

# **A Fieldguide to the Chatham Island Flora found in Tuku Nature Reserve**



Chatham Island near Point Gap, Tuku farm (Photo: Grace Yee).

**Collated by Grace Yee, in association with NZPCN,  
T.E.R.R.A.I.N and NZFlora**

# Acknowledgements

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*This guide is based on the plants described in Dawson (1991) and Graham Jane from the Nelson Botanical Society (1997a, b). Plant descriptions were taken from New Zealand Plant Conservation Network (NZPCN), Taranaki Educational Resource: Resource Analysis and Information Network (T.E.R.R.A.I.N.) and NZFlora. Photograph and Image credits are found below or above each image with website and book references in the appendix. This document would not have been possible without these contributions.*

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# Foreword - Mihi

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The flora of Rēkohu (Chatham Islands) often draws keen interest from botanists and gardeners but remains, curiously, under-represented in field guides and studies on our endemic and native plants. This comprehensive report from Grace Yee is, therefore, a valuable addition to our resources and knowledge on plants from the southern part of the main Chatham Island, called Rēkohu by Moriori meaning “misty sun”.

Grace attended a science wānanga at Kōpinga Marae hosted by Hokotehi Moriori Trust in March 2017. She worked alongside the Taikō Trust and staff from Landcare Research to carry out extensive field work on plants from the south coast (Tuku) region. I have no doubt that the report will be well received by Hokotehi, the Taikō Trust, DOC, and the wider community as well as keen visitors to the island interested in knowing more about our special island flora

Me rongo

**Maui Solomon**, Chairman of Hokotehi Moriori Trust.

*Disclaimer: This document is for non-profit and to be used by the Chatham Island community*

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\*1 nationally threatened

\*2 at risk

\*3 native - indigenous

\*4 endemic

\*5 exotic

## 1

# Trees and Shrubs

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A parea (*Hemiphagus chathamensis*) sitting on a branch in Tuku Nature Reserve.  
Photo taken by Grace Yee.

**Chatham Island Christmas tree, rautini (*Brachyglottis huntii*)**

**Flowering:** November-February, yellow

**Fruiting:** Late Summer and early Autumn

**Description:**

Aromatic, large spreading grey-green shrub (up to 6x6m) inhabiting peatlands of the Chatham Islands. Twigs brittle and bearing leaf scars. Bark grey, flaking usually in small shards. Leaves 5-10cm long, narrow, rolled, thin, grey-green, pale underneath, shiny, margin wavy. Flowers with many radiating yellow petals, clustered together. Cypsela (seeds) 1.5-1.8 mm long, narrow-oblong, pale brown to brown, grooved, glabrescent; pappus-hairs 5-7 mm long, off-white, slender, distinctly barbellate.



Photographer: Peter de Lange<sup>1</sup> from NZPCN

**Karamū (*Coprosma chathamica*)**

**Flowering:** August-December, Green

**Fruiting:** November-May

**Description:**

Canopy tree (up to 15m tall and 60cm diameter) with pairs of oval leaves. Twigs and leaf bases bearing small hairs. Leaves with pale veins which have a small pit at some of their junctions, those of juvenile plants to 12cm long, those of adults only 3-4cm long. Ripe fruit yellow. Branches and branchlets rather stout, densely pubescent when young. Male flowers solitary or in clusters of up to 6 on shortly branched axillary peduncles Female flowers 1-6 together. Drupe yellow-red to orange, obovoid, slightly compressed to subdidymous, c.9-12 × 9-14 mm.



Photographer: D. Glenny, Landcare Research<sup>2</sup>

**Hokataka, whakataka (*Corokia macrocarpa*)**

**Flowering:** November-April, Yellow

**Fruiting:** Throughout year

**Description:**

Tall shrub (up to 6m tall) with pointed greyish leaves that are white underneath. Dark brown bark. Leaves somewhat leathery, margin curved, 4-8cm long by 1.5-3.5cm wide, with white fuzz underneath. Flower yellow, star-shaped, with orange centre. Fruit orange or yellow.



Photographer: Top -, greenleafnurseries.co.nz Bottom

**Kopi, karaka (*Corynocarpus laevigatus*)**

**Flowering:** August-November

**Fruiting:** January-April

**Description:**

Large tree (up to 15m tall) about as wide as tall with many thick dark green glossy leaves and large oval orange fruit. Bark dark grey, with dark spots on trunk (1m diam.). Leaves 10-20cm long, paler underneath. Fruit (pale yellow to orange) to 4cm long, oval, in dense sprays, flesh thin. Flowers 4-5 mm diam., greenish-cream to off-white or pale yellow.



Photographer: left – Pieter Pelsers<sup>4</sup>, right – whangareiflora.weebly.com

**Tarahinau (*Dracophyllum arboreum*)**

**Flowering:** Throughout the year, Red/Pink, White

**Fruiting:** Throughout the year

**Description:**

Tree 4-18 m tall, leaves, green, grass-like of two types (broad juvenile and narrow adult), with adult specimens bearing white flowers borne in spikes and often partially obscured by persistent hard and sharp-tipped floral bracts. Bark on old branches greyish-brown to brown, finely fissured, young stems yellowish to reddish brown. Fruit sessile, 1.2-1.5 × 1.0-1.5 mm, oblong, apex round, dark brown, glabrous. Seed 0.6-0.65 mm long, ovoid, yellowish brown, testa slightly reticulate.



Photographer: top – Country, Farm & Garden<sup>5</sup>, middle – taiko.org.nz, bottom – Peter de Lange<sup>1</sup> from NZPCN

**Dracophyllum scoparium**

**Flowering:** Throughout the year, White

**Fruiting:** Throughout the year

**Description:**

Erect multi-stemmed shrub to small tree, 1–4 m tall. Bark on old branches dark brown to blackish brown, finely fissured, young stems reddish brown.

Grassy bright green shrub with many erect twigs bearing clusters of narrow pointed straight leaves are covered on the margin and upper surface. Leaves 30-50mm long by 0.5 to 1mm wide. Flowers white, in clusters of 3-6 at tip of twigs.



Photographer: left – John Sawyer<sup>1</sup> from NZPCN, right – Peter de Lange<sup>1</sup> from NZPCN

**Barker's koromiko (Hebe barkeri)**

**Flowering:** December-March, Lavender, white

**Fruiting:** January-April

**Description:**

Bushy small tree (up to 13m tall) bearing narrow pairs of leaves with a finely hairy margin (lens needed). A dense, rounded to conical, canopy when mature. Leaves taper towards tip, to 79mm long by 22mm wide. Leaf bud without gap. Flowers whiteish, in a spike to 8cm long. Branches erect, old stems brown, branchlets green, red-brown or purple, pubescent, hairs uniform; internodes 3–30 mm. Seeds 1.1–2.0 × 1.0–1.4 mm, strongly flattened, ellipsoid-oblong to broadly ellipsoid, winged, pale to dark brown.



Photographer: Petaholmes<sup>6</sup>

**Pepper tree, kawakawa (Piper excelsum)**

**Flowering:** August-November

**Fruiting:** Throughout the year

**Description:**

Fleshy shrub (at least 5m tall) with jointed dark twigs bearing large dark green glossy heart-shaped leaves with hard green flower spikes. Wine-red to purple-black stems and petioles, and dark-green leaves (often with red-green veins) which are never peltate. Leaves to 120mm wide, veins radiating from middle, peppery to taste, often with insect holes. Fruit orange.



Photographer: Left – Colin Ogle<sup>1</sup> from NZPCN, right – Phil Bendle<sup>3</sup>

**Chatham Island mahoe (*Melicytus chathamicus*)**

**Flowering:** Spring

**Fruiting:** September-April

**Description:**

Small tree (up to 8m tall) bearing oval toothed leaves which have the veins much more visible on the underside inhabiting the Chatham Islands. Pale bark. Leathery leaves 5-13cm long by 2-5cm wide, teeth or margin more obvious towards the tip. Either pale green or bright red leaf stalks. Flowers small. Fruit small, white flecked purple or entirely dark purple berries.



Photographer: P.B. Heenan, Landcare Research<sup>2</sup>

**Chatham Island matipō (*Myrsine chathamica*)**

**Flowering:** September-October, Green, Yellow

**Fruiting:** July-February

**Description:**

Bushy small tree (up to 12m tall) bearing dark green leathery leaves which often has small curled scales below the new growth. New growth hairy. Usually multi-trunked or branched from near base with dark red-brown, brown or grey-brown, firm (not flaking) bark. Branchlets yellow-green to orange-green. Glossy leaves 2-7.5cm long, those on juveniles much broader (to 120mm wide). Fruit glossy deep purple, arranged along twig. Flowers greenish yellow, pale yellow, or cream, and then spotted dark red or maroon, or wine-red spotted purple-black pedicels 4.6-7.2 mm long in fruit.



Photographer: Peter de Lange<sup>1</sup> from NZPCN

**Swamp matipō (*Myrsine coxii*)****Flowering:** May-September - Red/Pink, Yellow**Fruiting:** July-November**Description:**

Erect bushy shrub (up to 12m tall) with numerous erect branches and branchlets bearing small oval leaves with uneven edges inhabiting wet sites on the Chatham Islands. Usually multi-trunked and branching from base, bark red-brown to dark brown. Leaves 7-20mm long by 5-12mm wide, densely clustered along branchlets. Fruit purple. Flowers cream, pale yellow or wine-red, occasionally darkly spotted purple-black.

Photographer: Peter de Lange<sup>1</sup> from NZPCN**Cliff aster, keketererehe (*Olearia chathamica*)****Flowering:** October-March – Violet/Purple, White**Fruiting:** November-April**Description**

Flat-topped small tree with a rounded canopy and narrow leathery saw-edged dark green leaves that are white underneath and large whiteish daisy-like heads. Leaves 2.5-8cm long by 1.5-4cm wide, widest at middle, many even small thick teeth along edge with glossy upper surfaces. Large daisy flowers 3-4.5cm wide, petals white, centre purple.



Photographer: taiko.org.nz

**Chatham Island akeake (*Olearia traversiorum*)****Flowering:** November-January - Cream, Yellow**Fruiting:** January-June**Description:**

Small tree (12-18m tall, trunk up to 1m diameter) with oval dark green leathery leaves that are whiteish underneath and persistent seed heads inhabiting drier sites on the Chatham Islands. Bark light grey, becoming coarsely fibrous, deeply fissured, and rough textured on trunk and old branches. Leaves 15-80mm long by 10-46mm wide. Flowers cream or brownish (sometimes pale yellow), in small clusters, appearing late spring. Seeds are narrow-cylindric, light brown, with 4-5 pale ribs, sparsely to moderately hairy; off-white to buff, finely scabrid.

Photographer: top – John Sawyer<sup>1</sup>

**Chatham Island lancewood, hoho**  
**(*Pseudopanax chathamicus*)**

**Flowering:** October – May

**Fruiting:** November - September

**Description:**

Small tree (7-12m) with long (5-15cm) narrow thick and fleshy

leaves. Inflorescence an umbel, terminal, compound; staminate (male) with 5-10 primary rays, c. 5 cm long, flowers racemously arranged; pistillate (female) with shorter primary rays, umbellules 2-5 (or more) flowered. Fruit fleshy, broad-oblong, 6-5 mm diam., rounded style branches retained on an apical disc, very dark purple. Seeds 5 per fruit (often only 1 or 2 viable), grooved on lateral face, 4-6(-7) mm long.



Photographer: left- Peter de Lange<sup>7</sup>, right – Peter de Lange<sup>1</sup> from NZPCN

**Nikau palm (*Rhopalostylis sapida*)**

**Flowering:** Spring

**Fruiting:** Summer

**Description:**

Palm tree from 4-15m tall. Large leaf bases encircle the trunk.

Trunk is ringed by the scars left by the sheathing bases of the fallen leaves. Purple flowers and brilliant-red hard berries, which hang from just below the base of the leaves.



Photographer: left – Phil Bendle<sup>3</sup>, right – Věra Svobodová<sup>8</sup>

**Blackberry (*Rubus fruticosus*)**

**Flowering:** November, December, January, February, March, (May) – Red/Pink, White

**Fruiting:** November-May

**Description:**

A scrambling, extremely thorny shrub, semi-erect with stems arching and entangled. Stems grow up to 8m long. Black and shiny fruit is a berry, 1-3cm in diameter, that consists of many fleshy segments. The white flowers, or pink flowers occur in groups and are 2-3cm in diameter with 5 petals. The leaves are usually in leaflets of 5, with toothed, spines on the lower-side of the mid-rib. The leaves are dark green with a lighter underside.



Photographer: Carl Farmer<sup>9</sup>

**Blackberry (*Rubus polyanthemus*)**

**Flowering:** December-February

**Description:**

Semi-erect, scrambling shrub; primocanes arching, reddish, sharply angled and  $\pm$  flat between, with some subsessile glands and almost glabrous to sparsely clothed in simple and stellate hairs; armature of many, stout, erect prickles mostly on angles. Young stems moderately hairy and densely glandular. Leaflets 5, sparsely to moderately pilose on upper surface, pilose on veins and sparsely to moderately tomentose between on lower surface, serrate; terminal leaflet lamina elliptic-obovate, acuminate, 50–85  $\times$  40–60 mm, with petiolule  $\frac{1}{3}$ - $\frac{3}{8}$  length of lamina. Stipules narrow-lanceolate. Infl. densely hairy, with subsessile and usually a few long-stalked glands. Sepals long-acuminate, tomentose and with longer simple hairs, mostly with pricklets. Petals rounded to slightly notched,  $\pm$  smooth, pale pink. Anthers glabrous.



Photographer: NBNatlas<sup>41</sup>

**Poroporo, bullibulli (*Solanum laciniatum*)**

**Flowering:** Throughout the year – White, Violet/Purple

**Fruiting:** Throughout the year

**Description:**

Fleshy shrub to 4m tall bearing dark green thin wide leaves that are divided into 1-3 large sharp lobes and with large purpleish ruffled flowers that have a projecting yellow centre. Leaves 10-80cm long by 4-6cm wide. Flowers dished, up to 50cm wide. Fruit yellow or orange, 23-30mm long. POISONOUS.



Photographer: top – Jeremy Rolfe<sup>1</sup> from NZPCN, bottom – Peter de Lange<sup>1</sup> from NZPCN

# 2

## Ferns

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A group of plants that reproduce via spores and have neither seeds nor flowers. Ferns have leaves that are megaphyllis, which is a leaf with several or many large veins branching apart or running parallel and connected by a network of smaller veins.

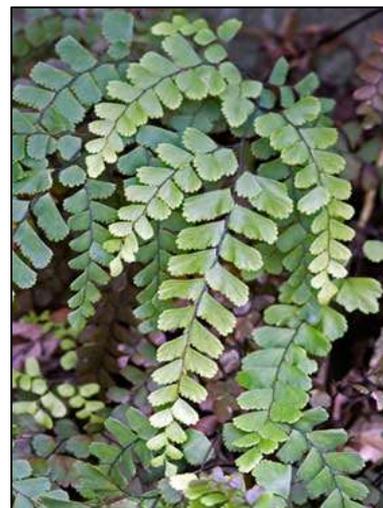


Under *Dicksonia fibrosa* fern fronds in Tuku Nature Reserve. Photo taken by Grace Yee.

### **Common maidenhair (*Adiantum cunninghamii*)**

#### **Description:**

Tufted, terrestrial fern. Rhizomes, short- to long-creeping. Stipes and rachises glabrous. Fronds adaxially dark green or glaucescent, abaxially paler, glaucous green, ovate to elliptic. Lamina 100-350 x 50-240 mm, 2-3-pinnate at base, Ultimate segments stalked to one side, oblong, tending to curve acroscopically at apices, upper margins irregularly toothed, lower margins smooth, glabrous. Indusia kidney-shaped, glabrous.



Photographer: Jeremy Rolfe<sup>1</sup> from NZPCN

### **Hen and chickens fern, pikopiko (*Asplenium bulbiferum*)**

#### **Description:**

Rhizome short, stout, erect, bearing ovate scales up to 15x5mm. Stipes 50-300 mm long, brown on underside, green above, stout, covered in small brown ovate scales. Rachis pale green to yellow-green, scaly, prominently grooved, usually bulbiferous. Pinnae 15-30 (or more) pairs, ovate to narrowly ovate, acuminate, shortly stalked, 30-200x10-50mm, scaly on underside, basal pair pointing downwards when fresh. Secondary pinnae sessile or shortly stalked, very narrowly elliptic to ovate or elliptic, obtuse, deeply serrate or sometimes almost pinnate, decreasing in size from base to apex, basal acroscopic pinnule often enlarged (up to 40 x 10 mm). Ultimate pinnules narrowly oblong, ± entire to crenate-serrate, up to 10 mm long. Sori numerous, broad, submarginal, 2-4 mm long.



