pseudocyphellaria intricata* and *Sticta babingtonii*.

Fauna

During the fieldwork a range of native bird species were seen. They included the endemic species:

- Korimako/bellbird (*Anthonis melanura*).
- Kukupa (*Hemiphaga novaeseelandiae*)
- Miromiro/ North Island tomtit (*Petroica macrocephala* subsp. *toitoi*).
- Pūtangitangi/paradise shelduck (*Tadorna variegata*).
- Tirairaka/North Island fantail (*Rhipidura fuliginosa* subsp. *placabilis*).
- Tūī /kōkō (*Prosthemadera novaeseelandiae*).

Native species

- Kāhu/swamp harrier (*Circus approximans*)
- Karoro/southern black-backed gull (*Larus dominicanus* subsp. *dominicanus*).
- Ruru/morepork (*Ninox novaeseelandiae*).
- Tauhou/silvereye/waxeye (*Zosterops lateralis*).
- Warou/welcome swallow (*Hirundo neoxena*).

Other fauna species seen were:

- The endemic chorus cicada (*Amphipsalta zelandica*) was calling loudly throughout the forest.
- The native locust (*Locusta migratoria*) was occasionally seen in grassland.
- The endemic stick insect *Clitarchus hookeri* was noted in riparian forest.
- The endemic tiger beetle (*Neocicindela tuberculata*) was local on steep banks.

Pest species:

- Four feral goats were seen during surveys: one billy, one nanny and two kids.
- Feral pig (*Sus scrofa*) sign was local.
- Possum sign (browsing and scat) was seen throughout.
- Rabbit (*Oryctolagus cuniculus*) sign was local throughout.

It is highly likely that rats (*Rattus* sp.) and feral cats (*Felis catus*) are also present, even with the extensive pest control undertaken at Waikereru.

Acknowledgements

I would like to thank Dame Anne and Jeremy Salmond for permission to visit the property and Mark Smale for helpful comments on the report draft.

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APPENDIX 1

LIST OF VASCULAR PLANT SPECIES RECORDED AT WAIKERERU

sp. = species

subsp. = sub-species

var. = variety

× = hybrid

syn. = synonym

plt = planted

Class	Scientific name	Common Name	Status
Ferns and Allies	<i>Adiantum cunninghamii</i>	common maidenhair	Endemic
Ferns and Allies	<i>Adiantum diaphanum</i>	small maidenhair	Native
Ferns and Allies	<i>Adiantum fulvum</i>	maidenhair	Endemic
Ferns and Allies	<i>Adiantum hispidulum</i>	rosy maidenhair	Native
Ferns and Allies	<i>Adiantum raddianum</i>	maidenhair	Exotic
Ferns and Allies	<i>Arthropteris tenella</i>	jointed fern	Native
Ferns and Allies	<i>Asplenium bulbiferum</i>	pikopiko	Endemic
Ferns and Allies	<i>Asplenium flaccidum</i>	hanging spleenwort	Native
Ferns and Allies	<i>Asplenium gracillimum</i>		Native
Ferns and Allies	<i>Asplenium hookerianum</i>	Hooker's spleenwort	Native
Ferns and Allies	<i>Asplenium oblongifolium</i>	huruhuruwhenua	Endemic
Ferns and Allies	<i>Asplenium polyodon</i>	sickle spleenwort	Native
Ferns and Allies	<i>Austrolechnum lanceolatum</i>	rereti	Native
Ferns and Allies	<i>Austrolechnum membranaceum</i>		Endemic
Ferns and Allies	<i>Azolla rubra</i>		Native
Ferns and Allies	<i>Cranfillia fluviatilis</i>	kiwakiwa	Endemic
Ferns and Allies	<i>Cyathea dealbata</i>	ponga	Endemic
Ferns and Allies	<i>Cyathea medullaris</i>	mamaku	Native
Ferns and Allies	<i>Dendroconche scandens</i>	mokimoki	Native
Ferns and Allies	<i>Diplazium australe</i>		Native
Ferns and Allies	<i>Doodia australis</i>	rasp fern	Native
Ferns and Allies	<i>Equisetum arvense</i>	horsetail	Exotic
Ferns and Allies	<i>Histiopteris incisa</i>	mātā	Native
Ferns and Allies	<i>Hypolepis ambigua</i>	pig fern	Endemic
Ferns and Allies	<i>Icarus filiformis</i>	thread fern	Endemic
Ferns and Allies	<i>Lastreopsis glabella</i>	smooth shieldfern	Endemic
Ferns and Allies	<i>Lastreopsis hispida</i>	hairy fern	Endemic
Ferns and Allies	<i>Lastreopsis microsora</i> subsp. <i>pentangularis</i>		Endemic
Ferns and Allies	<i>Lomaria discolor</i>	petipeti	Endemic
Ferns and Allies	<i>Paesia scaberula</i>	ringfern	Endemic
Ferns and Allies	<i>Parablechnum novae-zelandiae</i>	kiokio	Endemic
Ferns and Allies	<i>Parablechnum triangularifolium</i>	kiokio	Endemic
Ferns and Allies	<i>Pellaea rotundifolia</i>	button fern	Native

