



# Auckland's threatened plants Vol. VI



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

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## Introduction

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

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

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

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

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

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

## The New Zealand Botanic Region

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

## About the Network

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

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

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

That work has included:

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

## What is a threatened plant?

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

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

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

# *Pimelea longifolia*

## Common Name(s):

Long-leaved pimelea

## Current Threat Status (2012):

At Risk - Declining

## Distribution:

Endemic. New Zealand: Great Barrier, North (Coromandel Peninsula, Auckland, Kaimai Range, East Cape, Te Urewera and Tararua Ranges) and South Islands (Durville Island, Marlborough Sounds, north-west Nelson, Buller and Paparoa Ranges)

## Habitat:

Coastal to montane. Usually in open sites in forest, on forest margins and in scrub; on or near rock outcrops (especially base-rich rock such as limestone and basalt – but also on acidic rocks such as rhyolite).

## Features\*:

A much-branched, erect shrub up to 2 m tall. Branches and branchlets ascending, glabrous except at leaf axils and on receptacles. Node buttresses occupy whole internode, smooth, brown, sometimes prominent after leaf fall on small specimens; internodes 8–14 mm long. Bark ages to grey. Leaves decussate, in distant opposite pairs, ascending to patent or deflexed, on petioles 3–5 mm long. Lamina medium green, yellow-green to dark green, stiff, somewhat leathery, very variable in size and shape on the same plant; largest 40–110 × 10–22 mm, elliptic or ovate, sometimes obovate, oblong or lanceolate; flat, acuminate, base cuneate. Margins slightly thickened and downturned; midvein prominent abaxially, sunken above; lateral vein pattern camptodromous; stomata on undersides only. Inflorescences many-flowered; pedicels 1–2 mm long, persistent. Involucral bracts four, smaller than or sometimes the same size as largest ordinary leaves (20–40 × 8–10 mm). Plants gynodioecious. Flowers hairy on outside; inside hairless; fragrant, white, flushed rose or completely pink, lower tube often red. Calyx lobes open in salverform fashion. Female tube to 10 mm long, ovary portion 4 mm, calyx lobes 3.2 × 1.8 mm; staminodes short, at mouth of tube. Female tube to 15 mm long, ovary portion 3.5 mm, calyx lobes 5 × 2.5 mm. Anther filaments long, inserted at mouth of tube; anthers yellow. Ovary densely hairy at summit. Fruits ovoid, green, drying brown, 5 mm long. Seeds narrow ovoid, 4.0 × 1.8 mm. Dried hypanthia persistent often dispersing with fruits inside.

## Flowering:

September - April

## Fruiting:

November - June

## Threats:

Not Threatened

## \*Attribution:

Description based on Burrows (2008).

## References and further reading:

Burrows, C.J. 2008: Genus *Pimelea* (Thymelaeaceae) in New Zealand 1. The taxonomic treatment of seven endemic, glabrous-leaved species. *New Zealand Journal of Botany* 45: 127-176.

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=1123](http://nzpcn.org.nz/flora_details.asp?ID=1123)



**Caption:** *Pimelea longifolia* flowers

**Photographer:** Sandra Wotherspoon



**Caption:** *Pimelea longifolia*

**Photographer:** John Barkla

# *Pimelea pseudolyallii*

## Common Name(s):

Pimelea

## Current Threat Status (2012):

At Risk - Naturally Uncommon

## Distribution:

Endemic. New Zealand. South Island (easterly in Marlborough, Canterbury, North Otago)

## Habitat:

Montane to alpine. In open montane beech (*Nothofagus* spp.) forest near bush line, subalpine scrub, amongst shrubs in tussock grassland and within tussock grassland.