Photographer: Phil Bendle<sup>3</sup>

### **Chatham Island spleenwort (*Asplenium chathamense*)**

#### **Description:**

Rhizome short, erect, bearing blackish-brown subulate scales up to 25x3mm. Stipes 50-350 mm long, 2-4 mm diameter, stiff, pale brown at the base, green above. Laminae elliptic or rhombic to ovate, dark shiny green on upper surface, lighter on undersurface, stiff, erect, glabrous except for a few scattered scales, bipinnate to often tripinnate at base. Rachis green, or occasionally pale brown on undersurface, bearing a few small scattered scales. Primary pinnae in 6-17 pairs, the upper ones narrowly elliptic to narrowly ovate decreasing regularly in size towards the apex, the lower ones narrowly ovate to ovate. Secondary pinnae on the upper primary pinnae ± linear, undivided, with obtuse apices; those on the lower primary pinnae narrowly elliptic or ovate and divided into tertiary pinnae. Tertiary pinnae usually linear, undivided, occasionally larger and divided into 2-4 ultimate segments, apices obtuse. Sori extending along ultimate pinnules, margins of indusia entire. Spores; perispores prominently winged, sometimes with a few ridges.



Photographer: Top - John Smith-Dodsworth<sup>1</sup> from NZPCN, bottom - Peter de Lange<sup>7</sup>

**Hanging spleenwort, makawe (*Asplenium flaccidum*)**

**Description:**

Mostly epiphytic. Rhizome short, stout, erect, bearing dark brown subulate scales up to 20×2mm. Stipes 50-200 mm (or more) long, brown on underside, green above, flaccid, sparingly covered in small subulate scales with long filiform apices.

Laminae lanceolate to elliptic, 150-900 (or more)×50-250 mm, dull green, thick, leathery, limp and pendulous, pinnate to bipinnate. Raches green, sparingly scaly. Pinnae in 5-20 (or more) pairs, linear, acuminate, long stalked, 50-150×5-20 mm; degree of dissection very variable, sometimes only divided into very short obtuse segments, sometimes pinnate. Pinnules very variable in length, from oblong and obtuse to linear and acute, up to 15 × 2 mm. Basal acroscopic pinnule occasionally much longer than that next to it. Sori submarginal, linear, 2-10 mm long.



Photographer: Phil Bendle<sup>3</sup>

**Hooker's spleenwort (*Asplenium hookerianum*)**

**Description:**

Rhizome short, erect, bearing numerous brown, ovate, acuminate scales up to 10×2mm. Stipes 20-100 mm long, pale brown below, green above, densely covered in small, subulate to narrowly ovate scales with filiform apices.

Laminae lanceolate to rhombic, 40-250×10-150 mm, dark green, thin, normally bipinnate but often pinnate when young and almost tripinnate in well-grown specimens. Raches green, slender, and very scaly. Pinnae 5-15 pairs, very narrowly ovate to ovate, obtuse to acuminate, long-stalked, 10-80 × 5-20 mm, basal pair pointing upwards when fresh. Pinnules stalked, 3-10 pairs, linear to suborbicular, crenate to deeply incised (or almost pinnate), 3-12 × 3-10 mm, tending to lie at 90° to plane of frond in well-grown specimens. Sori sub-marginal on narrow pinnules, remote from margins on broad segments, 1-3 mm long.



Photographer: P.B. Pelsler<sup>4</sup>

**Shining spleenwort. paretao, huruhuru, paranako**  
**(*Asplenium oblongifolium*)**

**Description:**

Rhizome stout, often forming a hard woody mass above ground, bearing pale brown, shiny, ovate, acuminate scales up to 30×7 mm. Stipes 80-200 mm long, dark brown, stout, densely covered in narrow scales with very long filiform apices.

Laminae oblong to elliptic, 0.18-1.00 m long, 100-350 mm wide, dark green and glossy above, pinnate. Rachis brown below, green above, stout, slightly ridged, scaly. Pinnae 4-15 pairs, lanceolate to narrowly oblong or ovate, acuminate, crenate-serrate to ± entire, cuneate at base, 40-150 × 10-30 mm, frequently covered in very small hair-like scales on the underside. Sori up to 20 mm long, not reaching lamina edge.

**Similar taxa:**

*A. obtusatum* – it is distinguished by the rachis and foliar scales which have very long hair-like apices.



Photographer: Phil Bendle<sup>3</sup>

**Shore spleenwort (*Asplenium obtusatum*)**

**Description:**

Rhizome stout, often forming a hard woody mass above ground, bearing brown, shiny, ovate, acuminate scales up to 15 × 4 mm. Stipes 40-300 mm long, dark brown at base, green above, stout, covered in ovate scales with acute or acuminate apices. Laminae ovate, 60-400 × 50-200 mm, dull green, very thick and fleshy, pinnate. Rachis green, stout, prominently grooved and scaly. Pinnae 5-15 pairs, 20-narrowly ovate to oblong, obtuse to acute, crenate-serrate to entire, cuneate at base, 100 × 10-25 mm, scaly on the underside. Sori up to 10 mm long, not reaching to lamina edge.



Photographer: P.B. Pelsler<sup>4</sup>

**Sickle spleenwort, peretao, petako (*Asplenium polyodon*)**

**Description:**

Rhizome stout, short creeping, densely covered in red-brown, narrowly triangular scales up to 10 × 1 mm. Stipes 100-300 mm long, dark brown, stiff, densely covered in scales similar to but smaller than those of the rhizome. Laminae lanceolate, 250-500 (or more) × 100-200 mm, dark green and glossy above, paler and dull below, frequently pendulous, pinnate. Raches dark chocolate brown, very scaly. Pinnae 25 (or more) pairs, narrowly angular-ovate to ovate, sometimes with a large rounded basal acroscopic lobe, acuminate, doubly serrate, 50-100 × 10-20 mm, scaly and with prominent veins on underside. Sori often slightly curved away from the midrib, up to 2 mm long.



Photographer: Phil Bendle<sup>3</sup>

**Blechnum capense, kiokio, horokio (*Blechnum novae-zelandiae*)**

**Description:**

The long cascading fronds (up to 2m long and 50cm wide) are a bright pink colour when new, and turn light green and then darker green as they mature. The new fronds has red tones in the sun. *Blechnum novae-zelandiae* has fertile and sterile fronds of different form on the same plant. During every growing season, some adult ferns form: Sterile fronds that lack sporangia and fertile fronds that bear sporangia.



Photographer: Bradley Davis<sup>13</sup>

**Small kiokio (*Blechnum procerum*)**

**Description:**

It can grow as high as 90cm (especially the fertile fronds), it more typically attains a height of 30 to 50cm - hence, the common name, small kiokio. It will spread to 1m. New fronds exhibits a bronze colour that is most intense when growing within an open spot.



Photographer: Phil Bendle<sup>3</sup>

### **Blechnum durum**

#### **Description:**

Rhizome stout, ascending, sts produced into a short caudex, clad in brown linear-attenuate to ovate-lanceolate paleae up to 15 mm. long; stipites tufted. Stipes rigid, 2.5–5 cm. long, paleate in lower half, dark brown, ± pilose. Rhachis stout, prominent, deeply grooved above, ± pilose, bearing numerous pinnae. Sterile lamina coriaceous to almost fleshy, oblong to lanceolate, dark green above, paler below, acute to acuminate, margins entire; veinlets mostly forked; lower and mid portion pinnate, upper pinnatifid; 15–40–(75) × 3–5–(10) cm. Pinnae sessile by widened base, approximate. Larger pinnae 2–4–(7) cm. × 4–6–(12) mm., narrow-oblong, obtuse to subacute, subfalcate; lower gradually decreasing in size. Fertile lamina 10–40 × 2–7 cm.; pinnae rather close-set, linear-oblong, rigid, obtuse, patent. Sori covering whole of undersurface.



Photographer: Antony Kusabs, Te Papa<sup>14</sup>

### **Star fern, kiwakiwa (Blechnum fluviatile)**

#### **Description:**

An herbaceous symmetrical fern like a starfish with ladder like fronds measuring up to 50 cm long. Growing in a distinctive ground-hugging rosette shape, its fertile fronds - dark brown and spiky - stand upright from the centre, while the drooping sterile fronds with their nearly round leaflets form the rosette. As the parent plant ages it develops a short trunk central to a surrounding colony. It is a hardy small common ground fern which requires moist, shaded conditions for optimal growth.



Photographer: Phil Bendle<sup>3</sup>

### **Little hard fern (Blechnum penna-marina)**

#### **Description:**

Rhizome creeping. Fronds dimorphic, 40–120 × 6–12 mm. Stipe 15–200 mm long, dark red-brown at base, usually becoming stramineous towards lamina; scales somewhat bullate, linear to ovate, entire, red-brown. Lamina lanceolate, pinnate, with 4–34 pairs of pinnae; rachis and costae stramineous; scales mainly on lower surface, small, sparse, acuminate, entire, brown to red-brown; sterile pinnae oblong-obtuse or somewhat triangular, 3.5–8.0 × 2.0–4.2 mm, adnate with broad bases, contiguous; margins entire; basal pinnae shorter, rounder; fertile pinnae linear and somewhat falcate, 3.6–6.8 × 1.0–2.5 mm.



Photographer: Robbin Moran<sup>16</sup>

**Kidney fern, konehu, kopakopa, raurenga (*Cardiomanes reniforme*)**

**Description:**

Terrestrial or epiphytic fern forming extensive, interwoven creeping patches, Rhizomes long-creeping, much branched and/or interwoven. Stipes 50-250 mm long, very brittle, margins prominently winged. Fronds bright yellow-green to dark green, glossy. Laminae 30-100(-120) × 40-130 mm, reniform to almost orbicular, entire (not divided), venation conspicuous. Sori crowded along lamina margin, slightly sunken into lamina. Indusium cupular, not widened at mouth, receptacle exerted.



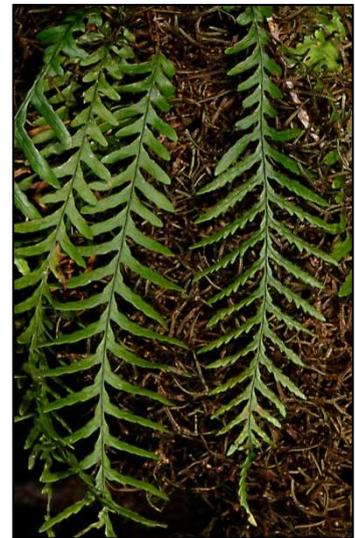
Photographer: Tonyfoster<sup>13</sup>

**Comb fern (*Notogrammitis heterophylla*)**

**Description:**

Epiphytic or rupestral shortly rhizomatous fern forming tufted patches. Frond produced in two rows. Lamina (25-)87-191(-300) mm long, (3-)18-57(-100)mm wide; pinnae (3-)12-21(-36) pairs; longest pinnae (1-)10-40(-63) mm long, 15-75(-21) mm wide, apically truncate to acuminate, herbaceous to thickly coriaceous; margins entire or with primary and secondary lobules; hairs 0.2-0.8 mm long, whitish to pale red-brown, catenate, simple, glandular to eglandular, or whitish to pale red-brown, forked, abaxially on rachis, sometimes on both surfaces of lamina and margins. Sori on (2-)8-15(-22) pairs of pinnae.

→ do not remove in wild due to difficult propagation



Photographer: P.B. Pelsler<sup>4</sup>

**Gully tree fern, ponga, pūnui (*Cyathea cunninghamii*)**

**Description:**

Tall tree fern with green-stalked soft leaves to 3m long. Trunk to 20m tall, slender, old leaves fall off leaving just the base. Leaf stems covered in small red and white star-shaped hairs, star-tipped scales and pointed scales (lens needed). Sporangia arranged in small half capsules underneath leaves.



Photographer: L.R. Perrie, Te Papa<sup>2</sup>

**Silver fern, kaponga, kātote (*Cyathea dealbata*)**

**Description:**

Tree fern with green-stalked soft leaves to 4m long (3-pinnate) that are distinctly silver on the underside. Trunk to 10m tall, covered by the bases of old fronds. Leaf stems covered in wavy hairs (lens needed). Stipes slender, silvery-white when young, maturing pale brown. Sporangia arranged in small round capsules underneath leaves.



Photographer: Phil Bendle<sup>3</sup>

**Black tree fern, mamaku (*Cyathea medullaris*)**

**Description:**

Large tree fern with black-stalked leaves to 5m long arching upwards from crown, 3-pinnate, leathery, dead fronds falling (except in very young plants). Trunk with obvious scars from old leaves, to 20m tall. Trunk black covered with hexagonal stipe bases. Leaf stems covered in small scales that have a spiny edge (lens needed). Sporangia arranged in small round capsules underneath leaves.



Photographer: left – forestflora.co.nz, right – Phil Bendle<sup>3</sup>

**Golden tree fern, whekī-ponga, whekī-kohoonga, kuripaka (*Dicksonia fibrosa*)**

**Description:**

Stout tree fern up to 10 m tall. Trunk solitary, dense, made of red-brown interwoven rootlets, Fronds forming dense crown, dying and leaving a tidy, persistent skirt beneath crown.



Photographer: Phil Bendle<sup>3</sup>

**Rough tree fern, whekī (*Dicksonia squarrosa*)**

**Description:**

Tree fern up to 8 m tall. Usually forming colonies. Trunks covered in dead, black stipe ends, not dense, and often bearing aerial buds. Live fronds often untidy and tattered, usually falling when dead, or forming an irregular, messy skirt.



Photographer: Left – Phil Bendle<sup>3</sup>, right – Peter Richardson<sup>17</sup>

**Water fern, mata (*Histiopteris incisa*)**

**Description:**

Terrestrial often summer green fern (deciduous in cooler areas). Rhizomes long-creeping, scaly. Stipe and rachis chestnut-brown at base otherwise mostly yellow-brown (sometimes glaucescent), glabrous except for basal scales, glossy. Lamina yellow-green, glaucescent or glaucous (irrespective distinctly glaucous when young), glabrous, ovate, 3-4-pinnate at base. Pinnae sessile, basal pinnules reduced, stipuliform; veins reticulate. Primary pinnae in opposite pairs; longest 130-600 × 70-350 mm, arising at narrow angles, sessile. Secondary pinnae opposite, arising at wide angles; longest 20-90 mm, with basal pair sometimes reduced to stipules. Tertiary pinnae opposite; longest 10-45 × 6-15 mm, sometimes divided into quaternary pinnae. Ultimate pinnules adnate to midribs; margins entire or crenate; apices obtuse. Sori ± continuous around margins, borne on connecting vein, bearing paraphyses; indusia absent, sori protected by reflexed membranous lamina margin. Spores pale, tuberculate.



Photographer: Julie F. Barcelona<sup>4</sup>

40-200 ×  
20-90 × 6-15

**Drooping filmy fern, irirangi, piripiri (*Hymenophyllum demissum*)**

**Description:**

Terrestrial or epiphytic fern forming large patches made up of numerous densely (more rarely diffuse) packed fronds. Rhizomes long-creeping, slender. Stipes 40-170 mm long, stout, pliant, wiry, glabrous usually not-winged, if winged then wing minute; rachises narrowly winged throughout. Laminae elliptic, ovate or narrowly ovate, 3-4-pinnate, 70-250 × 30-150 mm, pale green to dark green, glabrous. Ultimate segments oblong, margins smooth. Sori numerous on the terminal ends of the ultimate segments of the primary pinna. Indusial flap margins smooth or minutely toothed.



Photographer: Leon Perrie<sup>2</sup>

**Filmy fern (*Hymenophyllum flabellatum*)**

**Description:**

Rhizome long creeping, wiry, branched, 0.3-0.8 mm diameter, tan-coloured, with opaque villous hairs but tomentose at the stipe junction. Fronds 20-80 mm long, peundulous, rarely suberect. Stipe wiry, flexuose, 8-20 mm long, unwinged, with scattered pale-white or yellow hairs extending along main rachis. Lamina yellow-green, very variable in size and shape, oblong-linear to ovate-lanceolate (dwarfed fronds often broadly deltoid to round), 20-270 × 10-65 mm; primary division pinnate in the lower part, deeply pinnatifid above; pinnae or primary laminal segments oblique, 1-2-pinnatifid, flabellate, ovate or rhombic. Ultimate segments linear, 0.5-2.2 mm wide, glabrous to glabrescent; margins entire, 1-2-cells thick, apex obtuse, occasionally emarginate. Sori numerous; involucre ovate to rotund, bilabiate to below the middle. 0.5-2.0 × 0.5-2.0 mm; base broadly and shallowly cuneate; margins entire; receptacle included or slightly exserted.



