



# Flora of NZ - Native plant identification studyguide - Gymnosperms

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Made on the New Zealand Plant Conservation Network website – [www.nzpcn.org.nz](http://www.nzpcn.org.nz)

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## Introduction

This book was compiled from information stored on the website of the New Zealand Plant Conservation Network ([www.nzpcn.org.nz](http://www.nzpcn.org.nz)).

This website was established in 2003 as a repository for information about New Zealand's threatened vascular plants. Since then it has grown into a national database of information about all plants in the New Zealand botanic region including both native and naturalised vascular plants, threatened mosses, liverworts and fungi.

Funding to develop the website was provided by the New Zealand Government's Terrestrial and Freshwater Biodiversity Information System Programme (TFBIS).

The species information used on the website has come from a variety of sources. The indigenous vascular plant text was written largely by Dr Peter de Lange (former Network Vice President). Peter based the descriptions on a wide range of sources including the Flora of NZ Series (Allan 1961, Moore and Edgar 1970 and Webb et al 1987) as well as numerous other taxonomic treatments. For a full bibliography of information sources see the References at the end of this book.

Where no published treatment was available Peter used herbarium specimens and his own knowledge of the flora to prepare species pages. Various other contributors have provided text and additional information to many species pages including botanists such as Mike Thorsen, John Barkla, Cathy Jones, Simon Walls, Nick Singers and many others. The threatened fungi text was written by Eric Mackenzie and Peter Buchanan (Landcare Research).

More than 200 photographers have kindly provided images to illustrate the website and for use in this book especially John Smith-Dodsworth, Jeremy Rolfe, Peter de Lange, Wayne Bennett and Gillian Crowcroft.

## The New Zealand Botanic Region

The information on the Network website, from which this book was compiled, is for species that are indigenous to or naturalised within the New Zealand Botanic Region as defined by Allan (1961). The New Zealand botanic region encompasses the Kermadec, Manawatawhi/Three Kings, North, South, Stewart Island/Rakiura, Chatham, Antipodes, Bounties, Snares, Auckland Campbell island/Motu Ihupuku and Macquarie.

## About the Network

The Network has more than 800 members worldwide and is New Zealand's largest non-governmental organisation solely devoted to the protection and restoration of New Zealand's indigenous plant life.

The vision of the New Zealand Plant Conservation Network is that '*no indigenous species of plant will become extinct nor be placed at risk of extinction as a result of human action or indifference, and that the rich, diverse and unique plant life of New Zealand will be recognised, cherished and restored*'.

Since it was founded in 2003 the Network has undertaken a range of conservation initiatives in order to achieve its vision.

That work has included:

- Training people in plant conservation
- Publishing plant books, reports and posters
- Raising money for the David Given Threatened Plant Research Trust to pay for plant conservation research scholarships
- Advocacy to raise awareness of the importance of plant life in general and especially New Zealand's status as a Global Centre of Plant Diversity
- Lobbying central and regional government and business to protect indigenous plant life
- Educating people about plant life through the Network website
- Connecting people through the monthly newsletter, the Network conference and the annual general meeting

## What is a threatened plant?

The NZ Threatened Plant Committee was formed in 1991 and ever since then it has met at regular intervals to review the status of indigenous vascular plants. It is made up of a small group of botanists that between them have an extensive knowledge of the native plants of New Zealand. This group is chaired by Dr Peter de Lange of the New Zealand Department of Conservation.

This committee applies a set of criteria to each native plant to determine its conservation status. The resulting list of species classified as threatened is published in the NZ Journal of Botany (see for example de Lange et al. 2009). The main threat categories used are: Extinct, Critical, Endangered, Vulnerable, Declining. Other categories used are: Recovering, Relict, Naturally Uncommon, Coloniser, Vagrant and Data Deficient. For vascular plants the threat status used in this book is taken from the 2009 conservation assessment (see de Lange et al 2009).

More recently other committees have been established to review the status of non-vascular plants but their lists are yet to be published.

# *Agathis australis*

## Common Name(s):

kauri, kauri pine

## Current Threat Status (2012):

Not Threatened

## Distribution:

Endemic. Occurring from Te Pahi south to Pukenui (near Kawhia) in the West and near Te Puke in the East. Over much of its former range it has been heavily logged, such that the best stands now only occur in the Coromandel and Waitakere Ranges, on Great and little Barrier Islands, and in Northland at Waipoua, Trounson, Omahuta, Puketi, Herekino, Warawara and Radar Bush forests. Despite its northerly limit this species has been successfully grown as far south as Oban, Stewart Island, and seedlings have been observed near planted adults in Wellington, Nelson and Christchurch.

## Habitat:

The species forms its own forest type - Kauri forest - which is typified by dense canopies of kauri. Common associates in the northern half of its range may include taraire (*Beilschmiedia tarairi*), northern rata (*Metrosideros robusta*), rimu (*Dacrydium cupressinum*), towai (*Weinmannia silvicola*), and makamaka (*Ackama rosifolia*). Historically kauri forest seems to have been best developed on river terraces, coastal plains and the generally flat flood basalts of the Tangihua complex, which make the dominant geology of Waipoua, Omahuta, Puketi, Trounson. Some people believe that the hill and range occurrences, which is where most stands can now be seen, are relictual stands not truly favoured by the species, but merely examples of where it can grow, and of course locations where it was usually left because log extraction was less feasible.

## Features\*:

Stout, monoecious forest tree 30-60 m tall, with trunk 3-4(-7) m diam. Trunk typically devoid of branches for majority of its height. Trees at ricker development stage have a columnar growth form with trunk scarcely free of branches. As tree matures the basal branches are progressively abscised, eventually leaving bare trunk typical of mature specimens. Bark blue-grey, falling in large thick flakes with scalloped margins, undersides of discarded bark and freshly exposed underbark rust brown. Leaves (needles) alternate to subopposite, sessile, thick and leathery; juvenile leaves 50-100 mm x 5-12 mm, lanceolate, pinkish green, often black-spotted (a fungus specific to kauri causes this); adult leaves 20-35 mm, oblong, apex obtuse. Male cones 20-50 mm long, stout, cylindrical, female cones globose 50-75 mm diam., cone-scales (carpidia) deciduous, at first broad but then gradually narrowing toward base, bearing one ovule per scale. Seeds ovoid, compressed, margins winged.

## Flowering:

Female cones produced from September - December. Male cones throughout the year but most common from September to January

## Fruiting:

Mature cones occur anytime from December through to May, with rare persistent examples found on trees right up to about August

## Threats:

Not strictly regarded as threatened but some stands of kauri on private land remain vulnerable to illegal logging, while trees are still periodically removed (although only by permit or with approval) for cultural purposes, such as for making waka (canoes) or other Maori buildings and structures. Some small southerly populations are rather vulnerable to goat browse destroying regenerating seedlings and saplings. More recently kauri dieback (also known as *Phytophthora taxon Agathis* or PTA) has caused the death of kauri trees and has become a serious issue (see the information and links provided below and see images above of lesions and thinning caused by the disease).

## \*Attribution:

Fact Sheet Prepared for NZPCN by P.J. de Lange May 2004. Description adapted from Allan (1961).

## References and further reading:

Allan, H.H. 1961: Flora of New Zealand. Vol. I. Wellington, Government Printer.

Ogden, J. 1988. Kauri: Key to Auckland's past. *Auckland Botanical Society Journal*, 43: 17-19.

Enright, N., Cameron, E.K. 1988. The soil seed bank of a kauri (*Agathis australis*) forest remnant near Auckland, New Zealand. *NZ Journal of Botany*, Vol. 26, 223-236

Sem, G. and Enright, N.J. 1995. *The soil seed bank in Agathis australis* (D. Don) Lindl. (kauri) forests of northern New Zealand. *New Zealand Journal of Botany*, 33 (2). pp. 221-235.  
<http://dx.doi.org/10.1080/0028825X.1995.10410485>

Mirams, R.V. 1957. Aspects of the natural regeneration of the kauri (*Agathis australis* Salisb.). *Transactions of the Royal Society of New Zealand*, Vol. 84, Part 4, 661-680

Sando, C.T. Notes on *Agathis australis*. *NZ Journal of Forestry*.

J. B. Dickie and R. D. Smith (1995). Observations on the survival of seeds of *Agathis* spp. stored at low moisture contents and temperatures. *Seed Science Research*, 5, pp 5-14. doi:10.1017/S0960258500002531.