Class	Scientific name	Common Name	Status
Ferns and Allies	<i>Pakau pennigera</i> (Syn. <i>Pneumatopteris pennigera</i>)	piupiu	Native
Ferns and Allies	<i>Polystichum neozelandicum</i>	shieldfern	Endemic
Ferns and Allies	<i>Polystichum wawranum</i>		Endemic
Ferns and Allies	<i>Pteridium esculentum</i>	rarauhe	Native
Ferns and Allies	<i>Pteris macilenta</i>	sweet fern	Endemic
Ferns and Allies	<i>Pteris tremula</i>	shaking brake	Native
Ferns and Allies	<i>Pyrrosia elaeagnifolia</i>	leatherleaf fern	Endemic
Ferns and Allies	<i>Zealandia pustulata</i> subsp. <i>pustulata</i>	kowaowao	Native
Gymnosperms	<i>Agathis australis</i> plt	kauri	Endemic
Gymnosperms	<i>Dacrycarpus dacrydioides</i>	kahikatea	Endemic
Gymnosperms	<i>Dacrydium cupressinum</i>	rimu	Endemic
Gymnosperms	<i>Pectinopitys ferruginea</i>	miro	Endemic
Gymnosperms	<i>Prumnopitys taxifolia</i>	mataī	Endemic
Gymnosperms	<i>Podocarpus totara</i> var. <i>totara</i>	tōtara	Endemic
Eudicots	<i>Acaena anserinifolia</i>	piripiri	Endemic
Eudicots	<i>Acaena novae-zelandiae</i>	piripiri	Native
Eudiocots	<i>Acer pseudoplatanus</i>	sycamore	Exotic
Eudicots	<i>Alectryon excelsus</i> subsp. <i>excelsus</i>	tītoki	Endemic
Eudicots	<i>Alnus glutinosa</i>	black alder	Exotic
Eudicots	<i>Amaranthus blitum</i>	amaranth	Exotic
Eudicots	<i>Amaranthus deflexus</i>	prostrate amaranth	Exotic
Eudicots	<i>Arabidopsis thaliana</i>	thale cress	Exotic
Eudicots	<i>Aristotelia serrata</i>	makomako, wineberry	Endemic
Eudicots	<i>Beilschmiedia tawa</i>	tawa	Endemic
Eudicots	<i>Brachyglottis repanda</i>	rangiora	Endemic
Eudicots	<i>Callitriche stagnalis</i>	pond water-starwort	Exotic
Eudiocots	<i>Calystegia silvatica</i> subsp. <i>disjuncta</i>	bindweed	Exotic
Eudicots	<i>Calystegia tuguriorum</i>	NZ bindweed	Native
Eudiocots	<i>Capsella bursa-pastoris</i>	shepherd's purse	Exotic
Eudicots	<i>Cardamine forsteri</i>	bittercress	Endemic
Eudicots	<i>Carpodetus serratus</i>	putaputāwētā	Endemic
Eudicots	<i>Cerastium glomeratum</i>	chickweed	Exotic
Eudicots	<i>Chamaemelum nobile</i>	chamomile	Exotic
Eudicots	<i>Cirsium arvense</i>	Californian thistle	Exotic
Eudicots	<i>Cirsium vulgare</i>	Scotch thistle	Exotic
Eudicots	<i>Clematis cunninghamii</i>		Endemic
Eudicots	<i>Clematis paniculata</i>	puawhananga	Endemic
Eudicots	<i>Clematis vitalba</i>	old man's beard	Exotic
Eudicots	<i>Coprosma lucida</i>	shining karamu	Endemic
Eudicots	<i>Coprosma rhamnoides</i>	twiggy coprosma	Endemic
Eudicots	<i>Coprosma robusta</i>	karamu	Endemic
Eudicots	<i>Coriaria arborea</i> var. <i>arborea</i>	tree tutu	Endemic
Eudicots	<i>Corynocarpus laevigatus</i>	karako	Endemic