Photographer: Leon Perrie<sup>2</sup>

**Hypolepis ambigua**

**Description:**

Rhizome long-creeping, 2-4 mm diameter, covered in red-brown hairs up to 2.5 mm long, stipes arising at intervals of 90-200 mm (abundant near growing tip, sparse elsewhere). Stipes 80-600 mm long, 1.5-5 mm diameter, red-brown at very base, pale red-brown or yellow-brown above, covered at base in red-brown hairs, up to 3 mm long, sparse above and paler. Rachis red-brown or yellow-brown at base, green at apex, sparsely covered in pale brown hairs like those of stipe. Primary pinnae in 22-30 pairs, opposite or subopposite.

Secondary pinnae narrowly ovate or broadly ovate; parallel-sided, broadly winged. Tertiary pinnae narrowly ovate or parallel-sided. Veins reaching margin at tooth apex. Hairs: glistening colourless non-glandular hairs on underside of lamina, costae and midribs, absent from lamina margin; brown-tinged hairs on upper surfaces abundant on midribs. Sori: one on acroscopic edge of each ultimate segment, originating away from margin; protected at maturity by slightly reflexed pinnules margin which also often bears a few short hairs at this point; hairs also often present in sorus (0.3-0.5 mm long). Spores pale, brown, echinate.



Photographer: P.B. Pelsler<sup>4</sup>

**Hypolepis lactea**

**Description:**

Rhizome long-creeping, 1–2 mm diameter, covered in red-brown hairs 2.0–3.5 mm long, giving rise to stipes at intervals of 15–90 mm. Stipes dark purple-red to red-brown, bearing red-brown hairs up to 3 mm long, numerous at base, more scattered above, becoming replaced by abundant colourless glandular hairs which are very variable in length but generally shorter than the brown hairs. Laminae angular-ovate, pinnate at apex, tripinnate at base, exuding white milky substance from upper surface with age. Rachis red-brown at base, becoming pale yellow brown at apex, densely covered in short glandular hairs and more scattered longer red-brown hairs. Primary pinnae in 20–35 pairs + tapering pinnatifid terminal portion, opposite or subopposite. Secondary pinnae narrowly ovate. Tertiary pinnae ovate, divided into 2–4 pairs of ultimate segments, broadly winged. Veins reaching margin at a tooth apex, often very slightly excurrent. Hairs: lamina margins, undersurfaces, veins, and midribs densely covered in short colourless glandular hairs, interspersed with occasional non-glandular hairs of same length; equal mixture of short colourless glandular and eglandular hairs on upper surface; occasional longer red-brown non-glandular hairs on midribs. Sori: usually one on acroscopic edge of each ultimate segment, sometimes second on basiscopic edge, originating away from margin, virtually unprotected. Spores pale brown, echinate.



Photographer: Leon Perrie<sup>7</sup>

**Smooth shield fern (Lastreopsis glabella)**

**Description:**

An erect ground fern with dark green fronds. Fronds 15-35 x 5-25 cm. Differs from other common relative *Lastreopsis hispida* in having a smooth rather than hairy stipe. Sori (spore capsules) are round in one row either side of the midrib.



Photographer: Jeremy Rolfe<sup>1</sup>  
From NZPCN

**Hairy fern, tuakura (*Lastreopsis hispida*)**

**Description:**

Rhizome short-creeping, 5–8 mm diameter, densely scaly and hairy; scales 4.0–9.6 × 0.5–1.0 mm, dark red-brown to red-black, bristly, persistent. Fronds crowded. Stipe 100–480(–500) mm long, densely invested in harsh, bristly, stiff red-brown scales 4.0–9.6 × 0.5–1.0 mm and shorter, glandular hairs. Lamina 3–4-pinnate, deltoid, 100–500 × 60–300 mm, dark brownish green, rugose, glabrous except on veins and midribs; these invested in black bristly scales and smaller brown hairs; rachis bearing red-brown (to black) bristly scales and hairs; primary and secondary pinnae stalked, finely dissected. Ultimate segments narrowly oblong-lanceolate, sharply toothed; margins thickened with deeply cut into narrow curved teeth. Sori medial on the veinlets, or at the fork of these; indusium pale brown.



Photographer: Leon Perrie<sup>20</sup>

**Creeping shield fern (*Lastreopsis microsora*)**

**Description:**

A small native fern with fronds that are erect, broad-triangular, 3–4-pinnate, usually 30–90 cm long. A distinctive feature is very small pale brown circular sori under the fronds. It has a creeping rhizome which will form large adjoining colonies. It will also reproduce with self-sown spores.



Photographer: Phil Bendle<sup>3</sup>

**Button fern (*Pellaea rotundifolia*)**

**Description:**

Round, dark-green, leathery pinnae (leaves), on fronds up to about 30–40 cm in length. Forms into a clump over time.



Photographer: Robbin Moran<sup>16</sup>

**Fragrant fern, mokimoki (*Microsorium scandens*)**

**Description:**

Epiphytic or rupestral scrambling or climbing fern. Thin rhizome covered in erect dark brown to purple-brown scales, membranous, dull green, pleasantly scented fronds, and by the narrower and more numerous pinnae. Fronds 75-580 × 10-30 mm, dull green. Stipes 6-160 mm long, slender, pale, glossy, sparsely scaly. Lamina membranous, deeply pinnatifid or simple, strongly, pleasantly scented when fresh or recently dried. Pinnae in 1-20 pairs. Sori in 1 row close to margin on each side of costa of laminal lobe or midrib in simple fronds, rounded or sometimes elongated or oval, impressed into abaxial lamina, forming low protuberances on the adaxial lamina surface. Spores orange-brown.



Photographer: Phil Bendle<sup>3</sup>

**Hound's tongue, kōwaowao, pāraharaha (*Microsorium diversifolius*)**

**Description:**

Hard and glossy, three-lobed fronds on black stem. The fronds also rise from slender turquoise rhizomes. Epiphytic and terrestrial; creeping or climbing fern. Fronds 45–750 mm long. Stipes 10–350 mm long, pale to chocolate brown, glabrous or with very scattered scales. Laminae very varied, from undivided or variously lobed to deeply 1-pinnatifid; lamina extending 5–40 mm below the lowest lobe, bright glossy green, coriaceous, glabrous or with scattered scales on the costae. Veins reticulate, forming 2–3 series of areoles between costa and lobe margin; hydathodes conspicuous on adaxial surface of lamina. Sori round or rarely elliptic, 2.5–5 mm wide, impressed into lamina forming low bulges on adaxial surface, in 1 row either side of costa, medial or closer to the lobe margin; paraphyses absent; exindusiate.



Photographer: Phil Bendle<sup>3</sup>

**Gully fern, pakauroharoha, pākau, piupiu (*Pneumatopteris pennigera*)**

**Description:**

Delicate, terrestrial fern. Fronds 0.4–1.2 m long, pale yellow-green to bright green. Stipe pale brown or green-brown. Lamina narrowly elliptic to elliptic; pinnae to 36 pairs; basal 4–5 pairs gradually reduced; veins usually 6 pairs, 1 pair anastomosing, with next acroscopic vein sometimes passing to the sinus membrane. Lamina ± glabrous, aside from pale brown ovatescales on abaxial surface of costae of emergent and young fronds, and sparse brown acicular hairs and colourless capitate hairs on adaxial surface of rachis, costae and margins. Sori inframedial, exindusiate; sporangia without capitate hairs near annulus.



Photographer: L. Jensen<sup>21</sup>

**Bracken, rarauhe (*Pteridium esculentum*)**

**Description:**

Fern with deeply rooted, subterranean rhizomes. Stipes and rachis chestnut brown at base, yellow-brown to russet at apex, woody, grooved, smooth, bearing sparse non-glandular hairs or ± glabrous stipe 0.2-1.3(-2.0) m or more long, 3-8(-15) mm diameter, woody. Lamina broadly elliptic or broadly ovate, 3-4-pinnate at base, dark green (often glaucescent) above, paler beneath, adaxially glabrous, abaxially with sparse red-brown hairs on midribs and dense colourless appressed non-glandular hairs along veins. Longest pinnae arising at narrow angles; longest 150-650 × 80-400 mm. Secondary pinnae arising at narrow angles; longest 50-260 × 15-130 mm; basal one often much-reduced; midribs of primary and secondary pinnae narrowly winged. Tertiary pinnae decreasing markedly in length along secondary pinnae; longest 7-70 × 2-20 mm, with winged midribs. Quaternary pinnae to 12 × 4 mm; ultimate pinnules linear, straight, acute, entire, adnate and decurrent on 1 side. Sori continuous along pinna margin. Indusium > 0.2 mm wide, membranous, entire, glabrous. Spores dark yellow to orange yellow., granulose.



Photographer: Steve Attwood<sup>13</sup>

**Leather-leaf fern, ngarara wehi, ota (*Pyrrhosia eleagnifolia*)**

**Description:**

Epiphytic or rupestral rhizomatous fern. Rhizomes long-creeping, often densely interwoven, young portions densely invested in red-brown to fawn coloured scales. Stipes reduced to phyllopodia borne in intervals along rhizome. Fronds coriaceous, fleshy to almost succulent, undivided, 30-200 × 5-20(-30) mm; adaxially yellow-green to dark green (rarely glaucescent), glabrescent, initially sparsely covered in long straight to somewhat flexuous pale-yellow to translucent caducous hairs; abaxially densely covered in fawn or white-coloured stellate hairs, aside from midrib, veins not evident on either surface; lamina variable; sterile examples broadly ovate, rhomboidal, suborbicular, to elliptic (very rarely linear); fertile linear, linear-lanceolate to suborbicular. Sori without indusia, ovoid, ellipsoid to rounded, in 2-3(-4) irregular rows (rarely more) either side of midrib and set away from frond margins. Spores yellow.



Photographer: Leon Perrie<sup>20</sup>

**Leathery shield fern (*Rumohra adiantiformis*)**

**Description:**

Rhizome 10–15 mm diameter, densely covered in long, golden brown to red-brown scales; margins entire or minutely toothed; apices acuminate. Fronds often widely spaced or aggregated toward rhizome apices, 0.2–0.9 m long. Stipes 0.2–0.8 m long, thick, densely invested by peltate, golden brown scales. Lamina 2–3-pinnate, coriaceous, 100–500 × 70–400 mm, ovate to deltoid, adaxially glossy dark green to yellow-green (sometimes pale orange-green), abaxially paler and dull, ± scaly. Primary and lower secondary pinnae stalked; ultimate segments oblong, obtused to rounded, crenate to bluntly lobed; veins immersed. Sori black when mature; indusium with a dark centre.



Photographer: JMK<sup>6</sup>

**Fork fern (*Tmesipteris elongata*)**

**Description:**

Rhizome: brittle, dichotomously branched, 0.8-3.5 mm diameter, densely clad in dark brown rhizoids 1.0-1.5 mm long. Aerial Shoot: developing over one or many years and terminating in a small appendage 0.1-0.5× the size of the largest leaves or in small forms with predominantly distichously arranged leaves terminating in an appendage similar to the largest leaves developed; simple or dichotomously branched 1-2(-3) or more times, pendulous, 80-1180 mm long, ± quadrangular in cross-section; leaves spirally or distichously arranged, sporophylls spirally arranged. Leaves: 1-5 per 10 mm of stem, sub-coriaceous, flexible, almost isobilateral with stomata distributed over one or both surfaces, surfaces dull mid-green; oblong, lanceolate, falcate to aristate, variable on the same plant; 10-42 mm long, (excluding mucro), 3-9 mm broad; mucro blunt 1-2 mm long. Sporophylls: developed in regular or irregular zones or throughout most of the length except in the lowermost part, occasionally scattered amongst the leaves; slightly shorter than the leaves, 3-5 per 10 mm of shoot. Synangium: 2-6 mm long, 1.0-2.5 mm high at point of attachment, greenish yellow to light brown at maturity, testiculate; lobes ± equal, ends obtuse; lying along the sporophyll axis; immature synangia when dried reflex at the ends and then ± lunate; deciduous at maturity. Spores: pale yellow, often released in a mass.



Photographer: P.B. Pelsner<sup>4</sup>

**Veined bristle fern (*Trichomanes venosum*)**

**Description:**

Epiphytic (rarely terrestrial) fern usually forming dense carpets on suitable substrates. Rhizomes 0.2-0.8 mm diameter, widely creeping, much-branched and interwoven; densely hairy, hairs long, golden brown. Fronds 20-180 mm long, bright green, translucent, venation conspicuous. Stipe 8-55 mm long, slender, not winged. Rachises winged. Lamina 20-110 × 15-65 mm, lanceolate to elliptic, somewhat irregular, 1-pinnatifid, 1(-2)-pinnate, glabrescent (hairs when present unbranched). Ultimate segments 1.5-6.0 mm wide; margins crenate; apex obtuse, truncate, often notched; veins pinnately branched; false veins absent. Sori immersed in short basal acroscopic lobes; involucre narrowly cylindrical, tapering to base, 1.5-4.0 × 0.8-1.2 mm, narrowly winged; mouth broadly dilated, sometimes bilabiate; receptacle exerted up to 10 mm beyond mouth.



Photographer: Leon Perrie<sup>2</sup>

# 3

## Lycophytes

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A clade of vascular primitive plants similar to ferns with unique leaves called microphylls, which have only a single vein. They lack seeds, wood, fruit and flowers. They produce spores for reproduction and are wind-pollinated and dispersed. Extant plants included in lycophytes are club mosses, quillworts and spike mosses.

**Hanging clubmoss (*Phlegmariurus varius*)**

**Description:**

Terrestrial, lithophytic or epiphytic plants producing 1-many branches from near base. branches tufted, erect suberect if terrestrial or pendulous if epiphytic, branched 1-many times, 0.08-2.0 m long. Leaves spirally arranged, spreading, angled at 60-90 degrees to axis, linear-lanceolate, acute to subacute, 9-18 mm long, 1-3 mm wide, deep green to yellow-green, sometimes tinged orange; texture and thickness variable; margins entire, often thickened. Transition from sterile to sporogenous zone gradual or abrupt. Sporogenous zone 40-180 mm long, usually 3.5-4.5 mm diameter usually distinct from sterile leaves but sometimes scarcely discernible. Sporophylls variable; linear-lanceolate, spreading, shorter than sterile leaves, to 10 mm long, smaller towards apex; or ovate triangular, keeled, in 4-rows, imbricate, appressed, 2.0-2.5 mm long, 1.5-2.0 mm wide. Sporangia occupying one-tenth to the entire length of the sporophyll.



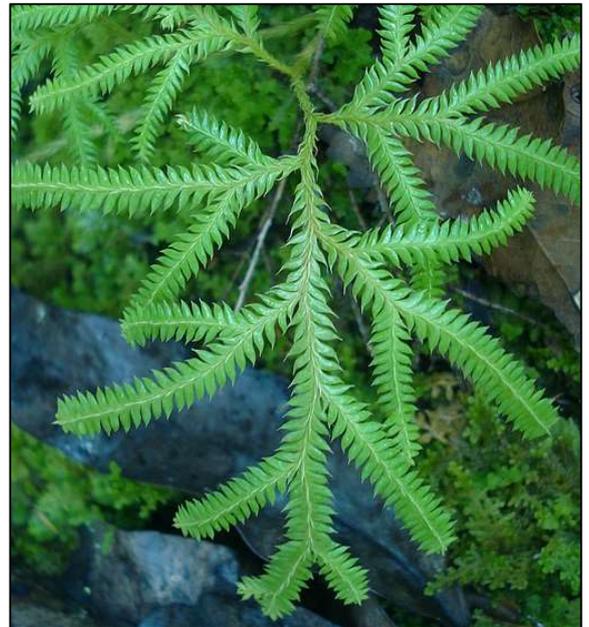
Photographer: Phil Bendle<sup>3</sup>

**Climbing clubmoss, waekāhu, waewaekoukou, hiawe (*Lycopodium volubile*)**

**Description:**

Main stems scrambling or climbing (scandent) up to 8 m long, wiry, much-branched, terete, with scattered appressed subpeltate attenuated scale leaves, 3.5-5.0 mm long. Branchlets scattered, spreading, flattened into 1 plane. Leaves trimorphic, yellow-green (very rarely orange); lateral leaves in 2 alternate to opposite rows, tending to curl downwards, 3-5 mm long, up to 1 mm wide, ovate-lanceolate, falcate, attenuate, adnate; upper leaves in 2 alternate to oppositerows, appressed, 1-2 mm long, c.0.2 mm wide, scale-like; lower leaves in 1 row, very scattered, appressed, up to 1 mm long, scale-like, obscure. Strobili up to 80 mm long, yellow-brown, straight or sometimes forked, borne in large pendulous clusters on sparsely-leaved much-branched stalks.