Wyse, S.V., Burns, B.R. 2013. Effects of *Agathis australis* (New Zealand kauri) leaf litter on germination and seedling growth differs among plant species. *NZ Journal of Ecology*, 37(2), 178-183

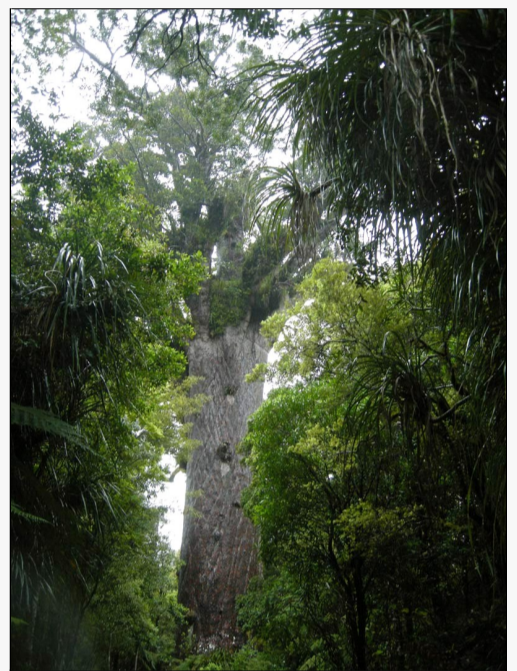
## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=2047](http://nzpcn.org.nz/flora_details.asp?ID=2047)



**Caption:** Waipoua Forest, Northland - Tane Mahuta

**Photographer:** John Sawyer



**Caption:** Waipoua Forest, Northland - Tane Mahuta

**Photographer:** John Sawyer



# *Dacrycarpus dacrydioides*

**Common Name(s):**

kahikatea, white pine

**Current Threat Status (2012):**

Not Threatened

**Distribution:**

Endemic. North, South and Stewart Islands

**Habitat:**

Lowland forest, formerly dominant on frequently flooded, and/or poorly drained alluvial soils. Occasionally extends into lower montane forest. Once the dominant tree of a distinct swamp forest type all but extinct in the North Island - the best examples remain on the West Coast of the South Island.

**Features:**

Stout, dioecious, cohort-forming conifer, 50 (-65) m. tall. Trunk 1(-2) m diam., often fluted and buttressed. Bark grey to dark-grey, falling in thick, sinuous flakes. Wood white, odourless. Trunks bare for 3/4 of length, subadults with a distinctive columnar growth habit, branches arising from 1/3 to 1/2 of trunk length. Branchlets slender, drooping. Leaves of juveniles subdistichous, subpatent, narrow-linear, subfalcate, acuminate, decurrent, 3-7 x 0.5-1mm red, wine-red, dark-green to green.; of subadults less than or equal to 4 mm., dark green or red; those of adults 1-2 mm., imbricating, appressed, keel, subtrigonus, lanceolate-subulate to acuminate with broader base, brown-green or glaucous. Male cones terminal, oblong, 10 mm. Pollen pale yellow. Ovule, terminal, solitary glaucous. Receptacle fleshy, oblong, compressed, warty, 2.5-6.5 mm., yellow to orange-red. Seed broadly obovate to circular (4-)4.5-6 mm diam., purple-black, thickly covered in glaucous bloom.

**Flowering:**

October - January

**Fruiting:**

February - April

**Threats:**

Not Threatened, although as a forest-type it has been greatly reduced through widespread logging. Very few intact examples of kahikatea-dominated forest remain in the North Island.

**References and further reading:**

Gardner, R. 2001. Notes towards an excursion Flora. Rimu and kahikatea (Podocarpaceae). Auckland Botanical Society Journal, 56: 74-75

Thorsen, M. J.; Dickinson, K. J. M.; Seddon, P. J. 2009. Seed dispersal systems in the New Zealand flora. Perspectives in Plant Ecology, Evolution and Systematics 11: 285-309

**For more information, visit:**

[http://nzpcn.org.nz/flora\\_details.asp?ID=2099](http://nzpcn.org.nz/flora_details.asp?ID=2099)



**Caption:** Fruit.

**Photographer:** © John Braggins



**Caption:** *Dacrycarpus dacrydioides*

**Photographer:** Wayne Bennett

# *Dacrydium cupressinum*

## Common Name(s):

rimu, red pine

## Current Threat Status (2012):

Not Threatened

## Distribution:

Endemic. North, South and Stewart Islands from North Cape south. Uncommon in large parts of the eastern South Island. Facultatively extinct on Banks Peninsula, where one natural tree is all that remains. Rimu is the type of the genus *Dacrydium*.

## Habitat:

Lowland to montane forest - occasionally ascending to subalpine scrub.

## Features\*:

Dioecious conifer 35(-60) m tall. Adult trees with trunk bare of branches for 3/4 of length. Trunk stout, 1.5-2 m diam., bark dark brown, falling off in large thick flakes. Wood dark red. Branches in juveniles numerous, slender, branchlets pendulous. Adult branches few, spreading, branchlets slender, pendulous. Leaves dark green, bronze-green, red-green or orange, imbricate, those of juveniles 4-7(-10) mm., 0.5-1 mm wide, keeled, acute, linear-subulate, subfalcate, decurrent; those of subadults ascending, incurved 4-6 mm., rhomboid; of adults similar but appressed, 2-3 mm., rigid, subacute, trigonous. Male and Female "cones" first appear on subadults. Male cones (strobili) solitary or paired, terminal 5-10 mm., oblong. Pollen yellow. Ovules solitary, terminal on up-curved branchlets. Receptacle a fleshy red or deep-orange cup 1-2 mm long. Seed oblong or elliptic-oblong, compressed in section, 3-3.8(-4) mm long, semi-glossy, dark-brown.

## Fruiting:

### Flowering:

December -  
March

Fruits take a year or more to mature and co-occur with young female cones, they are most frequently seen between February and May.

## Threats:

Not Threatened, although as a forest-type it has been greatly reduced through widespread logging. Very few intact examples of rimu-dominated forest remain in the North Island.

## \*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange 3 February 2006. Description adapted from Allan (1961), Webb & Simpson (2001), fresh material and herbarium specimens.

## References and further reading:

Allan, H.H. 1961: Flora of New Zealand. Wellington, Government Printer.

Gardner, R. 2001. Notes towards an excursion Flora. Rimu and kahikatea (Podocarpaceae). Auckland Botanical Society Journal, 56: 74-75

Kirk, T. 1889: The Forest Flora of New Zealand. Wellington, Government Printer.

Thorsen, M. J.; Dickinson, K. J. M.; Seddon, P. J. 2009. Seed dispersal systems in the New Zealand flora. Perspectives in Plant Ecology, Evolution and Systematics 11: 285-309

Webb, C.J.; Simpson, M.J.A. 2001: Seeds of New Zealand Gymnosperms and Dicotyledons. Christchurch, Manuka Press.

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=2100](http://nzpcn.org.nz/flora_details.asp?ID=2100)



**Caption:** Pihanga, Tongariro National Park

**Photographer:** John Sawyer



**Caption:** Pihanga, Tongariro National Park

**Photographer:** John Sawyer



# *Phyllocladus trichomanoides*

## Common Name(s):

Tanekaha, celery pine

## Current Threat Status (2012):

Not Threatened

## Distribution:

Endemic. New Zealand: North and South Islands. In the North Island widespread from Te Pahi to about the northern Manawatu - after which it is scarce. In the South Island confined to the Marlborough Sounds, northern Richmond Range and North-West Nelson from Puponga south to about Kahurangi Light and across to Abel Tasman National Park.

## Habitat:

Found from sea level to c.1000 m a.s.l. Tanekaha is a common tree in northern New Zealand where it often found growing in association with kauri (*Agathis australis*) on ridge lines. Tanekaha is also common in secondary regrowth forest overlying poorly draining and/or infertile soils. It can be very common in reverting fire-induced gumland scrub. In the Central North Island tanekaha-dominated forest is locally common overlying ignimbrite rock and this forest type is very much a feature of the northern Taupo - King Country - Atiamuri area where extensive tanekaha-dominated forests are present overlying such high aspect ratio ignimbrites as the Whakamaru Ignimbrite. Further south Tanekaha is rarely such a major component of the forest canopy.

## Features:

Monoecious tree up to 25 m, trunk up to 1 m diameter; phylloclades alternate, pinnately arranged on whorled rachides up to 300 mm long. Leaves of juveniles up to 20 mm long, narrow-linear, deciduous; of adults much smaller. Phylloclades 10-15 per rachis, irregularly and broadly rhomboid, flabellately lobed, cuneate at base; lobes obtuse to truncate, margins minutely crenulate; leaf-denticles small, subulate, 1.5-3.0 mm long, up to 1.5 mm wide. Male strobili terminal in clusters of 5-10, pedicels 3-10 mm long; staminal portion c.10 mm long, apiculus small, triquetrous; carpoidia rather thick, marginal on reduced final phylloclades up to 30 mm long, in clusters of 6-8; seeds nutlike, exserted beyond white, fleshy, irregularly crenulate cupule, c.3 mm long. Description from: Allan (1961).

## Flowering:

September - December

## Fruiting:

January - April

## Threats:

Not Threatened

## References and further reading:

Allan, H.H. 1961: Flora of New Zealand. Vol. I. Government Printer, Wellington.

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=1117](http://nzpcn.org.nz/flora_details.asp?ID=1117)



**Caption:** *Phyllocladus trichomanoides* (Tanekaha)

**Photographer:** Wayne Bennett



**Caption:** Catkins of *Phyllocladus trichomanoides*

**Photographer:** Wayne Bennett

## *Podocarpus totara* var. *totara*

### Common Name(s):

Totara

### Current Threat Status (2012):

Not Threatened

### Distribution:

Endemic. Common throughout most of the North and South Islands. Present but extremely scarce on Stewart Island (Freshwater River).

### Habitat:

Widespread and at times abundant tree of lowland, montane and lower subalpine forest. May also form a vegetation type in which it is the dominant species.