Class	Scientific name	Common Name	Status
Eudicots	<i>Daucus carota</i>	wild carrot	Exotic
Eudicots	<i>Delairea odorata</i>	German ivy	Exotic
Eudicots	<i>Dichondra brevifolia</i>		Endemic
Eudicots	<i>Dichondra repens</i>	Mercury Bay weed	Native
Eudiots	<i>Didymocheton spectabilis</i> (Syn. <i>Dysoxylum spectabile</i>)	kohekohe	Endemic
Eudicots	<i>Digitalis purpurea</i>	foxglove	Exotic
Eudicots	<i>Dipsacus fullonum</i>	wild teasel	Exotic
Eudicots	<i>Dysphania ambrosioides</i>	Mexican tea	Exotic
Eudicots	<i>Dysphania pumilio</i>	clammy goosefoot	Exotic
Eudicots	<i>Elaeocarpus dentatus</i> var. <i>dentatus</i>	hinau	Endemic
Eudicots	<i>Entelea arborescens</i>	whau	Endemic
Eudicots	<i>Epilobium cinereum</i>	willowherb	Native
Eudicots	<i>Epilobium nerteroides</i>	willowherb	Endemic
Eudicots	<i>Epilobium nummulariifolium</i>	creeping willowherb	Endemic
Eudicots	<i>Epilobium rotundifolium</i>	round-leaved willowherb	Endemic
Eudicots	<i>Euchiton japonicus</i>		Native
Eudicots	<i>Euphorbia peplus</i>	petty spurge	Exotic
Eudicots	<i>Erechtites hieraciifolius</i>	American fireweed	Exotic
Eudicots	<i>Erigeron karvinskianus</i>	Mexican daisy	Exotic
Eudicots	<i>Erigeron sumatrensis</i>	fleabane	Exotic
Eudicots	<i>Ficus carica</i>	fig	Exotic
Eudicots	<i>Foeniculum vulgare</i>	fennel	Exotic
Eudicots	<i>Fuchsia excorticata</i>	kotukutuku	Endemic
Eudicots	<i>Galium divaricatum</i>	Lamarck's bedstraw	Exotic
Eudicots	<i>Geniostoma ligustrifolium</i> var. <i>ligustrifolium</i>	hangehange	Endemic
Eudicots	<i>Geranium gardneri</i>	gardner's geranium	Exotic
Eudicots	<i>Gernaium homanum</i>		Native
Eudicots	<i>Geranium molle</i>	dove's-foot crane'sbill	Exotic
Eudicots	<i>Geranium potentilloides</i>		Native
Eudicots	<i>Geranium robertianum</i>	herb Robert	Exotic
Eudicots	<i>Jovellana sinclairii</i>	New Zealand calceolaria	Endemic
Eudicots	<i>Haloragis erecta</i> subsp. <i>erecta</i>	toatoa	Endemic
Eudicots	<i>Hebe stricta</i> var. <i>stricta</i> (Syn. <i>Veronica stricta</i> var. <i>stricta</i>)	koromiko	Endemic
Eudicots	<i>Hebe tairawhiti</i> (Syn. <i>Veronica tairawhiti</i>)	Wairoa koromiko	Endemic
Eudicots	<i>Helminthotheca echioides</i>	bristly oxtongue	Exotic
Eudicots	<i>Hydrocotyle elongata</i>		Endemic
Eudicots	<i>Hydrocotyle moschata</i> var. <i>moschata</i>	hairy pennywort	Endemic
Eudicots	<i>Hydrocotyle moschata</i> var. <i>parvifolia</i>	pennywort	Endemic
Eudicots	<i>Hypericum androsaemum</i>	tutsan	Exotic

