

5. Plant communities in New Zealand

Plants do not occur alone. They form communities and interact with one another and other organisms. There are a range of plant communities that occur in the New Zealand botanical region that may be observed as you travel through and across New Zealand (see box below).

Climate especially rainfall and temperature gradients are the main determinants of what grows where, but soils, relief and disturbance factors are also important.

The main plant community types in New Zealand*

Forests

- Kauri/podocarp/broad-leaf forest (northern) + hard beech in places
- Podocarp/broad-leaf forest
- Broad-leaf forest
- Kauri forest (northern)
- Podocarp forest
- Coastal forest and offshore islands (Composition changes with latitude, climate)
- Kermadec islands , Chatham islands, Subantarctic islands—unique flora
- Tawhai/beechn forest (cooler and drier locations)—really a type of broadleaf forest dominated by *Nothofagus* sp.
- Mixed beech/podocarp/broadleaf forest
- River/alluvial forest (kōwhai, ribbonwood, matai, tōtara feature)
- Duneland forest (well drained)
- Plantation

Scrub/shrublands (induced, natural, and seral or successional)

Coastal, montane, subalpine, zones/belts and boundary of wetlands, heathland

Tea tree /manuka/kanuka shrubland—often successional following disturbance

Fernland (Bracken-dominated community)—as above

Herbfields and fellfields (alpine subalpine and subantarctic, areas)

- Scree
- Megaherbs feature of subantarctic islands

Tussock grasslands

- Tall Tussock/Snow tussock grasslands (colder, drier but not too dry areas)
- Red tussock grassland (often boggy sites)
- Short tussock grassland (cold dry eastern sites generally)

Wetlands

- Saline(saltwater) wetlands and mangrove swamps.
- Freshwater wetlands (running/ stationary , fertile/infertile)
 - swamps
 - rivers
 - bogs
 - lakes and ponds
- Seepages

Dunelands

- Fore-dunes—spinifex, pingao and exotic marram grass
- Back-dunes—shrubs (e.g., *Ozothamnus*, coprosma) flax, herbs and grasses



Kauri (*Agathis australis*).

* Exotic plants occur in all of these plant communities.



A plant's place in the forest—is it an epiphyte, a parasite or a saprophyte?

Sometimes plants grow on each other as epiphytes (perching plants) (see box below). In other cases they take nutrients from their host. This select group of plants that depend on their host plants for **nutrition** is called parasites. Some parasitic plants also photosynthesise themselves—these are called hemi-parasites. In New Zealand several species of hemi-parasitic plant (such as the red and scarlet mistletoe—*Peraxilla tetrapetala* and *Peraxilla colensoi*) are under threat from forest clearance and browsing by possums and, as a result, are becoming increasingly rare. One species of mistletoe—Adams's mistletoe (*Trilepidea adamsii*)—that used to occur near Auckland is already extinct.



Peraxilla tetrapetala, red mistletoe.

Epiphytes, parasites and hemi-parasites

Epiphyte: a plant that perches on another plant without harming it.



e.g., *Tmesipteris lanceolata*

Parasite: an organism that derives its food from the living body of another.



e.g., *Dactylanthus taylorii*.
Photo: Avi Holzapfel.

Hemi-parasite: a plant that derives water and nutrients from a host but also photosynthesises.



e.g., green mistletoe (*Ileostylus micranthus*).
Photo: Peter de Lange.

Plants that feed off dead rotting vegetation are known as saprophytes. Examples include thismia (*Thismia rodwayi*) and the cryptic orchid, *Molloybas cryptanthus*.



Molloybas cryptanthus, a saprophytic orchid.
Photo: Ian St. George.

Vegetation strata

A forest can be viewed as a layered structure. Plants when mature will occupy a distinct layer (stratum). The description of layers in a forest is generally like this:

Strata in a forest ecosystem

Emergent

e.g., rimu, rātā.

Canopy

e.g., kāmahī, tawa.

Subcanopy

e.g., putaputāwētā, coprosma.

Understorey

e.g., kawakawa, smaller tree ferns.

Floor

e.g., ferns, herbs.



Photo: Les Molloy.

Often the climbers, epiphytes, parasites and hemi-parasites occupy intermediate layers. A young canopy tree species may temporarily occupy the shrub and sub canopy layers as it grows before maturing into a canopy tree. Most vegetation types including shrublands, wetlands, grasslands are also layered. Knowing where in a forest a plant grows can be useful for identification purposes.

Guide books such as Andrew Crowe's series *Which Native Tree*, *Which Forest Plant* and *Which Native Fern* relate the plants to a particular place in the strata of a forest.