## Features\*:

Robust, procumbent shrub with few to many flexible stems up to 800 × c.80 mm, but sometimes climbing in erect shrubs or tussocks; occasionally with adventitious roots. In exposed sites plant size is reduced and plants maybe appressed, with short, spreading stems. Branching sympodial and lateral. Branchlets light brown, moderately densely to sparsely covered in long, white, appressed hairs; internodes 2–6 mm long. Older stems glabrate to glabrous, smooth, dark brown. Node buttresses lunate, brown, often masked by hairs, not prominent on leafless stems. Leaves decussate, ascending at first, soon becoming patent, sometimes appearing distichous in appressed plants, on reddish petioles 0.5–1.5 mm long. Lamina medium to dark green, narrow-ovate to broad-ovate or elliptic to broad-elliptic or sometimes oblong, 5.0–15 × 3.0–6.5 mm, flat or slightly keeled, margin slightly down-turned, mid-vein clearly evident, sunken adaxially; tip acute, base cuneate; abaxial surface moderately to densely covered with long, white and glistening or sometimes yellowish, appressed hairs; stomata only on abaxial leaf surface. Inflorescences terminal, loose, 5–12-flowered. Involucral bracts 4, usually wider than adjacent ordinary leaves (10–7 mm). Receptacle densely hairy, sometimes slightly convex. Plants gynodioecious. Flowers white, scented, on short (0.6 mm) pedicels, very hairy outside, inside hairless. Female tube 3–4 mm long, ovary portion wrinkled, 2.3 mm, calyx lobes 2–1 mm; hermaphrodite tube 5–6 mm long, ovary portion 2 mm, calyx lobes ascending, 2.5 × 1.4 mm. Anther dehiscence introrse. Ovary hair cover dense near summit, sparse to half way down. Fruits fleshy, red, broad-ovoid 4 × 3 mm. Seeds 2.6 × 1.3 mm.

## Flowering:

November - January

## Fruiting:

December - February

## Threats:

Not Threatened. Apparently a naturally uncommon, biologically sparse species. Burrows (2011) notes that there is extensive introgressive hybridism present between this species and especially members of the *P. oreophila* complex (see Notes). Nevertheless he accepts the current threat listing of "At Risk/Naturally Uncommon" as valid.

## \*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange (28 April 2011), Description adapted from Burrows (2011).

## References and further reading:

de Lange, P.J.; Norton, D.A.; Courtney, S.P.; Heenan, P.B.; Barkla, J.W.; Cameron, E.K.; Hitchmough, R.; Townsend, A.J. 2009: Threatened and uncommon plants of New Zealand (2008 revision). *New Zealand Journal of Botany* 47: 61–96.

Burrows, C.J. 2011: Genus *Pimelea* (Thymelaeaceae) in New Zealand 4. The taxonomic treatment of ten endemic abaxially hairy-leaved species. *New Zealand Journal of Botany* 49: 41–106.

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=298](http://nzpcn.org.nz/flora_details.asp?ID=298)



**Caption:** Mt Hutt (January)

**Photographer:** John Smith-Dodsworth



**Caption:** Dec 2006.

**Photographer:** Peter de Lange

## *Pimelea villosa*

### Common Name(s):

sand daphne, autetaranga, toroheke, sand pimelea

### Current Threat Status (2012):

At Risk - Declining

### Distribution:

Endemic. North, South and Rekohu (Chatham Island). Abundant on Rekohu.

### Habitat:

Confined to sand dunes and associated swales and flats - usually in free draining sites but sometimes bordering streams in places prone to sudden flooding. On Rekohu (Chatham Island) this species often extends outside these habitats onto the sandy peat soils that were once forest and are now mostly pasture, and in these places it sometimes extends into dune forest remnants. It can be very common in pasture there probably because the soils are free draining and sandy and also because it is toxic and so cattle and sheep will not eat it. On the southern tablelands it is sometimes found within clears (on shallow peat soils) where it grows with other plants typical dune country such as *Coprosma acerosa*. Unusually for this species around Te Whanga it sometimes grows on limestone outcrops.