Class	Scientific name	Common Name	Status
Eudicots	<i>Hypericum humifusum</i>	trailing St John's wort	Exotic
Eudicots	<i>Hedycarya arborea</i>	porokaiwhiri	Endemic
Eudicots	<i>Hoheria sexstylosa</i>	houhere	Endemic
Eudicots	<i>Kunzea robusta</i>	kānuka	Endemic
Eudicots	<i>Lapsana communis</i>	nipplewort	Exotic
Eudicots	<i>Laurelia novae-zelandiae</i>	pukatea	Endemic
Eudicots	<i>Lepidium didymum</i>	twin cress	Exotic
Eudicots	<i>Lepidium sp.</i>		Exotic
Eudicots	<i>Leptospermum scoparium</i> agg.	mānuka	Native
Eudicots	<i>Leucanthemum vulgare</i>	oxeye daisy	Exotic
Eudicots	<i>Leucopogon fasciculatus</i>	mingimingi	Endemic
Eudicots	<i>Linum bienne</i>	pale flax	Exotic
Eudicots	<i>Linum trigynum</i>	yellow flax	Exotic
Eudicots	<i>Lonicera japonica</i>	Japanese honeysuckle	Exotic
Eudicots	<i>Lophomyrtus obcordata</i>	rōhutu	Endemic
Eudicots	<i>Lotus pedunculatus</i>	lotus	Exotic
Eudicots	<i>Melicope ×mantellii</i>		Endemic
Eudicots	<i>Medicago lupulina</i>	black medick	Exotic
Eudicots	<i>Melicope ternata</i> plt	whārangī	Endemic
Eudicots	<i>Melicytus ramiflorus</i> subsp. <i>ramiflorus</i>	māhoe	Endemic
Eudicots	<i>Mentha</i> sp.		Exotic
Eudicots	<i>Metrosideros colensoi</i>	rātā	Endemic
Eudicots	<i>Metrosideros diffusa</i>	white rātā	Endemic
Eudicots	<i>Metrosideros perforata</i>	akatea	Endemic
Eudicots	<i>Modiola caroliniana</i>	creeping mallow	Exotic
Eudicots	<i>Muehlenbeckia australis</i>	pohuehue	Endemic
Eudicots	<i>Muehlenbeckia complexa</i> var. <i>grandifolia</i>	pohuehue	Endemic
Eudicots	<i>Myoporum laetum</i>	ngaio	Endemic
Eudicots	<i>Myrsine australis</i>	māpou	Endemic
Eudicots	<i>Nasturtium officinale</i>	watercress	Exotic
Eudicots	<i>Nestegis lanceolata</i>	white maire	Endemic
Eudicots	<i>Nertera depressa</i>	nertera	Native
Eudicots	<i>Olearia rani</i> var. <i>colorata</i>	heketara	Endemic
Eudicots	<i>Orobanche minor</i>	broomrape	Exotic
Eudicots	<i>Oxalis corniculata</i>	wood sorrel	Exotic
Eudicots	<i>Oxalis exilis</i>	creeping oxalis	Native
Eudicots	<i>Oxalis incarnata</i>	Pink sorrel	Exotic
Eudicots	<i>Ozothamnus leptophyllus</i>	tauhinu	Endemic
Eudicots	<i>Passiflora tetrandra</i>	kohia	Endemic
Eudicots	<i>Parsonsia</i> sp.	kaihua	Endemic
Eudicots	<i>Pennantia corymbosa</i>	kaikōmako	Endemic
Eudicots	<i>Persicaria decipiens</i>	tutunawai	Native
Eudicots	<i>Persicaria hydropiper</i>	water pepper	Exotic
Eudicots	<i>Persicaria maculosa</i>		Exotic