→ should not be removed in wild due to difficult propagation



Photographer: Phil Bendle<sup>3</sup>

# 4

## Orchidaceae

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A family of flowering plants that often have colourful and fragrant blooms. It currently consists of approximately 28,000 accepted species.

**Spider orchid (*Corybas macranthus*)**

**Flowering:** September-January – Red/Pink, Yellow

**Fruiting:** October-February

**Description:**

Terrestrial, tuberous, spring to summer green perennial forming dense colonies. Plant at flowering 40-100 mm tall. Leaf solitary, distinctly petiolate, petiole hyaline to white, more or less fleshy up to 60 mm long, suberect, ascending; lamina firmly fleshy, up to 40 x 40 mm, mostly green flecked or spotted with purple, or dark green above, silvery green to white beneath, orbicular to oblong-oval, apiculate, base rounded. Floral bract minute, < ovary, narrowly deltoid, initially closely sheathing spreading at flower anthesis. Dorsal sepal mostly shorter than labellum, hyaline yellow-green to greenish-white flecked with crimson or completely wine red, rather long and narrow-lanceolate, acute to shortly acuminate, arching over tubular portion of labellum; lateral sepals dark pink to crimson, filiform, greatly exceeding labellum. Petals similar to lateral sepals but usually much shorter. Labellum completely dark maroon-black or wine red, or dark maroon-black with a greenish throat, auriculate at base, lamina abruptly deflexed, funnellform, broadly expanded all round, margin minutely denticulate with a median apiculus, inner surface rough with short, sharp, retrorse papillae.



Photographer: nativeorchids.co.nz

**Spring orchid, peka-a-waka (*Earina mucronata*)**

**Flowering:** August-January – Orange, Yellow

**Fruiting:** September-April

**Description:**

Epiphytic or rupestral, rhizomatous, perennial, producing numerous leafy, unbranched, long persistent, wiry, cane-like stems up to 1 m long. Leaf-sheaths imbricating, persistent, distichously arranged, not split, tubular, flattened, each overlapping with and covering the lower third to one half of the leaf-sheath above, exposed surface ivory to pale whitish-yellow, maculate with small orbicular to ovate dark purple-black spots. Leaves usually flexuose or slightly curled in upper third. Inflorescence a racemose panicle. Panicle up to 100 mm long, mostly pendulous; racemes 2-12, usually well spaced on fine, slender, wiry axis, each 30-40 mm long; floral bracts c. 3.5-4.2 mm long, scarcely overlapping, prominently longitudinally ridged, completely covering the very short pedicels. Perianth 10-12 mm diameter, opening widely (flaring), pale, slightly greenish-cream to greenish yellow, or completely white. Sepals elliptic, subacute. Petals slightly broader and more obtuse. Labellum broader and very conspicuous, yellowish, yellow-orange, deep apricot or completely white, flaring widely at flowering, broadly oblong with broader proximal portion connect by a narrow waist-like neck to the almost equally broad distal lobe; base with two inconspicuous ridges leading down to a small pit-like nectary. Column shorter than labellum, narrow to base, wings absent or minute, pollinia long-oval. Capsules elliptic-ovoid, ovoid, deeply, longitudinally grooved, yellow green to green maturing grey.



Photographer: Phil Bendle<sup>3</sup>

**Swamp greenhood (*Pterostylis micromega*)**

**Flowering:** November-February – Green, White

**Fruiting:** November-March

**Description:**

Orchid 150-380 mm tall. Stem smooth, lower internodes short, becoming progressively longer toward apex. Basalleaves usually in a somewhat loose rosette, though when in exposed conditions then a compact rosette; petiole 5-10 mm; lamina 35-50 mm, pale green to grey-green, broad-elliptic, subacute, margins often but not always finely undulate. Upper leaves sessile, ovate to narrowly ovate, channelled, and weakly keeled, becoming sheathing near flower, upper most often reaching or just overtopping flower. Flower conspicuous, solitary, erect, perianth white or cream. Dorsal sepal, green, 25-40 mm, arcuate, apex acuminate to shortly caudate, ascending to decurved; lateralsepals green and white striped at base, diverging at a narrow angle, apex caudate, overtopping galea. Petals white, shorter than dorsal sepal, acuminate. Labellum red-brown, narrow-triangular, arched, markedly protruding, apex narrowly obtuse. Column much shorter than labellum; stigma narrow-oblong, flat.



Photographer: Catherine Beard<sup>7</sup>

# 5

## Grasses

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Grasses are from the poaceae family and can be either annuals or perennials. They have the following features:

- **Leaves** are ligulate (having the shape of a strap); sheaths are open, and the alternate leaves form two ranks (the leaves come out on the two opposite sides of the stem).
- **Stems** are round, hollow at the internodes.
- **Fruits** are grains.
- **Flowers** are modified into glumes (a basal, membranous, outer sterile husk or bract), lemmas (specialised bracts enclosing a floret), and paleas (bract-like organs in the spikelet)

**Creeping bent (*Agrostis stolonifera*)**

**Flowering:** Spring and summer – Green, Violet/Purple

**Fruiting:** Summer to autumn

**Description:**

A sprawling mat-forming grass (30-60 (100) cm tall) with creeping stems, sometimes submerged in fast-flowing water, with fine many-branched flowerheads, either open or narrow depending on flowering stage. Leaf blade 1-20 cm long and 1-8 mm wide with an acute tip. Ligule 2-6 mm long, membranous. The flower heads are usually upright or bending upwards in a many-flowered open or contracted panicle 3-28 × 0.5-2.5-(6) cm.



Photographer: Glen Mittelhauser<sup>23</sup>

**Knead foxtail (*Alopecurus geniculatus*)**

**Flowering:** Spring and summer – Brown, Orange

**Fruiting:** Summer to Autumn

**Description:**

A sprawling mat-forming grass (15-45 cm tall) with creeping stems, often floating on water, with dense spiked flowerheads. Stems ascending from knee-like bends at the nodes. Leaf blade 4-12 cm long and 1.5-2.5 mm wide with an acute tip. Ligule (1.5)-2-4.5 mm long, membranous. The flower heads are upright spikes 2-4 cm long comprised of densely crowded conspicuously awned spikelets.



Photographer: Graham Calow<sup>18</sup>

**Sweet vernal (*Anthoxanthum odoratum*)**

**Flowering:** April-June

**Fruiting:** May to July

**Description:**

Scent of newly mown hay. A perennial growing to 0.5 m by 0.3 m. The flowers are hermaphrodite. Grows in tufts with stems 25-40 cm tall, and short, broad green leaves 3-5 mm wide, which are slightly hairy. flower spikes of 4-6 centimetres long and crowded spikelets of 6-10 mm, oblong shaped, which can be quite dark when young. The lower lemmas have projecting awns. The ligules are quite long, up to 5 mm, blunt, with hairy fringes around the side.



Photographer: top – Kristian Peters<sup>6</sup>, bottom – Sheldon Navie<sup>11</sup>

**Soft brome (*Bromus hordeaceus*)**

**Flowering:** May until July

**Description:**

The plant is hairy all over. It can grow between 10-100cm high, sometimes in tufts, sometimes singly. The culms have between 2 and 5 nodes. The leaves are grey-green. The ligules are 0.5-1.5mm high and flat but toothed. The panicles are 1.5-16 cm long and grey-green to purple. The spikelets have awns.



Photographer: Petr Vobořil<sup>25</sup>

**Cocksfoot (*Dactylis glomerata*)**

**Description:**

Hairless, erect, greyish to bluish green, strongly tufted perennial grass to 1m tall. Roots fibrous. Emerging leaf folded; ligule 2-12mm long, membranous, often torn; sheath strongly flattened, sharply keeled. Leaves 100-450 x 2-14 mm, rough towards boat-shaped tip, harsh when old, dull beneath with prominent sharp keel. Seedhead a large panicle, with one-sided clusters of flattened spikelets. Seeds with bristly ends.



Photographer: left – L.R. Dimensioni<sup>26</sup>, right – Xemenendura<sup>6</sup>

**Wavy hair grass (*Deschampsia cespitosa*)**

**Flowering:** January

**Fruiting:** February

**Description:**

A stiffly erect green to yellow-green tussock, which stands 20–50cm tall. The leaves are narrow (1–4mm wide) and are flat or partly rolled and dull green above and bright green beneath and rough to touch. An attractive grass with blonde flowering heads 1m or more tall.



Photographer: facultystaff.richmond.edu

**Cox's fescue (*Festuca coxii*)****Flowering:** November-February - Orange**Fruiting:** January-April**Description:**

Blue-green-grayish green tufted tussock of flowering habit up to 35 cm tall and 40cm wide. The leaves which have pointed tips are about 40 cm long and 1mm wide. The leaves edges are slightly in rolled so they appear cylindrical. It produces 40 – 45 cm long flowering stems with 4cm long inflorescences.

Photographer: Phil Bendle<sup>3</sup>**Glaucous sweet grass (*Glyceria declinata*)****Flowering:** Spring/summer**Fruiting:** late Spring-Autumn**Description:**

Aquatic perennial emergent grass found in and on the margins of freshwaters, on damp ground and swamps. It is characterised by its grey/green leaf blades, and ability to form loose floating mats in shallow water.

Rather flaccid culms (15)-25-45 cm. Leaf blade (4)-8-17 cm, folded at first then becoming flat. Panicle 20-40cm.

Photographer: left – Carl Farmer<sup>9</sup>, right – J.C. Schou<sup>10</sup>**Yorkshire fog (*Holcus lanatus*)****Flowering:** Spring to early summer – Green, Purple, Red/Pink, White**Fruiting:** Summer to Autumn**Description:**

Tufted pale, greyish green, furry grass, velvety to the touch, up to c. 1 m tall, with a soft whitish, pale green, pinkish or purple flower head. Leaf-sheath firmly membranous, striate, ± keeled above near ligule, villous with long, fine, silky hairs, basal sheaths often purplish. Panicle 4-18 × 1.5-7 cm, lanceolate, ovoid or sometimes oblong, dense to lax, erect or nodding; rachis and branches pubescent. Spikelets 3.8-5.5 mm, whitish, pale green, or purplish.

Photographer: top – Graham Calow<sup>18</sup>,  
bottom – Pete Hillman<sup>29</sup>

**Wall barley grass (*Hordeum murinum*)**

**Flowering:** May-July

**Fruiting:** Spring

**Description:**

It can grow to 30cm in height and its unbranched spikes can reach 10cm long. It produces small, dry nutlets and its leaves can be 8 mm wide with short, blunt ligules.



Photographer: Miwasatoshi<sup>27</sup>

**Perennial rye grass (*Lolium perenne*)**

**Description:**

Loosely tufted, dark green, hairless, perennial grass. Leaves soft, thin, 30-200 x 2-6 mm, regularly ribbed above, very glossy and smooth beneath, joined to stem with small collar. Leaf sheath reddish-purplish at base; inner sheath smooth, pale green; emerging leaf folded. Ligule up to 2 mm long, membranous, light green. Seedhead distinctive, erect, thin, flattened, slightly zigzagged; with seeds in small clusters arranged alternately.

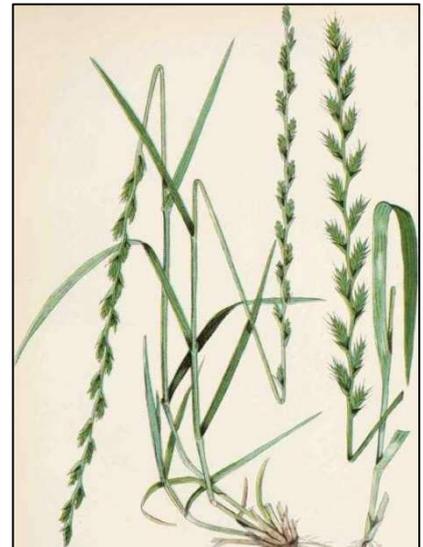


Image: Geo. H. Clark<sup>30</sup>

**Meadow rice grass, pātīti (*Microlaena stipoides*)**

**Description:**

Grows to a height of approximately 0.7m and produces delicate drooping stalks carrying the spikelets which contain seeds. The naked caryopses (grains) are similar in shape to rice grains but smaller, approximately 5mm long, with a mass that varies widely, ranging from 1-7mg.



Photographer: top – Phil Bendle<sup>3</sup>, bottom – victoriannativeseed.com.au

**Broad-leaved poa (*Poa anceps*)**

**Flowering:** September-December

**Fruiting:** November-May

**Description:**

Variable species of grass within the wild with coarse, light green to greenish brown to bluish green stiff erect or hanging leaves to 2m. The leaves have a prominent thickened midrib and numerous distinct lateral ribs. The flowering stalk is about the same height as the leaves. The plant can reach a height of 70cm. Spikelets numerous, 3.0-7.5 mm, 2-8-flowered light green. Anthers 1.5-2.5 mm. Seed c.2.0 × 0.5 mm.



Photographer: Phil Bendle<sup>3</sup>

**Annual poa (*Poa annua*)**

**Flowering:** Anytime – often in winter

**Description:**

A small grass that produces lots of short seed-heads. The tip of each leaf blade tends to be shaped a bit like the tip of a canoe. The colour of the leaves is often a lighter green colour than other turf grasses, almost a yellowish green. The leaves are relatively soft and weak, and there are often a few crinkles part-way down the leaf, especially in younger leaves. The leaves have no hairs and are of an average width.



Photographer: Max Licher<sup>31</sup>

**Kentucky blue grass (*Poa pratensis*)**

**Flowering:** May-July

**Description:**

A herbaceous perennial plant 30–70cm tall. The leaves have boat-shaped tips, narrowly linear, up to 20cm long and 3–5mm broad, smooth or slightly roughened, with a rounded to truncate ligule 1–2mm long. The conical panicle is 5–20cm long, with 3 to 5 branches in the basal whorls; the oval spikelets are 3–6mm long with 2 to 5 florets, and are purplish-green or grey. *Poa pratensis* has a fairly prominent mid-vein (center of the blade). The ligule is extremely short and square ended. The Kentucky bluegrass is a dark green compared. The rootstock is creeping, with rhizomes. The broad, blunt leaves tend to spread at the base, forming close mats.



Photographer: Max Licher<sup>32</sup>

### **Bristle grass (*Rytidosperma clavatum*)**

#### **Description:**

Variable in size and habit, from short and slender to larger and stout, dull green, densely soft-hairy or glabrous, shortly rhizomatous, spreading tufts; leaves « culms; branching extravaginal. Leaf-sheath light grey-brown, densely strict-hairy or glabrous; apical tuft of hairs to 5 mm, often extending dorsally below blade. Leaf-blade flat or sometimes folded, to 30 cm × 3–5 mm, abundant hairs, or glabrous, margins minutely scabrid. Spikelets 5–10-flowered, awns exerted from glumes. Glumes occasionally purple-margined, lanceolate, subobtuse, sometimes scattered long hairs.



Photographer: Kerry Ford, Landcare Research<sup>2</sup>

### **Cliff fairy grass (*Rytidosperma unarede*)**

#### **Description:**

Strong tufts spreading outwards from ± open centre, very shortly rhizomatous, mostly glabrous apart from apical tuft of hairs but not invariably so; leaves slightly < mature culms; branching extravaginal. Leaf-sheath pale stramineous, usually glabrous but some with long, scattered to very occasionally abundant, fine hairs, rarely all sheaths hairy; apical tuft of hairs to 4 mm. Ligule 0.2–0.8 mm. Leaf-blade flat, or margins inrolled, to 40 cm × 3.5 mm, glabrous, occasionally a few scattered long hairs, margins finely scabrid. Culm to 75–(85) cm, internodes smooth but finely scabrid below inflorescence. Panicle narrow, long-branched, to 15–(18) cm, of large spikelets on short slender pedicels; rachis and pedicels densely short-scabrid, occasionally with a few longer hairs below spikelets and at branch axils. Spikelets (3)–4–6–(8)-flowered, awns exerted from glumes. Glumes purplish centrally, lanceolate, acute or subacute.