### Features\*:

A medium-sized to large, much-branched, erect to decumbent, sometimes prostrate shrub; stems stout to slender, flexible to stiff, to 1.5 m long, usually shorter, sometimes developing adventitious roots if buried by sand. Young branchlets densely covered in short to long, white, or rarely yellowish, appressed hair. Internode length 0.8–10.0 mm; older stems sparsely hairy, or hairless, brown. Node buttresses short (0.25 mm), lunate, glabrous, or with short hairs, but masked by internode hair on young stems; not prominent on leafless stems. Leaves decussate, ascendant or spreading, then often deflexed, imbricate or distant, on short (0.2–0.8 mm) often red petioles. Lamina 5–15 mm long × 3–7 mm wide, broad-elliptic to broad-ovate, flat; obtuse, or acute, base cuneate. Upperside of leaf glaucous to medium green, usually glabrous, but young leaves sometimes sparsely hairy, above. Lower sides and margins are densely covered by appressed white to dull white or sometimes yellowish hair; midvein not prominent. Stomata on both leaf surfaces. Inflorescences terminal on branchlets, 3–7-flowered. In some individuals grouped in clusters of 2 or more. Receptacles very hairy. Involucral bracts 4, of similar size to, or smaller than, adjacent ordinary leaves (8–10 × 5–7 mm), broad-elliptic to broad-ovate, densely hairy below, usually glabrous above but sometimes with a few hairs on that side. Plants gynodioecious. Flowers white or sometimes cream, on short pedicels (0.5 mm); tube and calyx lobes very hairy outside, inside hairless or with a few hairs in the ovary portion, lobes open in ascendant or salverform fashion. Female tube 4–5.5 mm long, ovary portion 3–4.5 mm, calyx lobes 2.2 × 2.0 mm; hermaphrodite tube 5–7 mm, ovary portion 3.5–5 mm, calyx lobes 2.5–2.7 × 2–2.5 mm. Anther filaments short, inserted at mouth of tube; anther yellow. Ovary partly or completely hair-covered. Fruits ovoid, fleshy, dark purple-black, red, pink or white, opaque, 5.2 × 4.2 mm. The tube breaks off irregularly as the fruit ripens. Seeds 4 × 2.2 mm. Description based on Burrows (2009)

### Flowering:

September - March

### Fruiting:

October - April

### Threats:

Threatened throughout its range (except possibly Rekohu (Chatham Island) by competition from marram grass; trampling by cattle, sheep and horses; browsing of seedlings by possums; seed destruction by rodents; vehicle damage and fire. More worryingly it has been observed that fruiting plants are now rarely seen over large parts of its range despite apparently good sex ratios within populations. It is suspected that the low fruit set being observed is due to the decline of and perhaps loss from some areas of pollinators. Further study is needed to confirm this. Although treat in the broad sense here the southern variant (*Pimelea* aff. *arenaria* (AK 216133; Southern New Zealand)) is by far the less common and more threatened of the two forms.

### \*Attribution:

Fact Sheet by P.J. de Lange (1 November 2009). Description based on: Burrows (2009).

### References and further reading:

Burrows, C.J. 2009: Genus *Pimelea* (Thymelaeaceae) in New Zealand 3. The taxonomic treatment of six endemic hairy-leaved species. *New Zealand Journal of Botany* 47: 325–354.

de Lange, P.J.; Norton, D.A.; Courtney, S.P.; Heenan, P.B.; Barkla, J.W.; Cameron, E.K.; Hitchmough, R.; Townsend, A.J. 2009: *Threatened and uncommon plants New Zealand Journal of Botany* 47: 61–96.