Class	Scientific name	Common Name	Status
Eudicots	<i>Phytolacca octandra</i>	inkweed	Exotic
Eudicots	<i>Pilosella officinarum</i>	hawkweed	Exotic
Eudicots	<i>Pinus radiata</i>	Monterey pine	Exotic
Eudicots	<i>Piper excelsum</i> subsp. <i>excelsum</i>	kawakawa	Endemic
Eudicots	<i>Pittosporum eugenioides</i>	tarata	Endemic
Eudicots	<i>Pittosporum tenuifolium</i>	kohuhu	Endemic
Eudicots	<i>Plantago lanceolata</i>	narrowleaf plantain	Exotic
Eudicots	<i>Plantago major</i>	plantain	Exotic
Eudicots	<i>Polygonum aviculare</i>	knotweed	Exotic
Eudicots	<i>Populus alba</i>	silver poplar	Exotic
Eudicots	<i>Populus</i> sp.	poplar	Exotic
Eudicots	<i>Potentilla indica</i>	Indian strawberry	Exotic
Eudicots	<i>Pseudopanax arboreus</i>	whauwhaupaku	Endemic
Eudicots	<i>Pseudopanax crassifolius</i>	horoeka	Endemic
Eudicots	<i>Prunella vulgaris</i>	self-heal	Exotic
Eudicots	<i>Prunus</i> sp.		Exotic
Eudicots	<i>Ranunculus reflexus</i>	mārūrū	Endemic
Eudicots	<i>Ranunculus repens</i>	creeping buttercup	Exotic
Eudicots	<i>Rorippa</i> sp.		
Eudicots	<i>Rosa rubiginosa</i>	sweet brier	Exotic
Eudicots	<i>Rubus armeniacus</i>	blackberry	Exotic
Eudicots	<i>Rubus cissoides</i>	tātarāmoa	Endemic
Eudicots	<i>Rubus squarrosus</i>	leafless lawyer	Endemic
Eudicots	<i>Rubus ulmifolius</i>	blackberry	Exotic
Eudicots	<i>Rumex acetosella</i>	sheep's sorrel	Exotic
Eudicots	<i>Rumex conglomeratus</i>	clustered dock	Exotic
Eudicots	<i>Salix</i> sp.	willow	Exotic
Eudicots	<i>Schefflera digitata</i>	patē	Endemic
Eudicots	<i>Scrophularia auriculata</i>	water figwort	Exotic
Eudicots	<i>Senecio bipinnatisectus</i>	Australian fireweed	Native
Eudicots	<i>Senecio glastifolius</i>	pink ragwort	Exotic
Eudicots	<i>Senecio minimus</i>	fireweed	Native
Eudicots	<i>Senecio vulgaris</i>	groundsel	Exotic
Eudicots	<i>Sherardia arvensis</i>	field madder	Exotic
Eudicots	<i>Sison amomum</i>	stone parsley	Exotic
Eudicots	<i>Solanum americanum</i>	small-flowered nightshade	Native
Eudicots	<i>Solanum chenopodioides</i>	velvety nightshade	Exotic
Eudicots	<i>Solanum nigrum</i>	black nightshade	Exotic
Eudicots	<i>Solanum pseudocapsicum</i>	Jerusalem cherry	Exotic
Eudicots	<i>Sonchus asper</i>	prickly sowthistle	Exotic
Eudicots	<i>Sonchus oleraceus</i>	sowthistle	Exotic