### Features:

Robust dioecious conifer up to 30 m tall. Trunk stout, 2-3 m diam., clad in thick, corky, furrowed and somewhat stringy reddish-grey bark. Trunk without branches at base, branches stout, erect to spreading. Leaf bud narrower than or the same diam., as branchlet, surrounded by caducous, papery, narrowly lanceolate bracts. Leaves brownish-green, erect, leathery; juvenile 20 x 1-2 mm, adults 15-30 x 3-4 mm., linear-lanceolate, acute, apex pungent, mid-vein distinct to obscure. Male cones (strobili) axillary 10-15 mm, solitary or in 4s. Female branchlets axillary, ovules solitary or paired, receptacle of 2-4 scales, acute and free at tips, maturing as a red, swollen, succulent, sweet tasting "fruit" this surmounted by a 1(-2) broadly elliptic, ovoid-oblong 3-6 mm, semi-glossy, buff, grey nut brown, henna or dark brown (green to glaucous-green) when fresh, seed.

### Fructing:

### Flowering:

(August-)  
October (-  
December)

Fruits take a year or so to ripen, and may be found throughout the year, usually peaking at about the same time that cones are produced. They are most frequently seen between April and May

### Threats:

Not Threatened, though as a vegetation type it is all but extinct throughout most of its former range.

### References and further reading:

Gardner, R. 1990. Totara and Halls totara. *Auckland Botanical Society Journal*, 45:27-28.

Moorfield, J. C. (2005). *Te aka : Maori-English, English-Maori dictionary and index*. Pearson Longman: Auckland, N.Z.

Landcare Research. *Nga Tipu Whakaoranga - Maori Plant Use Database*.  
<http://maoriplantuse.landcareresearch.co.nz/WebForms/default.aspx>

### For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=1176](http://nzpcn.org.nz/flora_details.asp?ID=1176)



**Caption:** Podocarpus totara var. totara at Pokemokemoke

**Photographer:** Wayne Bennett



**Caption:** Seeds of Podocarpus totara var. totara

**Photographer:** Wayne Bennett



# *Prumnopitys ferruginea*

## Common Name(s):

Miro, brown pine

## Current Threat Status (2012):

Not Threatened

## Distribution:

Endemic. North, South and Stewart Islands.

## Habitat:

Common tree of lowland to montane forest.

## Features:

Stout tree up to 25 m tall. Trunk 1-1.5 m diam., in adults clear of branches for 2/3 of length. Bark thick, grey. Falling in thick, sinuous flakes. Leaves feathery, dark green, green to bronze-green, distichous, erect, narrow-linear, acute, falcate to subfalcate, acute to subacute, mid vein distinct, margins recurved, juveniles up to 30 mm long, those of adults 15-25 x 2-3 mm. Male cones (strobili) solitary, axillary, 5-15 mm long. Ovules solitary (rarely paired), on short branchlets 10 or less mm. long. Fruit a broadly oblong to sub-spherical red, pink-red fleshy drupe up to 20 mm long - fleshy, oily, smelling and tasting strongly of terpenes. Stone elliptic to broadly elliptic 11-17 mm long, dark brown to black-brown.

## Flowering:

June - August  
- October

## Fruiting:

Fruits take 12-18 months to mature.  
Ripe fruits are mainly found from  
November - April

## Threats:

Not Threatened, although as a forest-type it has been greatly reduced through widespread logging. Very few intact examples of miro-dominated forest remain in the country.

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=794](http://nzpcn.org.nz/flora_details.asp?ID=794)



**Caption:** Ruahine Range

**Photographer:** John Sawyer



**Caption:** Seeds of *Prumnopitys ferruginea*

**Photographer:** Wayne Bennett

# *Prumnopitys taxifolia*

## **Common Name(s):**

Matai, black pine

## **Current Threat Status (2012):**

Not Threatened

## **Distribution:**

Endemic. North, South and Stewart Islands. Uncommon on Stewart Island.

## **Habitat:**

Lowland forest. Often in drier climates, where it can dominate alluvial soils which are waterlogged/flooded in winter and dry in summer. Seems to prefer base-rich substrates and soils.

## **Features:**

Dioecious conifer 25(-30) m tall. Trunk 1-2 m diam. Bark dark brown (almost black), falling in thick circular flakes, leaving a distinctive hammer-like scar patterning on trunk. Wood dark brown to rich yellow-brown, very hard. Juveniles filiramulate, with distinctive, dark brown, slender, flexuous, divarciating branchlets. Leaves brown, pale yellow, or dirty white, 5-10 x 1-2 mm, linear-lanceolate, apex acute; adults dark green, somewhat glaucous above, glaucous below, 10-15 x 1-2 mm, subdistichous, linear, straight to subfalcate, obtuse, often apiculate. Male cones (strobili) in spikes, 30-50 mm long, with 10-30 cones per spike. Ovules on short axillary branches, 3-10 per 40 mm long spike. Fruit a fleshy, oily, aromatic, terpene-tasting, purple-black drupe with a glaucous bloom. Stone more or less circular (5.5-)6-8.5 mm diam., surface dull to semi-glossy, pale orange-yellow to light orange-yellow.

## **Flowering:**

(October-) November - February

## **Fruiting:**

Fruits take 12-18 months to mature. Ripe fruits may be found throughout the year.

## **Threats:**

Not Threatened, although as a forest-type it has been greatly reduced through widespread logging. Very few intact examples of matai-dominated forest remain in the country.

## **For more information, visit:**

[http://nzpcn.org.nz/flora\\_details.asp?ID=1193](http://nzpcn.org.nz/flora_details.asp?ID=1193)



**Caption:** Matai with female cones

**Photographer:** Bill Clarkson



**Caption:** Cones of *Prumnopitys taxifolia* (male)

**Photographer:** Wayne Bennett

## Definitions of botanical terms

A glossary has been provided below with definitions for many of the botanical terms used in the species descriptions.

### Glossary

Term	Definition
<b>Abaxial</b>	Facing away from the stem of a plant (especially denoting the lower surface of a leaf).
<b>Acerose</b>	Narrow with a sharp stiff point.
<b>Achene</b>	A simple, dry, one-seeded (one-celled) fruit
<b>Acicular</b>	Needle-shaped.
<b>Acidic</b>	Having a low pH, opposite of basic or alkaline.
<b>Acroscopic</b>	Pointing towards, or on the side of, the apex
<b>Acuminate</b>	Gradually tapered to a point. Sharply pointed.
<b>Acute</b>	Pointed or sharp, tapering to a point with straight sides.
<b>Adnate</b>	Fusion of unlike parts, e.g. stamens fused to petals.
<b>Adventive</b>	A plant that grows in the wild in New Zealand but which was introduced to the country by humans.
<b>Agglutinated</b>	Stuck together.
<b>Allelopath</b>	An organism that releases compounds that are toxic to other species.
<b>Allelopathy</b>	The release by an organism of compounds that are toxic to other species.
<b>Alternate</b>	Attached singly at each node but changing from one side of a stem to the other.
<b>Alveolate</b>	Honeycombed with ridged partitions.
<b>Amplexicaul</b>	clasping or surrounding the stem
<b>Anamorph</b>	Asexual fruiting stage, usually of an ascomycete fungus.
<b>Anastomosing</b>	Rejoining after branching, as in some leaf veins.
<b>Annual</b>	A plant that completes its complete life cycle within the space of a year
<b>Annual evergreen</b>	Plants that lose their over-wintering leaves rapidly in the first half of the growing season. Annual evergreens never present a leafless appearance, but are closer in a functional sense to a deciduous plant than they are to multi-annual evergreens.
<b>Annulus</b>	Line of thickened cells that governs the release of spores from a sporangium
<b>Anterior</b>	Towards the front.
<b>Anther</b>	The pollen-bearing portion of the stamen.
<b>Antheridium</b>	Male reproductive organ formed on the prothallus of a fern
<b>Anthesis</b>	When the flower is fully developed and functioning. The time of pollination or bloom.
<b>Apex</b>	Tip; the point furthest from the point of attachment.
<b>Apices</b>	Plural of apex. Tip, the point furthest from the point of attachment
<b>Apiculate</b>	Bearing a short slender and flexible point.
<b>Apiculus</b>	A small, slender point.
<b>Apomixis</b>	A form of reproduction whereby seed is formed without the usual mode of sexual fusion
<b>Appressed</b>	Pressed against another organ or surface.
<b>Aquatic</b>	Growing, or living in, or frequenting water. Applied to plants and animals and their habitats. Opposite of terrestrial (land living).
<b>Archegonium</b>	Female reproductive organ of a fern formed on the prothallus
<b>Arcuate</b>	Curved into an arch.
<b>Aril</b>	An often fleshy appendage on the outside of a seed.
<b>Artificial thinning</b>	Selectively removing vegetation to create gaps to facilitate natural invasion of native plants, or to plant later successional plants.
<b>Ascending</b>	Growing obliquely upward.
<b>Asexual</b>	Vegetative reproduction, lacking sexual involvement by sperm or egg cells
<b>Attenuate</b>	Narrowing gradually
<b>Auricle</b>	A small, ear-shaped appendage.
<b>Auriculate</b>	Bearing a small, ear-shaped appendage.
<b>Autogamous</b>	Self-fertilising flowers.
<b>Autotrophic</b>	Of or relating to organisms (as green plants) that can make complex organic nutritive compounds from simple inorganic sources by photosynthesis
<b>awn</b>	A stiff or bristle like projection often from the tip or back of an organ
<b>Axil</b>	The upper angle between the leaf and the stem.
<b>Axis</b>	The longitudinal supporting structure around which organs are borne, e.g., a stem bearing leaves.
<b>Barbellate</b>	Barbed, having or covered with protective barbs or quills or spines or thorns or setae
<b>Basal</b>	At the base.
<b>Basisopic</b>	Pointing towards the base
<b>Beak</b>	A prominent extension of an organ
<b>Bifid</b>	Deeply split into two lobes.
<b>Bifurcate</b>	Divided into two.