Photographer: Kerry Ford, Landcare Research<sup>2</sup>

### **Vulpia hair grass (*Vulpia bromoides*)**

#### **Description:**

Annual grass. Short-lived slender tufts. Leaves dull green or brown-green. Spikelets comprising 3–10 fertile florets; with diminished florets at the apex. Spikelets oblong, or cuneate; laterally compressed; 7–14 mm long; breaking up at maturity; disarticulating below each fertile floret. Rhachilla internodes eventually visible between lemmas; scaberulous. Anthers 1; 0.3–0.6 mm long; retained within floret. Ovary glabrous.

Caryopsis with adherent pericarp; glabrous. Hilum linear; 1 length of caryopsis.



Photographer: Colin Ogle<sup>1</sup> from NZPCN

# 6

## Sedges

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Sedges are all perennials of the Cyperaceae family. Members of the sedge family have the following features:

- **Leaves** sheaths are closed, spirally arranged in 3-ranked (three ranked means the leaves come out from three different sides of the stem).
- **Stems** are 3-sided and solid (with occasional exceptions).
- **Flowers** are scales
- Fruit are achene (simple dry fruit)

**Sedge (*Carex sectoides*)**

**Flowering:** September-December

**Fruiting:** December-June

**Description:**

Robust, tussock forming sedge up to 2x1 m, arising from a stout trunk-like base (comprised of densely interwoven former roots) up to 1m tall. Culms 0.15-1.8 m x 2-3 mm, triquetrous, margins razor sharp, scabrid, robust, curved over toward apices; basal sheaths grey-brown. Leaves  $\leq$  culms, 5-8 mm wide, deeply channelled, with strongly scabrid, razor-sharp margins. Inflorescence a broad, heavy, greyish-brown to brown panicle 70-80mm long, with numerous stiff, crowded branchlets up to 40mm long, the lowermost usually distant. Spikes numerous, more or less sessile, red-brown, 4-5 flowered, male flowers at apex. Nut slightly  $<$  2 mm long, biconvex, narrow-obovoid, pale grey, greyish-white to white.



Photographer: Peter de Lange<sup>1</sup>  
from NZPCN

**Mutton bird sedge, tataki (*Carex trifida*)**

**Flowering:** August-December

**Fruiting:** November-June

**Description:**

Extremely robust, compact, light green to glaucous sedge, producing tussocks up to 1m diameter. Culms 0.15-1m tall, 2-4mm diameter, trigonous with angles rounded, glabrous; basal sheaths cream, grey, or yellow-brown. Leaves often overtopping the inflorescence, 6-15mm wide, light green to dark glaucous green, double-folded, with keel not very much thickened, rather soft and spreading, margins slightly scabrid with rather distant teeth; sheath only slightly broader than lamina, paler green. Spikes 6-15, brown, very sturdy, 35-11 x 5-15 mm; upper 2-4 spikes male, occasionally with a few female flowers intermingled,  $\pm$  approximate,  $\pm$  sessile; lower spikes female, the lowest often compound, on stout erect peduncles; bracts leaf-like,  $>$  inflorescence. Nut c. 2 mm. long, trigonous, oblong-obovoid, dark brown.



Photographer: Jeremy Rolfe<sup>1</sup> from NZPCN

**Chatham Islands forest sedge (*Carex ventosa*)**

**Flowering:** September-January

**Fruiting:** October-May

**Description:**

Stout, very leafy tufts ( $\pm$  60 cm high), shortly-rhizomatous, tussock forming sedge. Female spikes c. 5, lowest usually distant, to 9.5 cm  $\times$   $\pm$  7 mm, light greenish-brown. Glumes  $\pm$  colourless, membranous, transparent. Stigmas 3. Inflorescence 0.2-0.5-1 m long of 7-15 spikes, these either approximate or the lowermost 1-4 distant, occasionally compound, pedunculate; terminal 1-4 spikes male; remaining spikes female, rarely with a few male flowers near their apices, 20-45-60  $\times$  6-8-10 mm. Nut 2 mm long, dark brown, trigonous, oblong.



Photographer: left – Peter de Lange<sup>7</sup>,  
right – John Sawyer<sup>1</sup>

**Swamp sedge, toitoi, toetoe, pukio (*Carex virgata*)**

**Flowering:** October-December

**Fruiting:** December-May

**Description:**

It has narrow arching bright green leaves and grows to about 90cm. Rhizomatous, densely clumped to tussock-forming sedge. Culms 150–900 mm.  $\times$  c.1.5 mm, trigonous, grooved, harshly scabrid; basal sheaths shining, grey-brown to dark brown, sometimes black. Lvs much > culms, 0.5–1.2 m tall, 1.5–4.5 mm wide, channelled, light green, harsh and rigid, keel and margins strongly scabrid. Inflorescence a narrow 100–260 mm long panicle with stiff erect branchlets, the lower-most quite distant. Spikes, androgynous, 4–6 mm. long, sessile, grey- or yellow-brown, male flowers terminal, lower spikes on each branchlet subtended by a pale membranous bract with a long scabrid awn often > spike. Nut slightly > 1 mm. long, biconvex, ovoid, dark brown.



Photographer: johnflower.org

**Sharp spike rush (*Eleocharis acuta*)**

**Flowering:** September-January

**Fruiting:** October-May

**Description:**

Terrestrial or semi-aquatic sedge forming yellow-green to green somewhat distinct, crowded tufts. Rhizomes, lignaceous, widely creeping, 1-2 mm diameter. Culms more or less crowded in distant tufts, 15.0-900.0 x 0.5-2.5 mm, more or less erect, terete, distinctly striated; lower sheath dark red to maroon with an oblique orifice, upper sheath paler, closely appressed to culm, orifice usually truncate or rarely slightly oblique, with dark thickened edge and distinct mucro at back. Spikelet 5-25 x 2-5 mm, cylindrical, acute at apex. Glumes numerous, basal 2 sterile, shorter, broader and paler than rest, upper glumes ovate-lanceolate with hyaline apices. Hypogynous bristles 6-8, some =, some > nut. stamens 3. Style 3-fid. Nut 1.5 x 1.0 mm, obovoid, biconvex or plano-convex, pale brown, smooth or faintly reticulate; the small persistent style-base triangular, compressed, white or very pale brown.



Photographer:  
Jeremy Rolfe<sup>1</sup> from  
NZPCN

**Slender spike sedge (*Eleocharis gracilis*)**

**Flowering:** August-January

**Fruiting:** October-May

**Description:**

Terrestrial or semi-aquatic sedge forming green to red-green tufts. Rhizomes widely creeping, 1-3 mm diameter, loosely ensheathed at each nodes by conspicuous dark maroon, obtuse bracts with broad membranous margins. Culms densely tufted to widely spaced (or set close together in a linear series), 20.0-400.0 x 0.5 mm, erect or curved; sheaths membranous, with maroon to purple markings and an oblique orifice. Spikelets conspicuous, 3-8 x 1-4 mm, 5-20-flowered, ovoid to almost lanceolate, subacute. Glumes oblong, obtuse, 1-nerved, membranous, margins often very broad. Hypogynous bristles 4-8, usually > nut. Stamens 3. Style 3-fid. Nut slightly < 1.5 mm long, slightly, 1 mm diameter, trigonous, obovoid, light to dark brown, smooth, surmounted by the pyramidal, persistent style-base.



Photographer:  
Peter  
Kinchington<sup>36</sup>

**Isolepis habra**

**Flowering:** Throughout the year but peaking in October-December

**Fruiting:** Throughout the year

**Description:**

Slender perennial, in close-packed tufts from a shortly creeping rhizome. Culms 50-300 mm long, <0.5 mm in diameter, soft and usually flaccid; basal bracts light reddish brown. Leaves 1-3(-4) per culm, bright green, soft, usually flaccid, shorter than the culms; sheaths often tinged with red-purple. Stamens mostly 2 per lower glumes and 1 per upper, and by ribbed nut < 1 mm long. Spikelet colour mostly dark black with cream nervation.



Photographer: Jeremy Rolfe<sup>1</sup> from NZPCN

**Knobby club rush, wiwi (*Ficinia nodosa*)**

**Flowering:** September-December - White

**Fruiting:** November-May

**Description:**

A perennial rush has clumps of dark green stems on long creeping rhizomes. It grows to between 15 and 100 cm in height. The stems are cylindrical - usually with a slight tapering at both ends, smooth-surfaced and approximately 1.5-3 mm thick. It grows to a height of 30-90 cm. The flower has a dense rounded form, 7-20 mm in diameter, with a sharp pointed leaf end protruding past the flower head. Rhizome short, 5-10 mm diameter, ascending to subhorizontal, woody, covered with red-brown bracts 5-10 mm long. Culms numerous, somewhat woody, 0.15-2.0 m, 1-2 mm diameter, yellow-green to bronze-green, densely packed on rhizome, rush-like, rigid and erect (sometimes in lush specimens with upper third curving over), terete or slightly compressed, finely striated when dry. Leaves reduced to 3-6 basal sheaths, the uppermost 50-130 mm long, brown or red-brown, the oblique orifice slightly dilated. Spikelets 3-4 mm long, ovoid, light brown. Nut 1 mm long, < 1 mm wide, plano-convex to trigonous, apiculate, dark brown to almost black, shining.



Photographer: Jeremy Rolfe<sup>1</sup>  
from NZPCN

**Fish-hooks (*Carex corynoidea*)**

**Flowering:** October-December

**Fruiting:** November-April

**Description:**

Robust, dark green to yellow-green plants. Leaves 5-9 per culm, usually > culms, 4-6(-8) mm wide, strongly scabrid on the margins and on the adaxial surface towards tip. Spikes 50-140 mm long, usually bracteate, clavate, 7-10(-15) mm diameter at the top below the male spike, female flowers numerous, usually c. 65-100, very closely crowded throughout almost the whole spike, internodes 0.5-4.0mm long but up to 8 mm long at base of spike. Glumes =, > or rarely < utricles, deciduous, narrow-lanceolate, acute or acuminate, coriaceous or subcoriaceous, yellowish brown to dark brown, midrib green. Utricles 5.0-7.0 × 1.5-2.0 mm, plano-convex to subtrigonal, ovate, yellow-brown to dark brown when ripe, one to two lateral nerves prominent and lighter coloured, stipe 1.5-2.0 mm long, beak 1.5-2.0 mm long; spreading widely when ripe.



Photographer: P.B. Pelsler<sup>4</sup>

**Hook sedge, kamu, matau-a-maui (*Carex uncinata*)**

**Flowering:** August-December

**Fruiting:** Throughout the year

**Description:**

Caespitose, yellow-green to dark green sedge. Culms 100–900 x 1.0–1.5 mm, glabrous, or occasionally scabrid just below inflorescence; basal sheaths dull brown. Leaves 5–10 per culm, ± = culms, or > flowering culms, 2–5 mm wide, dark green or occasionally reddish green, strongly scabrid on the margins and on the adaxial surface towards the tip. Spikes 55–200 x 2.0–3.5 mm, usually bracteate, female flowers numerous, usually c.60–120, very closely crowded throughout almost the whole spike, internodes 0.5–1.5 mm long. Glumes usually < but occasionally slightly > utricles, deciduous, ovate, obtuse or subacute, coriaceous, yellowish with a green midrib or often entirely dark brown, occasionally greenish pink. Utricles 4–5 mm long, slightly > 1 mm. diameter, plano-convex or concavo-convex, lustrous, with usually one prominent lateral nerve on the abaxial face and 3–4 faint nerves on the adaxial face, yellowish to dull brown, stipe 1.0–1.5 mm. long, beak slightly > 1 mm. long; scarcely spreading when ripe.



Photographer: Carlos Lehnebach<sup>20</sup>

# 7

## Rushes

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Rushes are a member of the Juncaceae family and are a slow-growing, rhizomatous, herbaceous plants that may superficially resemble grasses. A few rushes are annuals, but most are perennials. They have the following features:

- **Leaf** sheaths are open ligulate (thin outgrowth at the junction of leaf and leafstalk), sheaths open, 2-ranked (occur on two rows on opposite sides of the stems).
- **Stems** are cylindrical or slightly tapering and without substantial furrows or ridges and with a solid pith.
- **Fruit** is a capsule with tiny dust-like seeds.

### Track rush (*Juncus tenuis*)

#### **Description:**

Perennial, grass-like, in stiff tufts (15)–20–60–(90) cm high, often lax if longer. Stems with up to 6 usually basal leaves. Leaves slender but tough, <stems, usually flat; auricles large, tongue-like, 2–4 times as long as broad, membranous, subacute. Inflorescence variable in form and size, strict or diffuse with unequal branches, the longest to 12 cm, subtending bracts 1-several, slender, leaf-like, usually much >inflorescence. Flowers sessile, in clusters of 2–3 or borne singly but contiguously at branchlet tips, rarely more spaced along branchlets. Tepals 3.5–4.5 mm long, tapered, acute. Stamens 6. Capsule c. 3 mm long, <tepals, ovoid, obtuse but slightly mucronate, greenish-brown.



Photographer: left - Arieh Tal<sup>23</sup>, right - Jacob Sturm<sup>37</sup>

# 8

## Lianes

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Lianes are a long-stemmed, woody vine that hangs from trees and are rooted in the soil at ground level. They use trees and other vertical supports to climb up the canopy to get access to well-lit areas.

**Climbing convolvulus, NZ bindweed (*Calystegia tuguriorum*)**

**Flowering:** September-March - White

**Fruiting:** Throughout the year

**Description:**

Perennial vine or scrambling plant producing numerous, slender, much-branched puberulent twinning stems. Often forming dense patches. Petioles up to 40 mm, slender. Leaves (10-)40(-50) x (15-)30(-40) mm broad-ovate to deltoid or reniform, entire or sinuate; base cordate, sinus shallow and broad; apex acute to acuminate. Peduncles terete to slightly winged, (30-)110 mm long, > leaves. Bracts broadly ovate to suborbicular; base cordate, apex apiculate. Sepals similar to and < or = bracts. Corolla (25-)50 x (30-)60 mm diam., funnelform, white. Capsule 8-12 mm, broad-ovoid. Seeds orange, smooth.



Photographer: Phil Bendle<sup>3</sup>

**Pohuehue (*Muehlenbeckia australis*)**

**Flowering:** - Green, White

**Fruiting:** Juicy fruits with black shiny seeds that are covered by a white, succulent cup of 5 sepals

**Description:**

Large, robust, many-branched vine with sturdy stems. It becomes a high climber covering shrubs and trees. Its tendrils twine clockwise. It has juvenile and adult leaf forms. The leaves on adult plants are broadly oval and dark green while those on juvenile plants are three-lobed or fiddle-shaped. The leaves are on stiff petioles which are 25 millimetres long. The leaves 2-8 centimetres by 1-3 centimetres long. The leaves margins are undulating, irregular and leaves surface are hairless with glands. It is a dioecious vine (male and female reproductive organs in separate plants). Creamy flower panicles appear from late spring to autumn. The small flowers are 2-3 mm diameter. They have 8 stamens and the ovary is above the petals.



Photographer: Phil Bendle<sup>3</sup>

**Supplejack, kareao, pirita (*Ripogonum scandens*)**

**Flowering:** October-May – Green, Yellow

**Fruiting:** Throughout the year

**Description:**

Woody, evergreen, twining forest liane. Rhizome horizontal, stout, lignaceous, usually swollen into a woody tuber 30-60 mm diameter at base of erect stem. Stems of two kinds: (a) twining stems growing upward from mature rhizome on forest floor, without green lvs, succulent at tip; these are several metres long, c.15–20 mm diameter, little branched, almost black, finely pubescent; nodes c.100–200 mm apart, thickened; sheathing scale leaves alternate, subopposite or opposite, membranous, 10-30 mm long, charcoal black, narrowly deltoid, finely brown-scabrid, caducous. (b) non-twining stems arising from the long stems in full light; these are to 1 m long, c.5 mm diameter, more branched and widely spreading, light brown, glabrous; internodes shorter, the distal ones bearing green leaves and inflorescences.

Leaves mostly opposite, 55–160(-230) × 20–60(-80) mm,

green, dark green or yellow-green, ± coriaceous, narrow-ovate to oblong, narrowed rather abruptly to tip, margins entire and ± undulate; petiole c.10-15 mm long, ± channelled. Flowers not crowded.