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Eudicots	<i>Sophora chathamica</i>	kōwhai	Endemic
Eudicots	<i>Sophora tetrapetala</i>	large-leaved kōwhai	Endemic
Eudicots	<i>Stachys sylvatica</i>	hedge woundwort	Exotic
Eudicots	<i>Stellaria parviflora</i>	NZ chickweed	Native
Eudicots	<i>Streblus heterophyllus</i>	tūrepo	Endemic
Eudiicots	<i>Symphytum subulatum</i>	saltmarsh aster	Exotic
Eudicots	<i>Taraxacum officinale</i> agg.	dandelion	Exotic
Eudicots	<i>Torilis arvensis</i>	hedge parsley	Exotic
Eudicots	<i>Trifolium arvense</i>	haresfoot trefoil	Exotic
Eudicots	<i>Trifolium dubium</i>	lesser trefoil	Exotic
Eudicots	<i>Trifolium glomeratum</i>	clustered clover	Exotic
Eudicots	<i>Trifolium repens</i>	white clover	Exotic
Eudicots	<i>Verbascum thapsus</i>	woolly mullein	Exotic
Eudicots	<i>Verbena incompta</i>	purpletop	Exotic
Eudicots	<i>Verbena officinalis</i>	verbain	Exotic
Eudicots	<i>Veronica anagallis-aquatica</i>	water speedwell	Exotic
Eudicots	<i>Veronica serpyllifolia</i>	thyme-leaved speedwell	Exotic
Eudicots	<i>Veronica persica</i>	birdseye speedwell	Exotic
Eudicots	<i>Vicia sativa</i>	vetch	Exotic
Eudicots	<i>Vitex lucens</i>	pūriri	Endemic
Monocots	<i>Agrostis capillaris</i>	brown top	Exotic
Monocots	<i>Agrostis stolonifera</i>	creeping bent	Exotic
Monocots	<i>Anthoxanthum odoratum</i>	sweet vernal	Exotic
Monocots	<i>Arrhenatherum elatius</i>	tall oat grass	Exotic
Monocots	<i>Bromus catharticus</i>	prairie grass	Exotic
Monocots	<i>Carex divulsa</i>	grey sedge	Exotic
Monocots	<i>Carex forsteri</i>		Endemic
Monocots	<i>Carex geminata</i>	rautahi	Endemic
Monocots	<i>Carex lambertiana</i>		Endemic
Monocots	<i>Carex solandri</i>		Endemic
Monocots	<i>Carex ochrosaccus</i>		Endemic
Monocots	<i>Carex uncinata</i>	kamu	Native
Monocots	<i>Carex virgata</i>	pūkio	Endemic
Monocots	<i>Catapodium rigidum</i>	hard grass	Exotic
Monocots	<i>Cordyline australis</i>	cabbage tree, ti kouka	Endemic
Monocots	<i>Cortaderia</i> sp.	pampass	Exotic
Monocots	<i>Crocosmia x crocosmiiflora</i>	montbretia	Exotic
Monocots	<i>Cynodon dactylon</i>	couch grass	Exotic
Monocots	<i>Cynosurus cristatus</i>	crested dogtail	Exotic
Monocots	<i>Dactylis glomerata</i>	cocksfoot	Exotic
Monocots	<i>Dichelachne crinita</i>	plume grass	Native
Monocots	<i>Drymoanthus adversus</i>		Endemic
Monocots	<i>Echinochloa crus-galli</i>	barnyard grass	Exotic

Class	Scientific name	Common Name	Status
Monocots	<i>Festuca rubra</i> subsp. <i>rubra</i>	red fescue	Exotic
Monocots	<i>Gastrodia cunninghamii</i>	black orchid	Endemic
Monocots	<i>Holcus lanatus</i>	Yorkshire fog	Exotic
Monocots	<i>Isolepis prolifera</i>	bullrush	Native
Monocots	<i>Isolepis reticularis</i>		Native
Monocots	<i>Juncus articulatus</i>	joined rush	Exotic
Monocots	<i>Juncus australis</i>	wīwī	Native
Monocots	<i>Juncus edgariae</i>	wīwī	Endemic
Monocots	<i>Landoltia punctata</i>	duckweed	Exotic
Monocots	<i>Lemna disperma</i>	duckweed	Native
Monocots	<i>Libertia grandiflora</i>	Mikoikoi, NZ iris	Endemic
Monocots	<i>Lolium arundinaceum</i> subsp. <i>arundinaceum</i>	tall fescue	Exotic
Monocots	<i>Microlaena avenacea</i>		Native
Monocots	<i>Microlaena polynoda</i>	bamboo grass	Endemic
Monocots	<i>Microlaena stipoides</i>	pātītī	Native
Monocots	<i>Microtis unifolia</i>	onion-leaved orchid	Native
Monocots	<i>Oplismenus hirtellus</i> subsp. <i>imbecillis</i>	basket grass	Native
Monocots	<i>Panicum dichotomiflorum</i>	panic grass	Exotic
Monocots	<i>Paspalum dilatatum</i>	paspalum	Exotic
Monocots	<i>Paspalum distichum</i>	mercer grass	Exotic
Monocots	<i>Phormium cookianum</i> subsp. <i>hookeri</i>	mountain flax, wharariki	Endemic
Monocots	<i>Phormium tenax</i>	flax, harakeke	Endemic
Monocots	<i>Potamogeton crispus</i>	curly pondweed	Exotic
Monocots	<i>Pterostylis banksii</i>	tutukiwi	Endemic
Monocots	<i>Rhopalostylis sapida</i>	nīkau	Endemic
Monocots	<i>Ripogonum scandens</i>	kareao, supplejack	Endemic
Monocots	<i>Rytidosperma biannulare</i>		Endemic
Monocots	<i>Rytidosperma gracile</i>	dainty bristle grass	Native
Monocots	<i>Rytidosperma racemosum</i>		Exotic
Monocots	<i>Schoenoplectus tabernaemontani</i>	kuawa	Native
Monocots	<i>Setaria parviflora</i>	bristle grass	Exotic
Monocots	<i>Sporobolus africanus</i>	rat'stail	Exotic
Monocots	<i>Stuckenia pectinata</i>	fennel-leaved pondweed	Native
Monocots	<i>Tradescantia fluminensis</i>	tradescantia, wandering willie	Exotic