Term	Definition
<b>Biosecurity</b>	Preventing, eradicating, controlling and managing risks posed by pests and diseases.
<b>Biotic</b>	Pertaining to the living parts of the environment
<b>Bipinnate</b>	With each primary pinna divided to the midrib into a secondary pinna
<b>Biserrate</b>	Doubly serrate.
<b>Blade</b>	The flattened part of a leaf.
<b>Blunt</b>	Not pointed at the ends
<b>Bog</b>	A quagmire covered with specialised plants including sphagnum moss, grasses, sedges, rushes, sundews, umbrella ferns and other plants; has wet, spongy ground, a marsh-plant community on wet, very acid peat. Fed only by rainfall.
<b>Bottleneck</b>	A genetic term; refers to the fact that in smaller populations there could be lower genetic variability
<b>Brachyblasts</b>	Short shoots
<b>Bract</b>	A reduced leaf or leaf-like structure at the base of a flower.
<b>Bracteate</b>	Bearing bracts: leaves or leaf-like structure reduced at the base of a flower.
<b>Bracteolate</b>	With small bracts.
<b>Bracteole</b>	A small bract.
<b>Bracteoles</b>	Bracts directly below the flower
<b>Brevideciduous</b>	Brief (1 month or less) loss of most leaves from the canopy just before flowering or during flushing of a new cohort of leaves.
<b>Bryophyte</b>	Plant group including mosses, liverworts and hornworts
<b>Bryophytes</b>	Plant group including mosses, liverworts and hornworts
<b>Bulbil</b>	A bud produced vegetatively on the stem or frond that is capable of breaking off and growing into a new plant
<b>Bullate</b>	With rounded projections covering the surface as if blistered
<b>Caespitose</b>	Growing in dense tufts
<b>Calli</b>	Circular, warty, stalked thickenings commonly found on the lip (labellum) of the orchid (plural of callus).
<b>Callose</b>	Hardened or thickened.
<b>Callus</b>	Stalked thickening on the lip (labellum) of an orchid.
<b>Calyx</b>	The group of sepals, or outer floral leaves, of a flower
<b>Campanulate</b>	Bell-shaped.
<b>Canaliculate</b>	With longitudinal channels or grooves.
<b>Canopy</b>	The uppermost cover formed by the branches and leaves of trees or the spread of bushes, shrubs and ground covers.
<b>Canopy closure</b>	Stage where canopies of shrub and tree species meet.
<b>Canopy manipulation</b>	Selectively removing vegetation to create gaps to facilitate natural invasion of native plants, or to plant later successional plants.
<b>Capillary</b>	Hair-like
<b>Capitula</b>	Plural of capitulum: A dense head-like inflorescence of many flowers as occurs in most Asteraceae (daisies)
<b>Capitulum</b>	A dense head-like inflorescence of many flowers as occurs in most Asteraceae (daisies)
<b>Capsule</b>	A dry fruit formed from two or more fused carpels that splits open when ripe.
<b>Carbon sinks</b>	Carbon locked away, or sequestered e.g. by trees
<b>Carpel</b>	One unit of the female part of a flower that consists of a basal seed-bearing ovary joined to a receptive stigma by a stalk-like style.
<b>Cauda</b>	Tail-like appendage. (pl. caudae; adj. caudate)
<b>Caudex</b>	The axis of a woody plant, esp. a palm or tree fern, comprising the stem and root.
<b>Cauline</b>	Belonging to the stem, as in cauline leaves emerging from the stem.
<b>Cerise</b>	Bright or deep red.
<b>Chartaceous</b>	Having a papery texture.
<b>Chlorophyll</b>	The green pigment of plants.
<b>Chlorotic</b>	Lacking chlorophyll, therefore yellowish, suffering from chlorosis.
<b>Cilia</b>	Short small hair-like structures on a cell or microorganism
<b>Ciliate</b>	With small hairs (cilia).
<b>Ciliolate</b>	Diminutive of ciliate, i.e., having very small hairs
<b>Cladode</b>	Flattened stem with the function of a leaf
<b>Cladodes</b>	Usually flattened, photosynthetically active branches, these may be leaf-like (e.g., Phyllocladus) or branch-like (e.g., Carmichaelia)
<b>Clavate</b>	Club-shaped, gradually widening towards apex.
<b>Cleft</b>	Having indentations that extend about halfway to the center, as in certain leaves.
<b>Cleistogamous</b>	Flowers that self-fertilise without opening.
<b>Coherent</b>	Sticking together of like parts.
<b>Column</b>	Stamen and stigmas fused to form a single organ.

<b>Term</b>	<b>Definition</b>
<b>Columnar</b>	Shaped like a column
<b>Composite</b>	many small flowers tightly packed together e.g., daisy flowers.
<b>Compound</b>	Composed of several similar parts (cf simple)
<b>Concave</b>	Curved inward.
<b>Concolorous</b>	Of the same colour.
<b>Conical</b>	Cone-shaped.
<b>Connate</b>	Fusion of like parts.
<b>Conspecific</b>	Individuals of the same species.
<b>Cordate</b>	Heart-shaped with the notch at the base.
<b>Coriaceous</b>	Leather-like; thick, tough, and somewhat rigid.
<b>Corolla</b>	The whorl of petals of a flower.
<b>Corymb</b>	Modified raceme where stalks of lower flowers are elongated to same level as the upper flowers.
<b>Cosmopolitan</b>	A species or other taxonomic group that is distributed widely throughout the world.
<b>Costa</b>	The midrib
<b>Crenate</b>	With rounded teeth (bluntly toothed) along the margin.
<b>Crisped</b>	Margin tightly wavy or crinkled, curled or wavy.
<b>Cristate</b>	With a crest.
<b>Crown</b>	The growing point of an upright rhizome or trunk. This usually produces a tuft or ring of fronds.
<b>Crura</b>	The two small projections at the mouth of a utricle in Carex
<b>Cucullate</b>	Hood-shaped.
<b>Culm</b>	The erect stem of a grass.
<b>Cuneate</b>	Wedge-shaped.
<b>Cupular</b>	Cup-shaped.
<b>Cuttings</b>	Stems and/or leaves taken from plants for propagation
<b>Cyathium</b>	A cup-like structure that surrounds the inflorescence in Euphorbia
<b>Cyme</b>	Inflorescence at the terminus of a branch and where new flowering branches emerge laterally below the flower.
<b>Cytorace</b>	Populations (or infraspecific taxa) that differ in chromosome number or chromosome morphology, e.g., <i>Nematoceras trilobum</i> agg. has two cytoraces, a diploid and a tetraploid (in which the chromosomes are doubled).
<b>Cytotype</b>	Populations (or infraspecific taxa) that differ in chromosome number or chromosome morphology, e.g., <i>Nematoceras trilobum</i> agg. has two cytotypes, a diploid and a tetraploid (in which the chromosomes are doubled).
<b>Deciduous</b>	Marked leaflessness in winter, and greater than 90% leaves lost by beginning of spring flush.
<b>Decrescent</b>	Diminishing.
<b>Decumbent</b>	With a prostrate or curved base and an erect or ascending tip.
<b>Decurrent</b>	Attached by a broadened base.
<b>Decurved</b>	Curved downward.
<b>Deflexed</b>	Bent abruptly downward.
<b>Dehiscence</b>	The time of opening at maturity to release the contents, e.g., a capsule releasing the seeds.
<b>Dehiscent</b>	Splitting open at maturity to release contents (of a fruit).
<b>Deltoid</b>	Shaped broadly like an equilateral triangle.
<b>Dentate</b>	Toothed along the margin with the teeth pointing outward, not forward.
<b>Denticles</b>	minute teeth
<b>Denticulate</b>	having a very finely toothed margin
<b>Dichotomous</b>	Divided into two equal branches.
<b>Digitiform</b>	Finger-like.
<b>Dioecious</b>	Having male and female flowers on separate plants of the same species.
<b>Diploid</b>	With two complete sets of chromosomes in each cell.
<b>Disarticulating</b>	Separating at a joint.
<b>Discoid</b>	Disc-shaped.
<b>Disjunct</b>	A species or other taxonomic group that occupies areas that are widely separated and scattered and therefore have a discontinuous distribution.
<b>Distal</b>	Toward the apex, away from the point of attachment (cf. proximal).
<b>Distichous</b>	In two rows on opposite sides of the axis.
<b>Divaricating</b>	Branching at a very wide angle with stiff intertwined stems.
<b>Domatia</b>	small structures on the lower surface of a leaf in some woody dicotyledons, located in the axils of the primary veins and usually consisting of depressions partly enclosed by leaf tissue or hairs.