Fruit globose, bright red, c.10-15 mm diameter, pericarp thin, fleshy, tightly stretched over 1–2(-3) hard, spotted seeds, seed when single almost spherical.



Photographer: botanicalstockphotos.com

# 9

## Monocotyledonous herbs

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Monocotyledonous plants exhibit a number of characteristics although there are exceptions to these:

- One embryo leaf or cotyledon
- Adventitious root system - not single dominant root
- Leaves with parallel venation
- Usually no secondary growth in stems
- Whorls in flowers made up of three parts

**Chatham Island astelia or kakaha, silver spear**  
**(*Astelia chathamica*)**

**Flowering:** October-December – Green, White

**Fruiting:** February-July – Orange, Red

**Description:**

Kakaha (up to 1.5m tall) has long flax-like leaves clad in silvery hairs. Male and female flowers are found on separate plants. The male flower stalk is very thick and bears dark green, scented flowers, while the female plant has pale, greenish-white flowers.

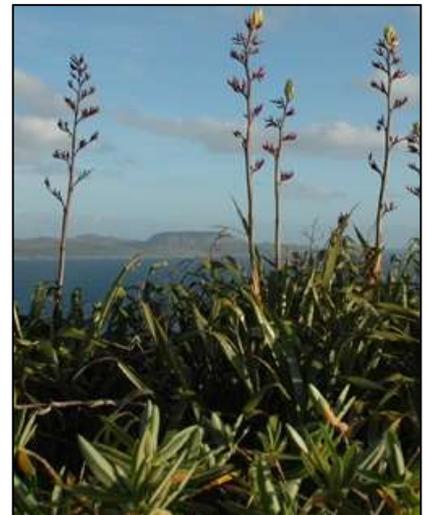


Photographer: top – Phil Bendle<sup>3</sup>,  
 bottom – Peter de Lange<sup>1</sup> from  
 NZPCN

**Chatham Island flax, harakeke, korari (*Phormium* “Chatham”)**

**Description:**

Grows as a clump of long, straplike leaves with tall flowering shoots that produce red flowers.



Photographer: University of Canterbury<sup>38</sup>

**Arrow-grass (*Triglochin striata*)**

**Flowering:** September-January – Green, Red/Pink

**Fruiting:** October-May

**Description:**

Fleshy, grass-like tufted or sward forming perennial herb. Bases not bulbous, roots distinctly fibrous. Leaves 10-400x 0.3-2.0 mm, dark green, reddish green or brown-green, ligule rounded to subacute; lamina linear, linear-filiform, flattened toward subacute apex. Inflorescence racemose, 10-200 mm long; pedicels 1-3 mm long, set at a rather wide angle to axis. Flowers(1-)2 mm long; stylar apices green or reddish-green, slightly spreading. fruit 2-3 mm long, dark green, reddish green to brown, subglobose, comprising 3 keeled fertile follicles and 3 narrower sterile carpels, all rather loosely attached to carpophore.



Photographer: Dean Wm. Taylor<sup>39</sup>

# 10

## Daisy-like herbs

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**Yarrow (*Achillea millefolium*)**

**Flowering:** Violet/Purple, White

**Description:**

An erect, herbaceous, perennial plant that produces one to several stems 0.2–1 m in height, and has a spreading rhizomatous growth form. Leaves are evenly distributed along the stem, with the leaves near the middle and bottom of the stem being the largest. The leaves have varying degrees of hairiness (pubescence). The leaves are 5–20 cm long, bipinnate or tripinnate, almost feathery, and arranged spirally on the stems. The leaves are cauline, and more or less clasping. The inflorescence has 4 to 9 phyllaries and contains ray and disk flowers which are white to pink. The generally 3 to 8 ray flowers are ovate to round. Disk flowers range from 15 to 40. The inflorescence is produced in a flat-topped capitulum cluster and the inflorescences are visited by many insects, featuring a generalized pollination system. The small achene-like fruits are called cypsela. The plant has a strong, sweet scent, similar to that of chrysanthemums.



Photographer: top - J.K. Lindsey<sup>40</sup>, bottom - greenlightplants.com

**Winged thistle (*Carduus tenuiflorus*)**

**Flowering:** November-December - Purple/Violet, White

**Fruiting:** Autumn

**Description:**

May exceed 2m in height. Its tall stem is ridged with wings and has long spines which may be several centimeters in length. The dull olive-green leaves are lobed and wrinkled and may fold and crease themselves.

The inflorescences may hold up to 20 flower heads which are somewhat rounded, covered in wide, spiny phyllaries, and packed with pale pink to bright purple long-tubed disc florets.



Photographer: Phil Bendle<sup>3</sup>

### Scotch thistle (*Cirsium vulgare*)

**Flowering:** November, December, January, February, March – Red/Pink, Violet/Purple

**Description:**

Taprooted biennial 50-150cm tall; stems branched and covered in fine cobweb-like hairs; prickles pale 4-10mm long; purple flowers 28-33mm long. The flowers are clustered at the end of the stem and the numerous wind-dispersed seeds.



Painter: Jacob Sturm <sup>37</sup>

### Soldier's button (*Cotula australis*)

**Flowering:** - White, Yellow

**Description:**

Grows low to the ground in a thin mat with some slightly erect, spindly stems. The leaves are divided and subdivided into fringelike lobes. The plant flowers in inflorescences only a few millimetres wide containing minuscule yellow disc florets surrounded by greenish brown bracts and rudimentary ray florets that have been reduced to pistils with no stamens or corolla. The fruit is a tiny winged achene about 1mm wide.



Photographer: left - Harry Rose <sup>13</sup>, right - Renzo Salvo <sup>26</sup>

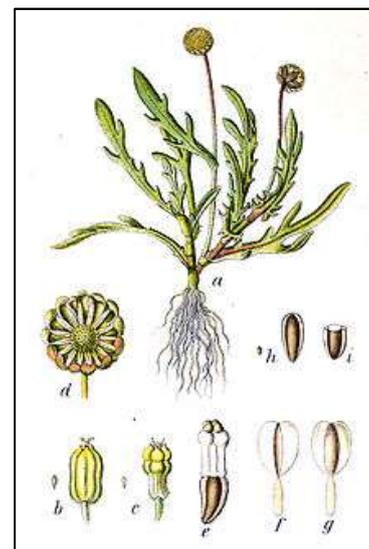


### Bachelor's button (*Cotula coronopifolia*)

**Flowering:** January-December - Yellow

**Description:**

The flower heads are bright yellow discoid heads that look like thick buttons. Individual plants (up to 30cm tall) spread stems along the ground and send up the knobby flowers at intervals. It has fat, fleshy leaves with reddish stems and green, blade-shaped leaves are coated with a shiny cuticle. Involucral bracts in 2-3 rows, 4-6 mm long. ♀ florets in 1 or <1 row, pedicellate, with a corolla; ♂ florets numerous, subsessile, with flattened tubular corolla. Achenes all flattened, hairy on inner surface, glabrous on outer. Achenes of ♀ florets 1.5-2 × 1-1.2 mm; lateral angles with thick, corky, entire, marginal wings. Achenes of ♂ florets 1.1-1.2 × 0.5-0.6 mm; lateral angles thinly ribbed.



Painter: Jacob Sturm <sup>37</sup>

**Catsear (*Hypochaeris radicata*)**

**Description:**

A perennial, low-lying edible herb often found in lawns. The leaves, which may grow up to 20 cm tall, are lobed and covered in fine hairs, forming a low-lying rosette around a central taproot. Forked stems carry bright yellow flower heads, and when mature these form seeds attached to windborne "parachutes".



Photographer: Gendler, www.weedalogue.com

**Papataniwhaniwha (*Lagenophera pumila*)**

**Flowering:** Summer - White, Yellow

**Description:**

A small native daisy with a slender rhizome which spreads to form loose small mats up to 1m across. The leaves which have longish stalks are in rosettes and are 1-1.5cm long, rounded to elliptic, crenate-dentate to shallowly lobed and are harshly hairy. During summer, white daisy flowers which resemble the common lawn daisy (*Bellis perennis*) are produced. They are 1.2cm plus wide and are on stems 8-15cm tall.



Photographer: Phil Bendle <sup>35</sup>

**Crenate-leaved pin cushion (*Leptinella potentillina*)**

**Flowering:** August-February - Green, Yellow

**Fruiting:** September-July

**Description:**

Stout, rather robust, fleshy, diffusely creeping to densely compact turf forming, monoecious, perennial herb. Rhizomes on soil surface, rather thick, fleshy, pale yellow, cream or white, sparsely pilose hairy; branches usually single at flowering nodes, leaves in two rows, single at apex, 50-40 mm apart. Short shoots alternate on both sides of rhizome, with clustered leaves, sometimes converted into rhizomes with distant leaves.



Photographer: Marei <sup>34</sup>

### **Jersey cudweed (*Pseudognaphalium luteoalbum*)**

#### **Description:**

It grows as an erect herb up to 70cm high, branching from the base. Flowers are cream, yellow or white. all parts whitish-woolly. Leaves sessile, up to 8 × 1 cm at base, oblanceolate, becoming smaller and lanceolate or linear above, *greyish or whitish tomentose or arachnoid, on both sides*; margin entire. Inflorescence consisting of dense clusters of capitula 1-several together in terminal corymbs. Involucres 3-4 mm in diameter; phyllaries in c. 3 rows, pale brown to whitish. Outer female florets very numerous, whitish. Bisexual disk florets cylindric. Achenes ellipsoid, papillose. Pappus of numerous soft bristles.



Photographer: Iain Harrison<sup>33</sup>

### **Shore groundsel (*Senecio lautus*)**

**Flowering:** January-December - Yellow

#### **Description:**

Prostrate to ascending, or erect, annual or short-lived perennial herb up to 1m tall. Leaves glabrous or sparsely hairy, cuneately narrowed at base and often appearing petiolate, narrow-ovate, elliptic, oblong, or lanceolate, not lobed and entire, irregularly pinnately toothed, or lobed with many leaves usually pinnatifid with narrow to broad, entire or few-toothed, usually distant segments, 15-65-(110) × (3)-5-15-(60) mm; primary segments, lobes, or teeth (0)-3-6-(7) on each side. Uppermost leaves smaller, less divided, often amplexicaul. Supplementary bracts 6-16, 1-3 mm long. Involucral bracts (8)-10-13-(15), 4-6.5 mm long, usually glabrous, sometimes with a few scattered hairs. Ray florets 7-13 (extremely rarely 0); ligules yellow, (1)-2-7-(9) mm long. Disc yellow, 3-6 mm diam. Achenes usually densely hairy only between ribs, very rarely glabrous or ± evenly hairy, slightly narrowed to apex, 2.2-3 mm long.



Photographer: left - Jeremy Rolfe<sup>1</sup> from NZPCN, right - Corinne [www.malleenativeplants.com.au](http://www.malleenativeplants.com.au)

**Common groundsel (*Senecio vulgaris*)**

**Description:**

An erect herbaceous annual growing up to 45 cm tall. The inflorescences usually lack ray florets, the yellow disc florets mostly hidden by the bracts giving the flowers an inconspicuous appearance. Open clusters of 10 to 22 small cylinder shaped rayless yellow flower heads 6 to 13 mm with a highly conspicuous ring of black tipped bracts at the base of the inflorescence. Upper leaves lack petioles and are sessile, lacking their own stem, alternating in direction along the length of the plant, two rounded lobes at the base of the stem and sub-clasping above. Leaves are pinnately lobed and 61 mm long and 25 mm wide, smaller towards the top of the plant. Leaves are sparsely covered with soft, smooth, fine hairs. Lobes typically sharp to rounded saw-toothed. The hollow stems branch at the tops and from the base. Its downy head of seeds are achene, include a pappus and become sticky when wet. The flower has white hairs.



Photographer: Carol Spears<sup>6</sup>

**Prickly sow thistle, puha (*Sonchus asper*)**

**Flowering:** July-September – Orange or Yellow

**Description:**

30–80 cm. Stem branched, glabrous, hollow. Containing abundant latex. Single flower-like capitula 1.5–2 cm broad, surrounded by involucral bracts. Capitulum flowers pale yellow, tongue-like, tip 5-toothed. Stamens 5. Gynoecium composed of 2 fused carpels. Involucral bracts (35–45) overlapping in 3 rows, green. Capitula borne in a corymbose cluster. Alternate, basal leaves stalked, stalks channelled, winged, teeth tipped, stem leaves stalkless, amplexicaul, roundish basal lobes surrounding stem. Blade usually ovate, basal lobes rounded with cordate base, glabrous, rigid, hard, shiny dark green, toothed margin with spiny bristle, sometimes lobed. Fruit have flat, winged, glossy-ridged, brown, 2–3 mm long achene, crowned by unbranched hairs.



Photographer: Glen Mittelhauser<sup>23</sup>

**NZ sow thistle, shore puha (*Sonchus kirki*)**

**Flowering:** August-April – Yellow

**Fruiting:** September-June

**Description:**

Biennial to perennial herb (50-)150-600(-1000) mm tall. Stem erect, simple or branched, finely grooved and ribbed, glabrous, hollow. Leaves thick, dull glaucous, lanceolate to narrowly oblong or linear oblanceolate (30-)80-200(-550) x (10-)30-60(-150) mm, margins dentate. Rosette and lower stem leaves pinnatifid to c.1/2 way to midrib; lobes broadly triangular, spreading or deflexed. Upper leaves not lobed, narrowly triangular to linear, or narrowly oblanceolate. Inflorescence cymose to umbellate. Capitula few to many. Involucre 10-15mm, turbinate to cylindric, bracts imbricate, recurved at fruiting. Florets yellow. Achenes elliptic, brown, strongly flattened, (3-)4 x 1-1.8 mm, 3-ribbed on each face, winged, wings and ribs smooth. Pappus hairs, fine, white. → at risk – declining



Photographer: top – Beverley Davidson<sup>28</sup>,  
bottom – Barbara Metcalf<sup>1</sup>

**Sow thistle, puha, puka (*Sonchus oleraceus*)**

**Description:**

Hollow, upright stem of up to 30-100cm tall and has quite a succulent stem when it flowers, and the foliage ooze a milky sap when cut. Its seeds are a white seed puff.



Photographer: top – Phil Bendle<sup>3</sup>, bottom – Ixitixel<sup>27</sup>

# 11

## Dicotyledonous herbs

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Dicotyledonous plants tend to exhibit the following characteristics (although exceptions may be found):

- One embryo leaf - cotyledon
- Tap root system - one main root with side roots
- Leaves with net venation
- Secondary growth in stems
- Whorls in flowers made up of four or five parts

**Bidibid, hutiwai, piripiri (*Acaena anserinifolia*)**

**Flowering:** October-January – Red/Pink, White

**Fruiting:** December-April

**Description:**

Stoloniferous, prostrate, trailing and perennial herb, forming diffuse to dense patches up to 1 m diam. Prostrate stems 1-1.5 mm diam. and < 1 m long, erect stems 1-1.5 mm diam., < 150 mm long (unless scrambling up through surrounding vegetation, in which case taller). Leaves 10-75 mm long, stipules 3-8-fid, leaflets 9-13, oblong, 4-17 x 2-9 mm, 7-15-toothed to base, dull green to yellow-green, basal leaves often mottled brown, upper surface sparsely to densely hairy, undersides paler, glaucescent to silvery, and very silky hairy, teeth tipped with a tuft of brush-like hairs. Inflorescence scape 40-120 mm long, covered in long, appressed hairs. Florets c. 50-60; sepals 4; stamens 2; anthers white or rose; style 1; white; achene 1. Fruit obconic, 3 x 12 mm, hairy, spines 4, pale brown, 4-9 mm long, barbed.



Photographer: Phil Bendle<sup>3</sup>

**Red bidibid, piripiri (*Acaena novae-zelandiae*)**

**Description:**

Stoloniferous perennial. One plant can cover up to 4-5 square meters under ideal condition. Plants have a burr which is formed after flowering and is beset with barbed spines. Leaves 2-11 cm long; leaflets 9-15, oblong, 4-17 x 2-10 mm, 8-15-toothed, bright, shining green (rachis often red) and glabrous or sparsely hairy on upper surface, glaucescent and sparsely or densely hairy on veins and margins on lower surface; teeth appearing crenate because of recurved margins. Scape 10-15 cm long, pilose; capitulum c. 9 mm diam. at flowering, <3.5 cm diam. (including spines) at fruiting; florets c. 80-100-(120); sepals 4; stamens usually 2, rarely 3; anthers white; style 1, white; achene 1. Fr. obconic, c. 4 x 1.7 mm, hairy; spines 4, red, 7.5-12 mm long, barbed, occasionally with stunted subsidiary spines on side of fr.