Merrett, M. 2005. The lowdown on *Pimelea arenaria*. *Wellington Botanical Society Bulletin* 49: 3–6

### For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=193](http://nzpcn.org.nz/flora_details.asp?ID=193)



**Caption:** A plant showing imbricate and larger lax leaves (see comments on taxonomy). Spirits Bay. Nov 2010.

**Photographer:** Jeremy Rolfe



**Caption:** *Pimelea arenaria* at Tokerau Beach

**Photographer:** Bill Campbell

# *Pimelea xenica*

## Common Name(s):

pinatoro

## Current Threat Status (2012):

At Risk - Declining

## Distribution:

Endemic. North Island: North Auckland (scattered sites from Cape Reinga and North Cape south to Anawhata), South Auckland (Coromandel Peninsula), eastern Bay of Plenty, near East Cape, and at Hawke's Bay, near Tangoio.

## Habitat:

Mainly coastal or near-coastal but sometimes further inland. A species of low heathland where it grows on open clay pans or within short shrubland dominated by *Leptospermum scoparium*, *Leucopogon fasciculatus*, *Ozothamnus leptophylla*, *Baumea* spp., *Phormium cookianum*, and *Hebe* spp. Also found on grassy slopes, open eroding banks on bare soil, and on rock outcrops.

## Features\*:

A moderately small, erect or suberect shrub, to 30 cm high, stems gracile, fastigiate to sprawling. Branching mainly sympodial with some diffuse lateral. Branchlets moderately densely covered by short to long, greyish-white hair. Internodes 0.5–1.2 mm long. Node buttresses short (0.1–0.8 mm), brown, lunate to slightly elongate, usually visible on young branchlets but not prominent on leafless stems. Older stems glabrate, grey or grey-brown. Leaves decussate, ascendant to patent, on short (0.2–0.5 mm) red petioles. Lamina thin, pliable, with a thickened margin, elliptic to ovate, 4.0–5.5 × 1.5–2.2 mm, pale green or glaucous, keeled and adaxially concave (dry leaf margins are often curled inward), midvein not plainly evident abaxially, obtuse or acute, base cuneate. Stomata abundant on adaxial and abaxial sides. Inflorescences terminal on branchlets, 3–5-flowered. Involucral bracts 4, broader than adjacent leaves (4 × 3 mm), partly hiding the flowers. Receptacles sparsely hairy, pedicels 0.3 mm. Plants gynodioecious. Flowers white, opening in salverform fashion, sparsely covered in short hair outside, inside hairy in upper tube and sparsely so in ovary portion. Female tube 3 mm long, ovary portion wrinkled, 2.4 mm long, calyx lobes 1.5 × 1.3 mm; hermaphrodite tube 4 mm long, ovary portion 1.5 mm, calyx lobes 1.8 × 1.5 mm. Anther dehiscence semi-latrorse. Ovary with sparse hair on summit and a few short hairs below that. Fruits sub-globose to oblate, fleshy, white, translucent, 5 × 4 mm. Seeds ovoid 2.1 × 1.7 mm, thin crest.

## Flowering:

September – April

## Fruiting:

November – June

## Threats:

Burrows (2009) notes that one population near Cape Reinga was recently destroyed due to road works. However, he affirms that this species is poorly known. As a precautionary measure it probably merits future listing as Data Deficient.

## \*Attribution:

Factsheet prepared by Peter de Lange with description from: Burrows (2009).

## References and further reading:

Burrows, C.J. 2009: Genus *Pimelea* (Thymelaeaceae) in New Zealand 2. The endemic *Pimelea prostrata* and *Pimelea urvilliana* species complexes. *New Zealand Journal of Botany* 47: 163–229.