<b>Term</b>	<b>Definition</b>
<b>Dorsal</b>	Of the back or outer surface relative to the axis. (cf. ventral)
<b>Drupe</b>	A stone fruit, the seed enclosed in a bony covering (endocarp) which is surrounded by a + fleshy layer (mesocarp)
<b>Early successional species</b>	Plants which are able to colonise an open area after disturbance but which are often temporary and are replaced by taller plants in time and shaded out.
<b>Echinate</b>	having sharply pointed spines or bristles.
<b>Ecological district</b>	A characteristic landscape and biological community defined in the PNA (Protected Natural Area) programme.
<b>Ecological restoration</b>	Attempt to reinstate original (pre-disturbance) state of a habitat, plant community or ecosystem.
<b>Ecosourced</b>	Plants sourced from seed collected from similar naturally growing plants in the area of the planting site.
<b>Ecosourcing</b>	Using native plants grown from locally grown seeds. Eco-sourced plants help to preserve the ecological distinctiveness of an area, and ecosourced plants fare better and are adapted to survive in the local conditions.
<b>Eglandular</b>	Without glands.
<b>Elaiosome</b>	Fleshy, oil-rich structure attached to seed that attracts ants which act as dispersers.
<b>Ellipsoid</b>	Elliptic in long section and circular in cross-section.
<b>Elliptic</b>	Broadest at the middle
<b>Emarginate</b>	With a notch at the apex.
<b>Emarginated</b>	Having a shallow notch at the tip, as in some petals and leaves.
<b>Emergent</b>	In an aquatic sense - wetland herbs that are rooted in the substrate below water level, but carry leaves and stems above the water level e.g. rushes and raupo. Found on the shallow margins of lakes, ponds and waterways. In a forest sense - tree that is appearing above the surrounding canopy.
<b>Emergent marginals</b>	An aquatic plant having most of its structure above water. Other aquatic plants are submerged or floating.
<b>Endemic</b>	Unique or confined to a place or region, found naturally nowhere else.
<b>Endophyte</b>	An endosymbiont (usually a bacterium or fungus) that lives within a plant for at least part of its life without causing any apparent disease.
<b>Endophytes</b>	Endosymbionts (usually bacteria or fungi) that live within plants for at least part of their lives without causing any apparent disease.
<b>Endosperm</b>	The nutritive tissue of a seed, consisting of carbohydrates, proteins, and lipids.
<b>Enrichment planting</b>	Returning to a revegetation site and creating gaps, or filling existing gaps, with different plants of plants, usually later successional plants which may not have survived being planted in the first phases of the project.
<b>Ensiform</b>	Sword shaped
<b>Entire</b>	Smooth. Without teeth, notches or divisions.
<b>Entomophilous</b>	Pollinated by insects.
<b>Epicalyx</b>	Calyx-like structure outside, but close to, the true calyx.
<b>Epigeal</b>	Growing on or close to the ground or emerging from the ground after germination (often used for cotyledons).
<b>Epiphyte</b>	A plant that grows upon another plant but is not parasitic and does not draw nourishment from it.
<b>Epiphytic</b>	Growing upon another plant but not parasitic and not drawing nourishment it
<b>Erose</b>	Irregularly toothed, as if gnawed.
<b>Estuarine</b>	Pertaining to the meeting of freshwater and seawater wetlands.
<b>Ethnobotany</b>	The study of people's classification, management and use of plants.
<b>Eusporangia</b>	Sporangia that arise from groups of epidermal cells
<b>Evanescent</b>	Lasting a very short time or running a short distance.
<b>Ex situ</b>	Away from the place of natural occurrence.
<b>Ex-situ</b>	Maintenance of plants as live specimens or propagules in cultivation as insurance against the loss of wild populations and as source for material for translocation.
<b>Excurrent</b>	Having the axis prolonged to form an undivided main stem or trunk (as in conifers).
<b>Extravaginal</b>	Outside an enclosing sheath
<b>Falcate</b>	Hooked or curved like a sickle.
<b>Fastigate</b>	Branches erect and close to central axis.
<b>Fen</b>	A type of wet land that accumulates peat deposits. Fens are less acidic than bogs, deriving most of their water from groundwater rich in calcium and magnesium.
<b>Ferruginous</b>	Rust-like (a colour term)
<b>Fertile frond</b>	Fronds that bear sporangia.
<b>Filamentous</b>	Resembling a filament.
<b>Filiform</b>	Thread like, resembling a filament.
<b>Filiramulate</b>	Branching at a very wide angle with stiff intertwined stems.
<b>Fimbriae</b>	Plural of fimbria: Fringe. A fimbria is composed of many fimbriae (individual hair-like structures).
<b>fimbriate</b>	With fringes.
<b>Flabellate</b>	Fan shaped.
<b>Flaccid</b>	Limp, not rigid, flabby.
<b>Flange</b>	A projecting rim.



<b>Term</b>	<b>Definition</b>
<b>Flexuose</b>	With curves or bends.
<b>Floccose</b>	Having tufts of soft woolly hairs
<b>Floret</b>	A small flower, usually one of a cluster - the head of a daisy for example.
<b>Foliaceous</b>	Leaf-like.
<b>Foliate</b>	Having leaflets.
<b>Founder effect</b>	When a small number of plants (and therefore their genes) from a larger population are selected some genetic information is lost.
<b>Fronid</b>	A leaf, the complete leaf of a fern including the stipe and lamina
<b>Fulvous</b>	Orange–yellow.
<b>Funneliform</b>	Funnel-shaped.
<b>Fusiform</b>	Broadest near the middle and tapering toward both ends.
<b>Galea</b>	Helmet- or hood-shaped.
<b>Galeate</b>	Shaped like a helmet or hood.
<b>Gametophyte</b>	A plant that produces sperm and egg cells and in which sexual reproduction takes place - in ferns this is known as the prothallus
<b>Gene pool</b>	The mixture of all genes and gene variations of a group or population.
<b>Genetic diversity</b>	The variety of genes in a plants or populations.
<b>Genetic variation</b>	Differences displayed by individuals within a plant which may be favoured or eliminated by selection.
<b>geniculate</b>	abruptly bent
<b>Genus</b>	A taxonomic rank of closely related forms that is further subdivided in to species (plural = genera). In a scientific name (e.g., <i>Sicyos australis</i> ), the first word is the genus, the second the species.
<b>Gibbous</b>	Swollen or enlarged on one side, as in a gibbous moon.
<b>Glabrescent</b>	Lacking hair or a similar growth or tending to become hairless
<b>Glabrous</b>	Without or devoid of hairs, smooth.
<b>Gland</b>	A structure that secretes a sticky or oily substance.
<b>Glandular</b>	A structure that secretes a sticky or oily substance.
<b>Glaucous</b>	Covered with a fine, waxy, removable powder that imparts a white or bluish cast to the surface.
<b>Gley</b>	A soil prone to seasonal inundation.
<b>Globose</b>	Globe-shaped.
<b>Glume</b>	One of two bracts at the base of a grass spikelet.
<b>Groundwater</b>	Groundwater is the water beneath the surface that can be collected with wells, tunnels, or drainage galleries, or that flows naturally to the earth's surface via seeps or springs. Groundwater is the water that is pumped by wells and flows out through springs.
<b>Gymnosperm</b>	Plants in the class Gymnospermae that have seeds which are not enclosed in an ovary.
<b>Gynodioecious</b>	A species population containing plants that produce bisexual (perfect) flowers, and plants that produce only female (pistillate) flowers.
<b>Gynoeceium</b>	The female reproductive organs of a flower; the pistil or pistils considered as a group. Means literally "womans house" i.e., the overall structure that contains the female sex organs
<b>Hastate</b>	Spear like. Shaped like an arrowhead, but with basal lobes pointing outward rather than downward.
<b>Haustorium</b>	The absorbing organ of a parasite or hemiparasite
<b>Hemi–parasite</b>	Obtains water and nutrients from the roots of other plants but also manufactures food through photosynthesis.
<b>Hemi–parasitic</b>	Obtaining water and nutrients from the roots of other plants then manufacturing food through photosynthesis.
<b>Herbarium</b>	The place where collections of dried/pressed plants are kept.
<b>Hermaphrodite</b>	Having both male and female sexual characteristics and organs.
<b>Heteroblastic</b>	Exhibiting differences in leaf shapes or forms in juvenile and adult phases of the plant.
<b>Heteroblasty</b>	The state of being heteroblastic (i.e., exhibiting differences in leaf shapes or forms in juvenile and adult phases of the plant).
<b>Hirsute</b>	Hairy.
<b>Hyaline</b>	Membranous, thin and translucent.
<b>Hybrid</b>	An individual that is the offspring of a cross between two different varieties or species.
<b>Hybridise</b>	Breeding with a member of a different plant or type.
<b>Hydrophyte</b>	A plant species adapted to growing in or on water or in wet situations. Aquatic or semi-aquatic.
<b>Hymenium</b>	The fertile, spore–bearing layer of a fruitbody.
<b>Hypanthium</b>	A ring–like, cup–shaped, or tubular structure of a flower on which the sepals, petals, and stamens are borne.
<b>Imbricate</b>	Overlapping.
<b>imbricating</b>	Overlapping.
<b>Imparipinnate</b>	Odd–pinnate, a leaf shape; pinnate with a single leaflet at the apex.
<b>In-situ</b>	On site conservation relating to the maintenance of plants in the wild.
<b>Inbreeding</b>	Genetic similarity in offspring of closely related individuals.