Photographer: Iain Harrison<sup>33</sup>

**Scarlet pimpernel (*Anagallis arvensis*)**

**Flowering:** June-September – Orange, Red, or Blue

**Fruiting:** Spring-Autumn

**Description:**

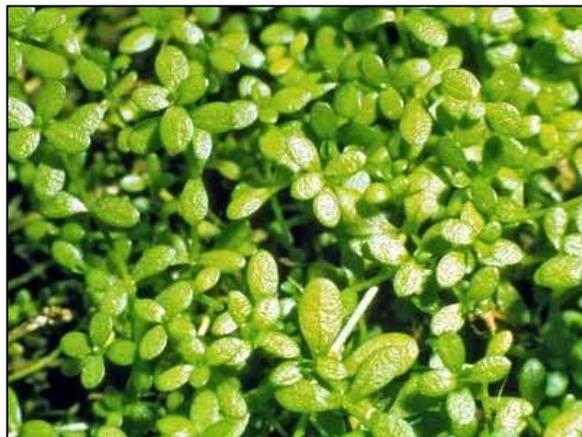
A low-growing creeping annual plant. 3-40 cm. Stalk limp-erect, highly branched from base, 4-edged. Flower: Corolla regular (actinomorphic), wheel-shaped, brick-red or sometimes blue, 8-14 mm wide, fused, 5-lobed (deeply). Calyx lobed till base, lobes narrow with tapered tips. Stamens 5. Gynoecium fused, single-styled. Flowers usually in axillary pairs. Leaves: Opposite, stalkless. Blade ovate-elliptic, hairy underside, darkly spotted, with whitish, densely-haired, entire margin. Fruit: Spherical 5 mm long capsule with opening lid (circumscissile capsule).



Photographer: Tom Todd<sup>24</sup>

**Petrie's starwort (*Callitriche petriei*)****Flowering:** November-January**Fruiting:** January-February**Description:**

Diminutive, dioecious to subdioecious, widely creeping perennial with weakly ascending to erect branches 30-100 mm long. Leaves 1.1-5 mm long, bright green to yellow green, spatulate to orbicular, the larger leaves often with short side veins arising from the midrib, and with two lateral veins. Flowers solitary, alternate on either side of stem, ebracteate. Fruit an more or less elliptic mericarp, laterally compressed, 0.6-0.7 x 0.7-0.9 mm, dull grey-brown or orange-yellow, lobes not rounded, keeled or winged.

Photographer: Colin Ogle<sup>1</sup> from NZPCN**Shore bindweed, nihinihi (*Calystegia soldanella*)****Flowering:** August-March – Red/Pink, White**Fruiting:** Present throughout the year**Description:**

Perennial herb with stout, white, deeply descending, fleshy roots and numerous prostrate branching stems forming dense patches. Stems glabrous. Petioles 80 mm or less, slender. Leaves (10-)50(-80) x (10-)50(-75) mm, reniform, fleshy, glossy, entire; sinus shallow and rounded; apex emarginate, obtuse or acute. Flowers solitary; peduncles ribbed, 100 mm long. Bracts ovate, cordate, obtuse 12-18 mm long. Sepals nearly = bracts, obtuse. Corolla 20-40 x 25-50 mm, campanulate, pink with white mid-petaline bands. Capsule 15-20 mm long, broad-ovoid, apiculate. Seeds dark brown, smooth.

Photographer: J David Ingram<sup>13</sup>**Centella (*Centella uniflora*)****Flowering:** October-March**Fruiting:** December-May**Description:**

Stems rather stout, branching, rooting at nodes. Leaves on petioles (1)–3–5–(15) cm. long; stipules ovate, up to c. 4 mm. long. Lamina glab. or sts loosely hairy towards base and on veins, orbicular to reniform, or oblong-reniform, (5)–10–(20) mm. diam., occ. larger; sinus open or base ± truncate; margins finely, regularly crenulate to nearly entire.

Peduncles (2.5)–3–4–(25) mm. long, slender, ± pilose. Bracts 2, suborbicular to ovate, glab. Fls 1–2–(4), sessile, forming heads ± 5 mm. diam.; petals ovate, purple to whitish. Fr.

suborbicular, somewhat compressed, c. 3–(4) mm. diam., with broad commissure. Mericarps rounded on dorsal edge, obscurely to distinctly 3–5–(7)-ribbed on face.

Photographer: Phil Bendle<sup>3</sup>

**Twin cress (*Lepidium didymum*)****Flowering:** July-September**Description:**

An annual or biennial herb with decumbent or ascending and glabrous green stems, up to 40cm long, radiating from a central position. The leaves are pinnate and alternate, and can reach a length of 5cm. The flowers are inconspicuous, the four white petals very short or absent, with 2 (rarely 4) stamens and the fruits consist of two rounded valves, notched at the apex, with a very short style between.

Photographer: Peter Mifsud <sup>22</sup>**Crassula ruamahanga****Flowering:** Throughout the year – Red/Pink, White**Fruiting:** Throughout the year**Description:**

Perennial herb form small to large diffuse to dense bright green mats. Stems green or pink, prostrate, rooting at nodes, with ascending tips, much-branched. Leaves fused at base, 1.3-8 x 0.4-1.5 mm, 0.2-0.6 mm thick, lanceolate, linear-lanceolate or elliptic lanceolate, flattened or slightly concave above, convex beneath, apex usually sharply acute, shortly acuminate or apiculate, sometimes obtuse. Flowers solitary in leaf axils, scarcely fragrant, stellate, 4-merous, 1.8-2.5 mm diam.; pedicels 0.5-1 mm, scarcely elongating at fruiting, Calyx lobes 0.8-1 x 0.4-0.6 mm, triangular or triangular-ovate, white or pink-flushed, acute, sharply acute, occasionally obtuse, slightly or much > calyx. Scales 0.5 mm long, cuneate. Follicles smooth. Seed 0.5 mm long.

Photographer: Peter de Lange<sup>1</sup>  
from NZPCN**Dichondra (*Dichondra brevifolia*)****Flowering:** September-February - White**Description:**

Prostrate herb, hairy or nearly glabrous, with rather close-set stems, often forming small mats. Petioles 0.5-3-(7) cm long. Lamina usually 3-10-(13) mm diam., suborbicular to reniform; upper surface usually glabrous or nearly so, sometimes hairy; lower surface glabrous or with appressed hairs; base cordate with narrow or wide sinus; apex rounded or emarginate. Peduncles <to a little>petioles. Bracts minute. Calyx 1-2 mm long. Corolla 3-8-(13) mm diam., usually much>calyx, sometimes = or slightly greater calyx, white or yellowish. Anthers yellowish. Capsule 2-4 mm diam., globose, hairy, = or>calyx.

Photographer: John Barkla <sup>7</sup>

**Mercury Bay weed (*Dichondra repens*)****Flowering:** September-February – Green, White**Fruiting:** November-May**Description:**

A small, prostrate, herbaceous plant and has a creeping habit, with roots forming at the nodes. The leaves are kidney-shaped and measure 0.5 to 2 cm across. The tiny yellowish-green flowers (4-6mm dia) form mostly in summer but can appear at any time of the year. The fruit is a hairy, two-lobed capsule.

Photographer: Phil Bendle<sup>3</sup>**New Zealand ice plant, horokaka (*Disphyma australe*)****Flowering:** Throughout the year – Red/Pink, Violet/Purple**Fruiting:** Throughout the year**Description:**

Trailing, succulent herb. Stem terete, glabrous. Short shoots prostrate, rooting freely at nodes. Leaves 3-angled, linear-lanceolate to oblong, acute, often mucronate, tapering to connate base, 6-40 × 4-9 mm; margins entire, smooth, very rarely with a few papillae towards the distal end of the keel. Flowers 20-40 mm diameter. Sepal keel entire, smooth. Petals uniformly white to deep pink, in 3-5 rows, 10-30 mm long. Stamens 4-6 mm long; inner filaments hairy at base. Stigmas (5)-6-8-(10). Capsule valves 5-10, with parallel or ± divergent expanding keels; placental tubercle rounded or 0. Seeds brown, obovoid, rugose, c. 1 mm long.

Photographer: <http://www.oratianatives.co.nz>**Pigweed (*Chenopodium triandrum*)****Flowering:** September-May**Description:**

Herb, often slightly woody towards base, ± grey-farinoso at least when young. Stems prostrate and creeping, or tending to scramble on other vegetation, to c. 70 cm or more long, eventually becoming glabrous. Branchlets slender, sulcate. Lvs alternate or opposite; petiole 1-7 mm long, slender. Lamina 2-13-(15) × 1.5-11-(13) mm (occasionally more in shaded situations), usually hastate, subhastate, or ovate, less often lanceolate, rather thin, densely grey-farinoso when young, often becoming red, entire except sometimes for basal lobe; base usually hastate or sagittate and truncate or subcordate; apex obtuse or subacute, sometimes mucronulate. Fls in small terminal or axillary glomerules, these sometimes forming spike-like infls. Perianth segments c. 0.5 mm long, accrescent, broadly ovate, becoming crimson and succulent at fruiting; keel green or reddish. Stamens (2)-3. Fr. 3-5 mm diam., globular; pericarp succulent, crimson. Seed 1-1.5 mm diam., circular, flattened, shining black, reticulate.

Photographer: Jeremy Rolfe<sup>1</sup> from NZPCN

**Round-leaved willowherb (*Epilobium rotundifolium*)**

**Flowering:** September-May – Black, White

**Fruiting:** October-July

**Description:**

Herb, often sprawling and branching at base. Stems ± erect, 10–40 cm tall, strigillose all round, densely so in lines decurrent from margins of petioles, often also with a few glandular hairs. Lamina of lf broadly ovate, 3–25 × 3–20 mm. Floral tube 0.5–1.5 mm deep, sparsely glandular-hairy. Petals white, 2–2.5 × 1.5–3.5 mm. Capsule subglabrous to strigillose, 2–5 cm long; fruiting pedicel 1.5–4.2 cm long.



Photographer: P.B. Pelsler <sup>4</sup>

**Cleavers (*Galium aparine*)**

**Flowering:** Early spring-Summer - White

**Fruiting:** Mid-Late Spring

**Description:**

It is a clambering weed with long weak stems that climb up over surrounding plants and structures. The leaves are simple and borne in whorls of 6-8. Both leaves and stem have fine hairs tipped with tiny hooks, making them cling to clothes and fur much like velcro. The white to greenish flowers are 2-3 mm across, with four petals. The flowers occurring in most of the leaf nodes. The fruits are clustered 1-3 seeds together; each seed is 4-6 mm diameter, and is also covered with hooked hairs (a burr).



Photographer: Phil Bendle <sup>3</sup>

**Māwe (*Galium propinquum*)**

**Flowering:** October-March - Cream, White

**Description:**

Perennial herb; stems slender, filiform, straggling, to 20 cm long, glabrous, or retrorsely ciliate on angles. Leaves and stipules in distant whorls of 4, subsessile or with petioles to 1–(2) mm long; lamina (1)–1.5–4–(8) × (0.7)–1–3.5 mm, usually elliptic, broad-ovate to broad-elliptic or obovate, rarely narrower; margins and midrib glabrous or ciliate; apex usually mucronate. Fls 1–3 in terminal or axillary cymes; peduncles and pedicels filiform; peduncles 0–2–(7) mm long; pedicels (0.7)–1–4–(6) mm long, deflexed at fruiting; bracts very small or 0. Corolla 1.3–2 mm diam., white; lobes ± ovate-oblong, acute or mucronate. Mericarps 1–1.5 mm diam., reniform to subglobose, ± rugulose, glabrous or with appressed hairs.



Photographer: davesgarden.com

**Dove's foot crane's bill (*Geranium molle*)**

**Flowering:** September-February

**Description:**

A small annual herbaceous plant reaching on average 5–30 centimetres in height. It is a much branched plant, quite hairy, with several ascending stems. The leaves are palmate, cut 5 to 9 times. The basal leaves are arranged in a rosette, the upper ones are sessile, rounded and hairy, with a long petiole of about 5–12 millimetres. The flowers are pinkish-purple, 8-12 mm in diameter, with 5 deeply notched petals. Stamens are whitish and the anthers are mauve. The flowers are hermaphrodite. Fruits are glabrous, usually with 6-9 transverse ridges.



Photographer: Phil Bendle <sup>3</sup>

**Chatham Island geranium (*Geranium traversii*)**

**Flowering:** October-March (peaking in summer) – Red/Pink, White

**Fruiting:** July-June

**Description:**

It is perennial rosette herb which forms patches up to 0.8 × 0.6 m. It has silvery grey to grayish-green basal leaves which are round, 2.5–7.5 cm diameter, and are cut into 5 to 7 lobes. These are on slender petioles up to 220 mm long. Flowers are solitary up to 30 mm in diameter with petals that are pink, white or rarely a pale purple. The petals usually have up to 5 more darkly pigmented, longitudinal veins. The seeds are a black to reddish brown and the plant self seeds readily.

→ At Risk – Naturally uncommon



Photographer: Phil Bendle <sup>3</sup>

**Solitary gunnera (*Gunnera monoica*)**

**Flowering:** October-November

**Fruiting:** December-February

**Description:**

Monoecious herb. Leaves (1)–2–6–(9) cm long; lamina very variable in shape, usually broadly ovate or orbicular, shallowly to deeply cordate, not lobed or shallowly to deeply lobed, coarsely dentate or crenate, subcoriaceous, usually hairy. Inflorescences with ♂ flowers above ♀. Infructescence usually hidden among leaves, sometimes partly exposed. Drupes spaced along stalk or clustered, barrel-shaped, white, often flecked with purple or red, or very rarely (probably hybrids) entirely orange or red; seed free within fleshy envelope.



Photographer: guy.smugmug.com

**Lilaeopsis novae-zelandiae****Description:**

A short-stemmed plant with pale green leaves that in the right conditions form a short carpet. Reaches a height of about 4-7cm.



Photographer: Leon Pierre<sup>14</sup>

**Mudwort (*Limosella lineata*)**

**Flowering:** - White

**Fruiting:** October-March

**Description:**

Leaves linear-cylindric in close- to rather wide-set clusters of 5-10, of diverse length according to habitat; in damp ground (5)-10-15 mm., in mud (5)-10-20 mm., in water (10)-20-60 mm. Flowers in clusters of 3-8, (2)-5-(10) mm. long, on stalks c. 5-10 mm. long. Calyx unequally 5-toothed, corolla-lobes up to twice as long as broad. Style c. 1.5-2 × ovary-length. Fr. subglobose, up to 2 mm. diam. Seeds minute.



Photographer: Greg Jordan<sup>19</sup>

**Shore lobelia (*Lobelia anceps*)**

**Flowering:** August-May - Blue, White

**Fruiting:** October-August

**Description:**

Herb forming diffuse to compact patches up to 400 mm long, with vegetative parts glabrous; sap clear. Stems erect to wide spreading or prostrate, not usually rooting at nodes; branchlets narrowly winged, grooved. Leaves very variable; petioles flat, to c.10 mm long. Leaves becoming narrower and petioles shorter above; uppermost leaves sessile, narrow, linear to lanceolate or spatulate, 10-60 × 1-5 mm (sometimes leaf shape varies little from base to shoot apex). Peduncles 2-7 mm long, usually puberulent. Calyxlobes 0.9-1.5 mm long, linear to triangular, acute or acuminate. Corolla 6-10 mm long, white, pale blue (often deeper blue on lower lip), less commonly pale pink; lobes of lower lip 5-8 mm long, linear to oblong.



Photographer: Phil Bendle<sup>3</sup>

**Lotus major (*Lotus pedunculatus*)**

**Flowering:** November-January - Yellow

**Fruiting:** Summer & Autumn

**Description:**

Scrambling herb, either forming dense yellow flowered patches or scrambling through other vegetation, leaves with 5 lobes, small (c. 1 cm) yellow, pea-like flowers in groups of 12 or more at the branch tips. Stems with stolons, hollow, hairless to moderately hairy, woody at base often dying back to base in dry conditions. Leaves stalkless, 3-foliolate with 2 smaller leaflets (stipules) at base, usually with a few hairs beneath and on margins; leaflets 8-22 mm long, with conspicuous lateral veins. Flowers pea-like, 11-13 mm long, fragrant, golden yellow; clustered 5-12 on stalk 12-15 cm long, Nov-Mar. Seed pods straight, thin, 15-35 mm long.