Moss Species

*=introduced

Acrocladium chlamydophyllum
Achrophyllum dentatum
Breutelia pendula
**Bryum argenteum*
**Calliergonella cuspidata*
Campylopus introflexus
Cyathophorum bulbosum
Dicranoloma billardierei
Ditrichum difficile
Echinodium hispidum
Fissidens sp.
Hypnum cupressiforme
Hypopterygium sp.
Leptostomum sp.
Leucobryum javense
Lopidium concinnum
Macrocoma tenuis
Macromitrium
Papillaria crocea
Philonotis tenuis
Ptychomnion aciculare
Racomitrium sp.
Racopilum robustum?
Syntrichia antarctica
Thuidiopsis furfurosa
Thuidium laeviusculum
Trachyloma diversinerve
Triquetrella papillata
Weissia controversa var. *controversa*

Liverwort Species *=introduced

Lobatiriccardia sp.
**Lunularia cruciata*
Monoclea forsteri
Pallavicinia innovans
Porella sp.
Reboulia hemisphaerica
Trichocolea sp.

Lichen species

Biatoropsis usnearum
Brigantiaea chrysosticta
Brigantiaea lobulata
Caloplaca sp.
Chrysothrix xanthina
Cladia aff. *inflata*
Cladonia confusa
Cladonia blanchonii
Cladonia darwinii
Cladonia chlorophaea
Cladonia pleurota
Cladonia polycarpoides
Coccocarpia palmicola
Coccotrema cucurbitula
Coenogonium implexum
Collema laeve
Collema leucocarpum
Collema subconveniens
Crocodia poculifera
Dibaeis arcuata
Dirinaria picta
Flavoparmelia soredians
Fuscopannaria subimmixta
Gabura fascicularis var. *fascicularis*
Heterodermia casarettiana
Hypogymnia pulchrilobata
Lecanora flavopallida
Lecanora sp.
Leioderma sorediatum
Leparia finkii
Leptogium coralloideum
Leptogium cyanescens
Leptogium oceanianum
Menegazzia neozelandica
Micarea prasina
Notoparmelia erumpens
Normandina pulchella
Pannaria elixii
Pannaria fulvescens
Pannaria leproloma
Pannaria aff. *minutiphylla*
Parmeliella nigrocincta
Parmotrema subtinctorum
Parmotrema reticulatum
Peltigera nana
Peltigera dolichorrhiza

Pertusaria sp.
Phaeophyscia sp.
Physcia jackii
Physcia poncinsii
Physma chilense
Peltigera dolichorhiza
Placopsis sp.
Pseudocypphellaria bartlettii
Pseudocypphellaria carpoloma
Pseudocypphellaria chloroleuca
Pseudocypphellaria coriacea
Pseudocypphellaria crocata agg.
Pseudocypphellaria dissimilis
Pseudocypphellaria episticta
Pseudocypphellaria haywardiorum
Pseudocypphellaria intricata
Pseudocypphellaria neglecta
Podostictina pickeringii
Porina exocha
Punctelia borreri
Pyrenula sp.
Pyxine subcinerea
Ramalina celastri
Scytinium kauaiense
Stereocaulon ramulosum
Sticta babingtonii
Sticta fuliginosa
Sticta latifrons
Sticta limbata
Sticta martinii
Strigula sp.
Usnea angulata
Usnea dasaea
Usnea rubicunda

Fungi

Auricularia cornea
Cordyceps sinclairii
Favolaschia claudopus
Paurocotylis pila
Russula sp.