Term	Definition
<b>Incoherent</b>	Not sticking together.
<b>Incursion</b>	Entrance of a pest into an area where it is not present
<b>Indumentum</b>	A covering of fine hairs (or sometimes scales)
<b>Indusia</b>	Plural of indusium, a membrane covering a sorus of a fern
<b>Indusium</b>	A thin tissue that covers the sorus in many ferns. Plural: indusia.
<b>Inflorescence</b>	The arrangement of flowers on the stem. A flower head.
<b>Infundibuliform</b>	Funnel-like.
<b>Interkeel</b>	The space between the keel and the leaf blade
<b>Internode</b>	The part of an axis between two nodes; the section of the stem between leaves.
<b>Internodes</b>	Part of a stem between two nodes.
<b>Intramarginal</b>	Within or near the margin.
<b>Involucral bracts</b>	The scales surrounding the flower head or capitula.
<b>Involucre</b>	A group of bracts surrounding a flower head.
<b>Involute</b>	With margins rolled inward toward the upper side.
<b>Irritable</b>	Responding to touch.
<b>Jugate</b>	Paired.
<b>Juvenile</b>	A plant of non-reproducing size.
<b>Keel</b>	A prominent or obvious longitudinal ridge (as in a boat).
<b>Labellar</b>	Pertaining to the labellum: a lip; in orchid flowers referring to the middle petal which usually differs in size, shape or ornamentation from the two lateral petals.
<b>Labellum</b>	A lip; in orchid flowers referring to the highly modified middle petal which usually differs in size, shape or ornamentation from the two lateral petals.
<b>Lacinia</b>	A jagged lobe.
<b>Laciniae</b>	Jagged lobes.
<b>Laciniate</b>	Cut into narrow, irregular lobes or segments.
<b>Lacustrine</b>	Of or having to do with a lake, of, relating to, or formed in lakes, growing or living in lakes.
<b>Lamina</b>	The expanded flattened portion or blade of a leaf, fern frond or petal.
<b>Lanceolate</b>	Lance-shaped; of a leaf several times longer than wide with greatest width about one third from the base, tapering gradually to apex and more rapidly to base
<b>Lateral</b>	On or at the side.
<b>Lax</b>	With parts open and spreading, not compact.
<b>Laxly</b>	With parts open and spreading, not compact
<b>Leaflet</b>	One section of a compound leaf.
<b>Lemma</b>	The lower of two bracts enclosing the flower in grasses.
<b>Lenticillate</b>	Bark that is covered in fine lenticles (breathing pores)
<b>Ligulate</b>	Strap-like, tongue-shaped
<b>Ligule</b>	The membrane between the leaf and the stem of a grass; the "petal" of a ray floret in a composite inflorescence
<b>Linear</b>	Long and narrow with more or less parallel sides.
<b>Littoral</b>	Occurring at the border of land and sea (or lake). On or pertaining to the shore. The shallow sunlit waters near the shore to the depth at which rooted plants stop growing.
<b>Lobe</b>	A recognisable, but not separated, rounded division or segment of a leaf or pinna. Used to describe ferns and leaves in <i>Cotula</i> and <i>Leptinella</i> .
<b>Lobed</b>	Part of a leaf (or other organ), often rounded, formed by incisions to about halfway to the midrib.
<b>Lobule</b>	A small lobe or sub-division of a lobe
<b>Lustrous</b>	Glossy, shiny.
<b>Lycophytes</b>	Seedless vascular plants that belong to the phylum Lycophyta (characterised by microphylls -primitive leaves found in ancient plants).
<b>Lyrate</b>	Pinnatifid or pinnatisect terminal lobe much larger than lower lobes.
<b>Maculate</b>	Blotched or spotted.
<b>Mangrove</b>	Coastal wetland dominated by Manawa or mangrove <i>Avicennia marina</i> var. <i>resifera</i> . Northern New Zealand only, salt marsh replaces it further south.
<b>Margin</b>	The edge or border of a leaf
<b>Marine</b>	Pertaining to the sea and saltwater systems.
<b>Marsh</b>	A tract of wet land principally inhabited by partially-submerged herbaceous vegetation. Has fewer woody plants than swamplier habitats.
<b>Mealy</b>	Dry, powdery, crumbly.
<b>Median</b>	In the middle.
<b>Membranous</b>	Very thin, like a membrane.
<b>Mid-lobe</b>	The middle part into which a leaf is divided.
<b>Midrib</b>	The central or principal vein of a leaf or pinna of a fern.
<b>Mire</b>	Synonymous with any peat-accumulating wetland. Term covers bogs and peaty swamps, fens, carr, moor, muskeg and peatland. Term excludes marsh which is non-peat forming.

Term	Definition
<b>Molecular techniques</b>	Where proteins and genes are used to investigate plant relationships
<b>Monitoring</b>	Recording of quantitative data over time to document changes in condition or state of species or ecosystems.
<b>Monoecious</b>	Having male and female flowers on the same plant of the same species.
<b>Montane</b>	Land between 300 and 800 metres above sea level.
<b>Mucronate</b>	Tipped with a short, sharp, point.
<b>Mucronulate</b>	Having a very small mucro; diminutive of mucronate.
<b>Multi-annual evergreen</b>	Overlapping annual cohorts of leaves always present.
<b>Multifid</b>	Cleft into many lobes or segments
<b>Multiseptate</b>	With many septa.
<b>Mycorrhiza</b>	A symbiotic relationship between a fungus and a plant.
<b>Mycorrhizal associations</b>	Symbiotic association between fungi and plant roots which assists plant health by allowing increased ability for uptake of nutrients and promote plant growth.
<b>Napiform</b>	A long swollen but tapering root – like a parsnip, or carrot.
<b>Native</b>	Naturally occurring in New Zealand (i.e., not introduced accidentally or deliberately by humans).
<b>naturalised</b>	Referring to plants that have escaped from cultivation (including gardens or forest plantations) and can now reproduce in the wild (without human assistance)
<b>Nectary</b>	Organ that produces nectar.
<b>Nerve</b>	Prominent vein or rib.
<b>Nerves</b>	Strands of conducting and usually strengthening tissue in a leaves or similar structures
<b>Net veins</b>	Veins that repeatedly divide and re-unite.
<b>Net venation</b>	Feather-like or hand-like venation on a leaf.
<b>Nival</b>	Growing at high altitudes. From Latin: nivalis, snowy etc. from nix, nivis, snow.
<b>Node</b>	The point at which leaves, branches or roots arise on a stem.
<b>Ob-</b>	Prefix meaning inverted, in reverse direction.
<b>Obcordate</b>	Heart shaped with the notch at the apex.
<b>Oblanceolate</b>	Tapering and widest towards the apex or inversely lanceolate.
<b>Oblique</b>	Slanting; of a leaf, larger on one side of the midrib than the other, in other words asymmetrical.
<b>Oblong</b>	Rectangular.
<b>Obovate</b>	Roughly elliptical or reverse egg shaped and widest near the apex (i.e., the terminal half broader than the basal half).
<b>Obtuse</b>	Blunt or rounded at the apex, with the sides meeting at an angle greater than 90°.
<b>Operculate</b>	With a small lid.
<b>Opposite</b>	A pair of organs attached at nodes in pairs on either side of a stem or axis.
<b>Orbicular</b>	Almost or approximately circular.
<b>Outbreeding depression</b>	A reduction in vigor of offspring from distant parents. It can occur when a locally adapted population is moved and mixed with plants adapted to different conditions.
<b>Outer canopy deciduous</b>	Marked reduction in leaf number in the outer canopy in exposed high light environments over winter.
<b>Oval</b>	Planar, shaped like a flattened circle, symmetrical about both the long and the short axis; about twice as long as broad, tapering equally both to the tip and the base. Synonymous with elliptical.
<b>Ovary</b>	Part of a flower containing the ovules and later the seeds.
<b>Ovate</b>	Egg-shaped and widest at base.
<b>Ovoid</b>	Oval; egg-shaped, with rounded base and apex.
<b>Pakihi</b>	A term which in its strict sense refers to open clears within forest dominated by low scrub and rushes. However, more usually used to refer natural and induced wetlands and their associated shrublands. A vernacular most frequently used in the West Coast for impoverished soils and their associated peats, left after forest has been cleared
<b>Palea</b>	The small upper bract enclosing the flower of a grass
<b>Palmately</b>	Radiating from a point, as fingers radiating from the palm of a hand.
<b>Palmatifid</b>	Deeply divided into several lobes arising from more or less the same level.
<b>Palmatisect</b>	Intermediate between palmate and palmatifid, i.e. the segments are not fully separated at the base; often more or less digitate.
<b>Palustrine</b>	Pertaining to wet or marshy habitats. Term covers mires and marshes
<b>Pandurate</b>	Fiddle-shaped.
<b>Panicle</b>	Highly branched (multiple raceme).
<b>Papilla</b>	A short rounded projection.
<b>Papillae</b>	A soft, fleshy projection, usually small and nipple-like.
<b>Papillate</b>	With short rounded projections.
<b>Papillose</b>	Warty, with short rounded projections or gland-dotted
<b>Parallel venation</b>	Veins are parallel along leaf.