Photographer: David Nicholls<sup>18</sup>

**Lucerne, alfafa (*Medicago sativa*)**

**Description:**

A perennial herb living for several years. It has erect stems up to 60 cm tall with many branches. The leaflets are 5-20 mm long and dentate (toothed) at the apex and sometimes at the base. The flowers, which are violet to pale lavender, are clustered along an unbranched axis (known as a raceme). The flowers are papilionaceous. The calyx, the outer whorl of floral organs, has teeth which are as long as the floral tube (corolla). The corolla is composed of petals fused into a tube which is 6-12 mm long. A curved or loose spiral seed pod containing 10 to 20 seeds which are yellow to brown in colour.



Photographer:  
mdidea.com/products/new/alfalfa\_photo05.jpg

**Swamp plantain (*Plantago australis*)**

**Flowering:** November-January – Brown, White

**Fruiting:** Autumn

**Description:**

Sparsely hairy herb with lance-shaped leaves lying close to the ground arising from a central point (like a dandelion), up to 30 cm long and 8 cm wide, with parallel veins, flower in centre of leaves, an up to 60 cm tall stem with a cylindrical flowerhead more than 10 cm long at the top, consisting of many small brown flowers.



Photographer: Phil Bendle<sup>3</sup>

**Ribwort, narrow-leaved plantain (*Plantago lanceolata*)**

**Flowering:** - White

**Fruiting:**

**Description:**

A rosette-forming perennial herb, with leafless, silky, hairy flower stems (10–40 cm). Its distinguishing feature is that it's the only weed that narrow-leaved plantain. The brownish fruits on the seed-head of narrow-leaved plantain are clustered closer to the tip of the stem than with broad-leaved plantain where fruits extend much further down the stem. The basal leaves are lanceolate spreading or erect, scarcely-toothed with 3-5 strong parallel veins narrowed to short petiole. Grouping leaf stalk deeply furrowed, ending in an oblong inflorescence of many small flowers each with a pointed bract. Each flower can produce up to two seeds. Flowers 4 mm. (calyx green, corolla brownish), 4 bent back lobes with brown midribs, long white stamens.



Photographer: Phil Bendle <sup>3</sup>

**Kopakopa, tūkōrehu (*Plantago raoulii*)**

**Flowering:** November-April

**Description:**

Rosette plants. Leaves all basal, 5–21 to per rosette, green or brown when dry, usually narrowly angular-ovate, angular-ovate, sometimes linear, narrowly rhombic or narrowly obovate, widest point usually above middle, sometimes at middle, 21–270 mm long, 4–27 mm wide; axillary hairs rust coloured, slightly to very visible, up to 2–10 mm long. Inflorescences erect, 2–20 per rosette, 45–386 mm long (including spikes); scapes usually elongating before anthesis, rarely sessile, not ribbed, 35–366 mm long, 4–10 mm thick at fruiting, sparsely or densely hairy, especially near top; trichomes usually patent, type 'g' (proximally), antrorse, type 'i' (distally), sometimes type 'i' only; spikes usually long and linear-ovoid, sometimes ovoid, 5–32 mm long, 4–10 mm thick at fruiting. Flowers 4–59 per spike, usually densely crowded, rarely more distant below (up to 5 mm apart). Seeds 4–6 per capsule, two or three size classes, ellipsoid or broadly ellipsoid (2–4 seeds), or rhomboid, broadly rhomboid, angular-ovoid or broadly angular-ovoid (top seed and sometimes two others), rust, brown or dark brown, 0.6–2.2 mm long, 0.4–1.0 mm wide; edges angular (1–3 seeds) and rounded (2–4 seeds).



Photographer: John Barkla <sup>12</sup>

**Chatham Island pratia (*Lobelia arenaria*)**

**Flowering:** - Violet/Purple, White

**Description:**

Glabrous, prostrate or semi-prostrate herb often forming large mats to c. 1 m diam., compact when in exposed situations. Stems creeping, rooting at nodes, rather stout, somewhat succulent, usually branched. Petioles 1–5 mm long. Lamina (4)–7–25–(35) × (4)–7–20–(25) mm, obovate-oblong to orbicular, sinuate to bluntly and obscurely dentate or sometimes rather coarsely toothed, membranous to somewhat succulent. Peduncles 1–2 cm long, slender. Fls solitary. Calyx lobes 2–3 mm long, narrow-oblong to narrow-triangular. Corolla white, deeply lobed; lobes c. 10 mm long, ± narrow-elliptic, acute; lower lip spreading; upper lip ascending. Fr. ± 6–10 × 5–8 mm, obliquely subovoid to subglobose, reddish purple to pinkish purple, somewhat compressed.



Photographer: John Sawyer<sup>1</sup> from NZPCN

**Shore buttercup (*Ranunculus acaulis*)**

**Flowering:** August-April – Green, Yellow

**Fruiting:** September-July

**Description:**

Perennial, mat-forming; rosettes tufted along pale, spreading, slender rhizomes. Leaves long-petiolate; lamina dark bronze-green to dark green, fleshy, glabrous, trifoliolate or deeply 3-lobed, 5-15(-20) mm diameter; lobes bluntly obovate, entire to shallowly toothed, terminal lobe entire or 3-fid, rounded to obtuse at apex, lateral lobes entire or with 1 basiscopic lobe. Flowers solitary, 5-10 mm diameter; scapes ± sessile, or very short, peduncles glabrous. Sepals spreading, glabrous. Petals 5-8, greenish-yellow, narrowly oblong or spatulate; nectary single, 1.5-2.0 mm from petalbase, pocket-like. Receptacle glabrous. Achenes (6-)10-12(-30), not flattened, glabrous; body 2-3 mm long; beakstraight, 0.5-1.0 mm long.



Photographer: © suniat<sup>12</sup>

**Watercress (*Nasturtium officinale*)**

**Flowering:** May-October

**Fruiting:** July-October

**Description:**

Hollow, rafting stems. A perennial growing to 0.5 m by 1 m at a fast rate. The flowers are hermaphrodite. Small white and green flowers produced in clusters.



Photographer: Dr. Stephen L. Timme<sup>15</sup>

**Sheep's sorrel (*Rumex acetosella*)****Flowering:** March-November - Red/Pink**Description:**

A perennial herb that has a slender and reddish upright stem that is branched at the top, reaching a height of 0.5 meters. The arrow-shaped leaves are small, slightly longer than 3 cm, and smooth with a pair of horizontal lobes at the base. Yellowish-green (male) or reddish (female) flowers develop on separate plants at the apex of the stem, which develop into the red fruits (achenes).

Photographer: <http://botanika.wendys.cz>**Shore dock (*Rumex neglectus*)****Flowering:** November-April**Description:**

Glabrous herb 1–12–(20) cm tall; rootstock long, stout, often branched above. Broadly oval, bright green (or red) fleshy leaves, 3–5 cm x 2–3 cm. Flowers and fruits in dense clusters arising from leaf tufts, 1–3cm tall. Leaves in clusters, with flattened petioles to 6 cm long. Lamina (1)–2–9–(12) × (0.5)–1–3–(5) cm, narrow-oblong, oblong, or oblong-elliptic; margins subcrenate to sinuate; base cuneate to truncate; apex rounded to obtuse. Ochreae prominent, long. Infl. lvs narrower, decreasing in size upwards. Infl. of dense axillary clusters of up to c. 16 ♀ fls; axes 1–2-branched, short, stout; pedicels short or very short, glabrous. Outer perianth segments ± 2 mm long, oblong, remaining forward pointing at fruiting; inner segments ovate-lanceolate. Fr. valves c. 2.2–2.5 mm long, pale brown; margins entire or with a tooth or lobe; valves with an elongated tubercle. Fr. sharply angled, tightly invested by thickened perianth.

Photographer: P.B. Heenan<sup>2</sup> © Landcare Research**Broad-leaved dock (*Rumex obtusifolius*)****Description:**

A perennial weed with very large broad leaves (up to 35 cm long and 15 cm wide) and are hairy underneath and have long stalks. Some of the lower leaves having red stems. The edges of the leaves are slightly "crisped" or wavy. The foliage of the plant can grow up to 1m tall in height. The stems have nodes covered by an ocrea, a thin, paper-like membrane. Large clusters of racemes contain green flowers that change to red as they mature appear June to April. They are held on a single stalk that grows above the leaves and blooms. The seeds produced are reddish-brown. Seedlings can be identified by the oval leaves with red stems and rolled leaves sprouting from the center of the plant.

Photographer: Phil Bendle<sup>3</sup>

**Procumbent pearlwort (*Sagina procumbens*)****Flowering:** (August) May – Cream, Green**Fruiting:** August-May**Description:**

Perennial. Stems procumbent or rarely ascending, slender but not filiform, glabrous, (2)–5–10–(20) cm long; axillary fascicles of lvs present; adventitious roots sometimes present at nodes. Rosette lvs short-lived. Cauline lvs linear, hyaline at base, glabrous or with minute marginal cilia, aristate at apex, (3)–5–10–(15) × 0.2–0.5 mm. Fls small, 4–(5)-merous.

Pedicels glabrous, (5)–10–15–(20) mm long. Sepals obtuse, glabrous, 1.5–2–(3) × 1–1.5 mm; hyaline margins always green.

Petals very small to c. 3/4 length of sepals, rarely 0. Stamens 4–(5). Capsule ovoid, slightly > calyx; styles and valves 4–(5). Seeds brown, triangular- ovoid, papillate, 0.4 mm long.

Photographer: <http://www.aphotoflora.com>**Sea primrose, māākoako (*Samolus repens*)****Flowering:** - White**Fruiting:** November-May**Description:**

Glab. perennial herb with ∞ branches arising from a stout stock. Stems up to ± 4 dm. long, branching, prostrate, rooting at nodes or sprawling. Leaves fleshy, alt. or occ. fascicled, on petioles up to 15 mm. long. Lamina (5)–7–15–(25) × (2)–4–6–(10) mm., narrow-obovate to narrow-spathulate. Fls 6–7 mm. diam., axillary, solitary, on peduncles ± 10 mm. long. Receptacle adnate to lower half of ovary; calyx with acute triangular to ovate lobes ± 4 mm. long; corolla broadly ovate-oblong, white, ± 6 mm. long. Style slender, stigma capitate; capsule 4–5 mm. diam., broad-ovoid.

Photographer: Wendy John<sup>28</sup>**Selliera, remuremu, rekoreko (*Selliera radicans*)****Flowering:** August-April – Blue, White**Fruiting:** October-June**Description:**

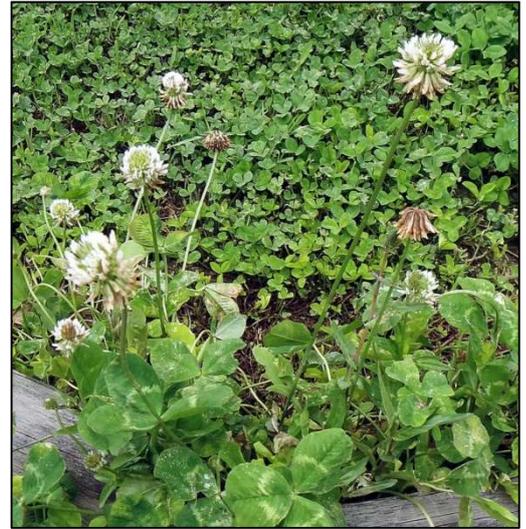
A small, hardy perennial succulent creeping native herbaceous plant. The plant can grow to a height of 20cm and patches of a width of 2m. The glossy, fleshy leaves are up to 4 cm long, and are narrow spoon-shaped. It has small white, one-sided, scented flowers in summer. Fruit 3.0-6.1 x 2.1-10.0 mm, obovoid to ovoid, truncate, green. Seeds 1.0-1.8 mm long, broadly ovate, broadly elliptic to almost circular, biconvex, pale orange yellow to pale brown, winged, wing 0.1-0.3 mm wide, margin irregular, wrinkled, translucent.

Photographer: Phil Bendle<sup>3</sup>

**White clover (*Trifolium repens*)**

**Description:**

It is an herbaceous perennial plant. It is low growing, with heads of whitish flowers, often with a tinge of pink or cream that may come on with the aging of the plant. The heads are generally 1.5-2 cm wide, and are at the end of 7 cm peduncles or flower stalks. The leaves, which by themselves form the symbol known as shamrock, are trifoliate, smooth, elliptic to egg-shaped and long-petioled. The stems function as stolons, so white clover often forms mats with the stems creeping as much as 18 cm a year, and rooting at the nodes. The creeping stems set roots at whatever point they touch the ground.



Photographer: Phil Bendle<sup>3</sup>

**Southern nettle, onga (*Urtica australis*)**

**Flowering:** December-January

**Fruiting:** December-March

**Description:**

Stout semi-deciduous shrub forming dense bushes up to 1 x 1 m. Branches semi-erect to erect, rooting at base up to 1 x 0.1 m, somewhat woody at base, semi-succulent. Young branchlets, petioles and inflorescence axes sparsely to densely clad in stinging hairs, these sometimes completely absent from stems. Interpetiolar stipules lanceolate, usually bifid, 20 mm long. Petioles up to 50 mm long, stout, somewhat fleshy, often with a pair of lateral leaflets developed near petiole base.

Leaves dark green, 100-150 x 80-140 mm, broadly ovate-cordate to suborbicular, acute to obtuse, coarsely dentate-serrate to subentire (rarely entire), teeth up to 10 mm long, stinging hairs confined to leaf margins and veins on leaf underside, often sparse or absent. Male inflorescence of 1-3 branched spikes up to 70 mm long; female inflorescence similar, flowers densely arranged, perianth in both sexes glabrate. Achenes (Seeds), pale brown, elliptic 1.5-2 mm.



Photographer: Peter de Lange<sup>12</sup>

# Glossary of Botanical Terms

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1. Achene – a type of simple dry fruit, contain a single seed
2. Apex – the tip; the point furthest from the point of attachment
3. Blade – the expanded leafy part of the frond
4. Bract – a modified or specialised leaf
5. Bifid - (of a part of a plant) divided by a deep cleft or notch into two parts
6. Burr – a seed or dry fruit or infructescence that has hooks or teeth
7. Calyx – the sepals of a flower, typically forming a whorl that encloses the petals and forms a protective layer around a flower in bud
8. Cauline – located at the base
9. Capitulum – a type of flower head where the bracts are located under the basis
10. Carpel – the female reproductive organ of a flower
11. Corolla – petal
12. Deciduous – shedding its leaves annually
13. Fiddlehead (crozier) – an uncurling frond (fern)
14. Frond – the whole leaf; blade and stalk
15. Glabrous – smooth; hairless
16. Gynoecium – the female part of the flower, consisting of one or more carpels
17. Inflorescence – a group/cluster of flowers arranged on a stem that is composed of a main branch or a complicated arrangement of branches
18. Infructescence – an aggregate fruit
19. Lamina - The flat part of a leaf or leaflet; the blade
20. Ligule - a narrow strap-shaped part of a plant
21. Panicle - a loose branching cluster of flowers
22. Pappus – a modified calyx, the part of an individual floret, that surrounds the base of the corolla tube in flower heads of the plant family Asteraceae.
23. Peduncle – a stalk supporting an inflorescence
24. Perennial – plant that lives for more than 2 years
25. Perianth – the outer part of a flower, consisting of the calyx and corolla
26. Petiole – the stalk that joins a leaf to a stem
27. Pinna (leaflet) – a primary division of the blade
28. Pinnule (subleaflet) – a division of the pinna (pinnules can be divided into lobes)
29. Procumbent – (of a plant or stem) growing along the ground without throwing out roots
30. Prostrate – growing along the ground
31. Pseudanthium – flower head, anything from a small cluster to hundreds or sometimes thousands of flowers are grouped together to form a single flower-like structure
32. Rachis (axis) – the stalk within the blade
33. Rhizome – a continuously growing horizontal underground stem which puts out lateral shoots and adventitious roots at intervals
34. Rosette – a circular arrangement of leaves
35. Scape - a long internode forming the basal part or the whole of a peduncle
36. Sepal – each of the parts of the calyx of a flower, enclosing the petals and typically green and leaflike
37. Sporangium - (in ferns and lower plants) a receptacle in which asexual spores are formed
38. Stipe – stalk below the blade
39. Stipule - a small leaf-like appendage to a leaf, typically borne in pairs at the base of the leaf stalk
40. Stolon – a creeping horizontal plant stem or runner that takes root at points along its length to form new plants
41. Style – a stalk structure in female flower parts

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