Term	Definition
<b>Parasite</b>	An organism that derives all its nourishment from its host.
<b>Patent</b>	Spreading or expanded, e.g., spreading petals.
<b>Peat</b>	A mass of partially carbonised plant tissue formed by partial decomposition in water of various plants and especially of mosses of the genus Sphagnum, widely found in many parts of the world, varying in consistency from a turf to a slime used as a fertiliser, as stable litter, as a fuel, and for making charcoal. Partially carbonized vegetable matter saturated with water; can be used as a fuel when dried. A type of soil deriving from dead organic material situated in a wet area, where the reduced amount of [[oxygen available in the wet conditions results in the organic material not decomposing as much as it usually would do so in the presence of more oxygen. Used in growing media. Represents an important carbon sink –drainage of peat releases large amounts of carbon (CO <sub>2</sub> ) to the atmosphere.
<b>Pedicel</b>	The stalk of a single flower in an inflorescence or fruit (either in a cluster or existing singularly).
<b>Peduncle</b>	The stalk of a solitary flower or the main stalk of an inflorescence or flower cluster.
<b>Pedunculate</b>	Describing fruits, which are borne on a stalk (a peduncle).
<b>Pellucid</b>	Transparent.
<b>Peltate</b>	Shield-like, with the stalk attached well inside the margin
<b>Pendent</b>	Hanging down from its support
<b>Pendulous</b>	Hanging or drooping.
<b>Penicillate</b>	With a tuft of hairs at the end, like a brush.
<b>Perennial</b>	A plant lasting for three seasons or more
<b>Perianth</b>	A collective term for the calyx (sepals or tepals) and corolla (petals) of the flower, especially when these are indistinguishable
<b>Petal</b>	Part of flower inside the sepals; usually coloured.
<b>Petiolate</b>	Having a petiole.
<b>Petiole</b>	Leaf stalk.
<b>phloem</b>	The vascular tissue in land plants that is primarily responsible for the distribution of sugars and nutrients manufactured in a shoot.
<b>Photopoint</b>	A monitoring technique where repeat photos are taken of the same scene from the same point over a period of time in order to quantify changes.
<b>Pilose</b>	Bearing long, soft hairs.
<b>Pinna</b>	A segment of a divided lamina that is classified as primary, secondary or tertiary according to the degree of dissection of the lamina.
<b>Pinnae</b>	Divisions of a pinnate leaf
<b>Pinnate</b>	With leaflets arranged regularly in two rows on either side of a stalk as in a feather; the lamina on a fern is divided into separate pinnae
<b>Pinnatifid</b>	Pinnately lobed, cleft more than halfway to the midrib. Not cleft all the way to the rachis.
<b>Pinnatisect</b>	Pinnately divided almost to midrib but segments still confluent.
<b>Pioneer</b>	Plant species are hardy species that should be planted first to establish a good canopy cover that restricts weed growth and promotes natural regeneration. In natural ecosystems these are the first plants to arrive and grow on a site.
<b>Pistil</b>	The female reproductive organ of a flower, consisting of an ovary, style, and stigma.
<b>Pistillate</b>	A flower with one or more pistils, but no stamens.
<b>Plano-convex</b>	Flat on one side, convex on the other.
<b>Plumose</b>	Feathery.
<b>Podzol</b>	Infertile, acidic soil, strongly leached to form a whitish-grey subsoil underlain by a layer enriched in iron, aluminium and organic matter; usually under forest in a wet temperate climate.
<b>Pole</b>	A subcanopy size individual with a long thin trunk and foliage tuft of a potential canopy tree.
<b>Pollinia</b>	Compact masses of orchid pollen.
<b>Population enhancement</b>	Increasing a population for a specific biological purpose, e.g., when a species is already present in an area but extra individuals are added to address a sex imbalance.
<b>Porrect</b>	Extending forward.
<b>Procumbent</b>	Lying and flat along the ground but not rooting
<b>Propagate</b>	To reproduce a plant by sexual (i.e., from seed) or asexual (e.g., from cuttings) means.
<b>Prostrate</b>	A general term for lying flat along the ground. This includes procumbent (that is lying and flat along the ground but not rooting) and decumbent (with a prostrate or curved base and an erect or ascending tip).
<b>Provenance</b>	The place of origin (of a plant that is in cultivation).
<b>Proximal</b>	Toward the base or point of attachment (cf. distal).
<b>Pseudobulb</b>	Thickened surface stem; usually looking like a bulb.
<b>Pseudoterminal</b>	Falsely terminal – as in a bud which appears to occupy a terminal position but does not
<b>Puberulent</b>	Minutely clad in short, soft hairs
<b>Pubescence</b>	Covering of soft, fine hairs
<b>Pubescent</b>	Covered in short, soft hairs.
<b>Pungent</b>	Ending in a stiff sharp point
<b>Pustule</b>	Small blister-like elevation.

Term	Definition
<b>Quadrat</b>	Square, rectangular.
<b>Raceme</b>	An unbranched, elongated inflorescence with pedicellate flowers maturing from the bottom upward i.e., flowers attached to the main stem by short stalks.
<b>Rachis</b>	the axis of an inflorescence or of a compound leaf
<b>Ray</b>	An outer ring of strap-like florets in the head of Asteraceae (daisy) flowers.
<b>Re-introduction</b>	Translocating wild or cultivated individuals to sites where the taxon has been known to occur in the past, but from which it has disappeared.
<b>Recurved</b>	Curved backward.
<b>Reflexed</b>	Bent back on itself
<b>Reniform</b>	Kidney shaped.
<b>Repand</b>	With a slightly wavy margin.
<b>Replum</b>	The outer structure of a pod in which the valves have dehisced (persists after the opening of the fruit)
<b>Restiad</b>	Area dominated by rush-like plants (collectively known as restiads) of the family Restionaceae. Includes Chatham Island and North Island Sporodanthus and oioi ( <i>Apodasmia similis</i> )
<b>Retrorse</b>	Pointing backward.
<b>Retuse</b>	A shallow notch at the rounded or blunt apex of a leaf.
<b>Rhizoid</b>	Any of various slender filaments that function as roots in mosses and ferns and fungi.
<b>Rhizomatous</b>	With underground creeping stems.
<b>Rhizome</b>	An underground stem (usually spreading horizontally or creeping) or short and erect.
<b>Rhombic</b>	Diamond-shaped.
<b>Rhomboid</b>	Diamond shaped, nearly rhombic.
<b>Riparian</b>	Relating to or living or located on the bank of a natural watercourse (as a river) or sometimes of a lake or a tidewater.
<b>Riparian margin</b>	Refers to the edges of streams, rivers, lakes or other waterways.
<b>Riparian plants</b>	Refers to plants found growing near the edges of streams, rivers or other waterways.
<b>Riparian zone</b>	A strip of land next to streams, rivers, and lakes where there is a transition from terrestrial (land vegetation) to aquatic (water) vegetation. Also known as "berm".
<b>Riverine</b>	Pertaining to rivers, streams and such like flowing water systems.
<b>Rootstock</b>	A short, erect, underground stem.
<b>Rosette</b>	A radiating cluster of leaves.
<b>Rostellum</b>	In orchids, a modified stigma that prevents self-fertilisation.
<b>Rosulate</b>	A dense radiating cluster of leaves.
<b>Rugose</b>	Wrinkled.
<b>Rugulose</b>	Having small wrinkles.
<b>Runcinate</b>	Sharply pinnatifid or cleft, the segments directed downward.
<b>Runner</b>	A trailing stem that roots at the nodes.
<b>Rupestral</b>	Growing on rocks.
<b>Rushes</b>	A group of distinctive wetland plants. They have solid stems (grasses have hollow stems), true rushes <i>Juncus</i> sp. have rounded leaves.
<b>Sagittate</b>	Shaped like the head of an arrow; narrow and pointed but gradually enlarged at base into two straight lobes directed downwards; may refer only to the base of a leaf with such lobes; cf. hastate.
<b>Salt marsh</b>	A coastal wetland, with specialized salt tolerant plants (halophytes).
<b>Sapling</b>	A juvenile tree that has reached the stage of 1 or 2 main stems but is still in the shrub layer.
<b>Saprophyte</b>	A plant lacking chlorophyll and living on dead organic matter.
<b>Saprophytic</b>	Lacking chlorophyll and living on dead organic matter.
<b>Sarcotesta</b>	The fleshy, often highly coloured outer layer of the seed coat in some species, e.g., titoki ( <i>Alectryon excelsus</i> ).
<b>Scabrid</b>	Roughened or rough with delicate and irregular projections.
<b>Scale</b>	Any thin, flat, membranous structure.
<b>Scape</b>	A leafless flower stem.
<b>Scutiform</b>	Shield-shaped.
<b>Sedges</b>	A group of grass-like or rush-like herbaceous plants belonging to the family Cyperaceae. Many species are found in wetlands some are forest floor plants. Leaves are usually angular. Hence the saying "rushes are round and sedges have edges".
<b>Seedling</b>	A newly germinated plant.
<b>Self sustaining</b>	Able to sustain itself, or replace itself, independently of management i.e. regenerate naturally
<b>Self thinning</b>	Natural tree death in a crowded, even-aged forest or shrubland.
<b>Semi-deciduous</b>	Partial leaflessness in winter, and greater than 50% leaves lost by the beginning of spring flush.
<b>Sepal</b>	Outer part of flower; usually green.
<b>Serrate</b>	Sharply toothed with teeth pointing forwards towards apex.
<b>Serrulate</b>	Finely serrate, i.e., finely toothed with asymmetrical teeth pointing forward; like the cutting edge of a saw.

Term	Definition
<b>Sessile</b>	Attached by the base without a stalk or stem.
<b>Seta</b>	The stalk of a fruiting moss capsule
<b>Sheath</b>	A portion of an organ that surrounds (at least partly) another organ (e.g., the tubular envelope enclosing the stem in grasses and sedges).
<b>Silicles</b>	The flattened usually circular capsule – compared with the narrow, elongated fruit (silique) – containing the seed/seeds. A term used almost exclusively for plants within the cabbage family (Brassicaceae)
<b>Silique</b>	A capsule, usually 2-celled, with 2 valves falling away from a frame (replum) bearing
<b>Simple</b>	Of one part; undivided (cf compound).
<b>Sinuate</b>	With a wavy margin.
<b>Sinus</b>	The space or recess between lobes; in hebes a gap between the margins of two leaves of an opposite pair that may be present in the bud before the pair of leaves separate.
<b>Sorus</b>	A cluster of two or more sporangia on the margin or underside of the lamina of a fern, sometimes protected by an indusium.
<b>Spathulate</b>	Spatula or spoon-shaped, a rounded blade tapering gradually to the base.
<b>Spheroidal</b>	Almost spherical but elliptic in cross section.
<b>Spicate</b>	Arranged in a spike.
<b>Spike</b>	Flowers attached to main stem without stalks.
<b>Spikelet</b>	Collection of individual grass florets borne at the end of the smallest branch of the inflorescence.
<b>Sporangia</b>	Plural of sporangium. Structures in which spores are produced.
<b>Sporangium</b>	Structure in which spores are produced.
<b>Spore</b>	A single-celled reproductive unit similar in function to that of the seed in a flowering plant.
<b>sporophyte</b>	The spore producing plant in ferns that is usually the visible part.
<b>Stamen</b>	The male reproductive organ of a flower where pollen is produced. Consists of an anther and its stalk.
<b>Stamens</b>	The male, pollen bearing organ of a flower.
<b>Standing water</b>	Where water lies above the soil surface for much of the year.
<b>Stellate</b>	Irregularly branched or star shaped.
<b>Stigma</b>	Female part of the flower that is receptive to pollen, usually found at or near the tip (apical end) of the style where deposited pollen enters the pistil.
<b>Stipe</b>	The stalk of a frond.
<b>Stipitate</b>	Borne on a stipe or stalk.
<b>Stipulate</b>	A leaf with stipules.
<b>Stipule</b>	A scale-like of leaf-like appendage at the base of a petiole, usually paired.
<b>Stolon</b>	A stem which creeps along the ground, or even underground.
<b>Stoloniferous</b>	Producing stolons
<b>Stramineous</b>	Chaffy, like straw or straw-colored.
<b>Stria</b>	A fine line or groove.
<b>Striae</b>	Fine lines or grooves.
<b>Striate</b>	Fine longitudinal lines or minute ridges
<b>Style</b>	The elongated part of the flower between the ovary and the stigma.
<b>Sub-</b>	A prefix meaning under, somewhat or almost.
<b>Subglabrous</b>	Very slightly, but persistently, hairy.
<b>Suborbicular</b>	Slightly rounded in outline
<b>Substrate</b>	The surface upon which an orchid grows.
<b>Subtended</b>	Immediately beneath, occupying a position immediately beneath a structure, i.e., flower subtended by bract
<b>Subulate</b>	Slender and tapering to a point.
<b>Succession</b>	Progressive replacement of one species or plant community type by another in an ecosystem.
<b>Successional</b>	Referring to species, plant communities or habitats that tend to be progressively replaced by another.
<b>Succulent</b>	Fleshy and juicy.
<b>Summer-green</b>	Used in New Zealand to indicate herbs or sub-shrubs that die down to a root stock or rhizomatous network.
<b>Supplementary planting</b>	Returning to a revegetation site and creating gaps, or filling existing gaps, with different plants of plants, usually later successional plants which may not have survived being planted in the first phases of the project.
<b>Surface water</b>	Water present above the substrate or soil surface.
<b>Surveillance</b>	Regular survey for pests inside operational and managed areas e.g. nurseries, stand-out areas on parks.
<b>Survey</b>	Collection of observations on the spatial distribution or presence or absence of species using standardised procedures.
<b>Sustainable Land Management</b>	The use of farming practices which are sustainable both financially and environmentally including management of nutrient runoff, waste disposal or stock effluent, reducing impacts of nutrients on waterways, preventing erosion and soil loss, and protecting native forest and wetland habitats from stock damage.
<b>Swamp</b>	Low land that is seasonally flooded; has more woody plants than a marsh and better drainage than a bog. They are more fertile and less acidic than bogs because inflowing water brings silt, clay and organic matter. Typical swamp plants include raupo, purei and harakeke (flax). Zonation and succession often leads through manuka to kahikatea swamp forest as soil builds up and drainage improves.

Term	Definition
<b>Symbiote</b>	An organism that has an association with organisms of another species whereby the metabolic dependence of the two associates is mutual.
<b>Symbiotic</b>	The relation between two different species of organisms that are interdependent; each gains benefits from the other (see also symbiosis).
<b>Sympatric</b>	Occupying the same geographical region.
<b>Synangia</b>	Structures made up of fused sporangia
<b>Synonym</b>	A botanical name that also applies to the same taxon.
<b>Systematics</b>	The study of taxonomy, phylogenetics, and taxogenetics.
<b>Tabular</b>	Shaped like a rectangular tablet.
<b>Taxa</b>	Taxonomic groups. Used to refer to a group at any level e.g., genus, species or subspecies.
<b>Taxon</b>	A taxonomic group. Used to refer to a group at any level e.g., genus, species or subspecies.
<b>Taxonomy</b>	The process or science of classifying, naming, and describing organisms
<b>Tepal</b>	An individual member of the perianth.
<b>Terete</b>	Cylindrical and tapering.
<b>Terminal</b>	At the tip or apex.
<b>Ternatifid</b>	Leaflets In threes,
<b>Tetrad</b>	A group of four.
<b>Tomentum</b>	A hairy covering of short closely matted hairs.
<b>Translocation</b>	The movement of living organisms from one area to another.
<b>Trifid</b>	Divided into three.
<b>Trifoliate</b>	Having three leaflets.
<b>Trigonous</b>	Three-angled
<b>Tripinnate</b>	With each secondary pinna divided to the midrib into tertiary pinnae
<b>Triquetrous</b>	Triangular in cross section and acutely angled.
<b>Truncate</b>	With the apex or base squared at the end as if cut off.
<b>Tuberculate</b>	Bearing small swellings.
<b>Tubular</b>	Tube-shaped.
<b>turbinate</b>	Top-shaped.
<b>Turgid</b>	Distended through internal pressure
<b>Type locality</b>	The place or source where a holotype or type specimen was found for a species.
<b>Ultramafic</b>	A type of dark, usually igneous, rock that is chemically dominated by magnesium and iron-rich minerals, the partially metamorphosed form of which is serpentinite.
<b>Umbel</b>	Umbrella like; the flower stalks arise from one point at the stem.
<b>Undulate</b>	Wavy edged.
<b>Undulose</b>	Wavy edged.
<b>Unitubular</b>	A tube partitioned once – literally one tube (compare – multitubular – many tubes)
<b>Utricle</b>	A thin loose cover enveloping some fruits (eg., Carex, Uncinia)
<b>Valvate</b>	Opening by valves.
<b>Vascular plant</b>	A plant that possesses specialised conducting tissue (xylem and phloem). This includes flowering plants, conifers and ferns but excludes mosses, algae, lichens and liverworts.
<b>Velutinous</b>	Thickly covered with delicate hairs; velvety.
<b>Ventral</b>	Of the front or inner (adaxial) surface relative to the axis. (cf. dorsal)
<b>Vermiform</b>	Worm-shaped.
<b>Vernicose</b>	Glossy, literally as if varnished, e.g., Hebe vernicosa has leaves that appear as if varnished
<b>Verrucose</b>	Having small rounded warts.
<b>Verticillium</b>	A fungus disease that will cause wilting and death.
<b>Villous</b>	Covered with long, soft, fine hairs.
<b>Water table</b>	The level at which water stays in a soil profile. The zone of saturation at the highest average depth during the wettest season.
<b>Wetland</b>	A site that regularly has areas of open water for part or all of the year, or has a water table within 10 cm of the surface for at least 3 months of the year. Wetland ecosystems support a range of plant and animal species adapted to an aquatic or semi-aquatic environment.
<b>Whipcord</b>	A shrub in which the leaves are reduced to scales that are close-set and pressed against the stem.
<b>Whorl</b>	A ring of branches or leaves arising at the same level around the stem of a plant.