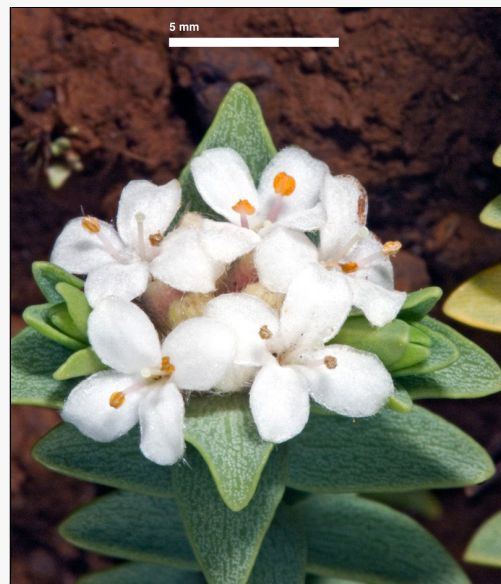
## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=2395](http://nzpcn.org.nz/flora_details.asp?ID=2395)



**Caption:** Node buttresses and hairs on stem. Surville Cliffs, North Cape.

**Photographer:** Jeremy Rolfe



**Caption:** Inflorescence. Surville Cliffs, North Cape.

**Photographer:** Jeremy Rolfe



## *Piper excelsum* subsp. *delangei*

### Common Name(s):

de Lange's kawakawa, de Lange's pepper

### Current Threat Status (2012):

Naturally Uncommon

### Distribution:

Endemic. Three Kings Islands: Manawa Tawhi (Great Island), South West and North East Islands

### Habitat:

Coastal forest where it is often an important component of the shrub layer. On South West Island it is sympatric with, and forms hybrids with *Piper melchior*.

### Features\*:

Shrub or small tree to at least 3 m tall; stems ± erect, not notably lenticellate, new shoots green (without reddish colouring), taste oily-aromatic and extremely peppery; pith of axes (including rachis of spike) usually without a mucilage core (but this sometimes present in sucker shoots), in older (leafless, secondarily thickened) stems the pith not more than 0.5× stem diameter, and remaining intact in the largest trunks. Prophyll a collar to 0.5(-2.0) mm high. Leaf blades coriaceous, fleshy ± suborbicular, at vegetative nodes to 100(-160) mm diameter, usually with 7 or 9 principal nerves, cordate at base, with a very narrow or closed sinus, occasionally basal lobes overlapping, or sometimes the blade peltate with the petiole inserted up to 5(-20) mm inside blade margin, upper surface of blade not bullate; petiole to 40(-60) mm long, c.0.4× as long as blade, the sheath 0.3-1.0(-2)× as long as non-sheathing part, truncate-rounded at apex and not produced there, the non-sheathing part of petiole to 3.5 mm diam. Inflorescences solitary or 2-3 together on a short (rarely more than 1 cm long) axillary shoot, and (usually solitary) on the adjacent terminal shoot (occasionally this shoot not fertile); reduced leaf at apex of fertile shoot with a glabrous petiole and usually with a green oblong lamina at least 5 mm long, but lamina often ± lacking, especially on terminal fertile shoot. Female inflorescence erect in flowering and remaining so into fruit, peduncle to c. 1.5 cm long, spike to 60(-100) × c.6 mm diameter, with uniseriate usually 5-10-cellular hairs to 0.15 mm long on lower part of bract stalks and sparingly on rachis, these hairs not obvious on the peduncle just below the lowermost bracts; bracts peltate, bract heads 0.40-0.75 mm diameter; flowers at full emergence centred c.1.3 mm apart, emergent part of ovary ovoid; stigmas 3-4(-5), together c. 1.2 mm diameter. Male inflorescence erect, spike to c.110 mm long, proximally c.6 mm diameter, bracts and hairs as in female inflorescence; staminal filaments c. 0.25 mm long, anthers c.1.00 × 0.75 mm wide. Ripe infructescence c.10 mm diameter; fruitlets coalescent, sunken apically about the persistent dark stigmas, exocarp and mesocarp orange; seed oblong to slightly obovoid, apiculate at apex, c.2.0 × 1.5 dark brown, with (3-)4-5(-7) broad longitudinal furrows.

### Flowering:

August - December

### Fruiting:

September - May

### Threats:

Not Threatened. Listed because it is a narrow range endemic confined to a small geographic area

### \*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange 30 August 2005. Description based on Gardner (1997).

### References and further reading:

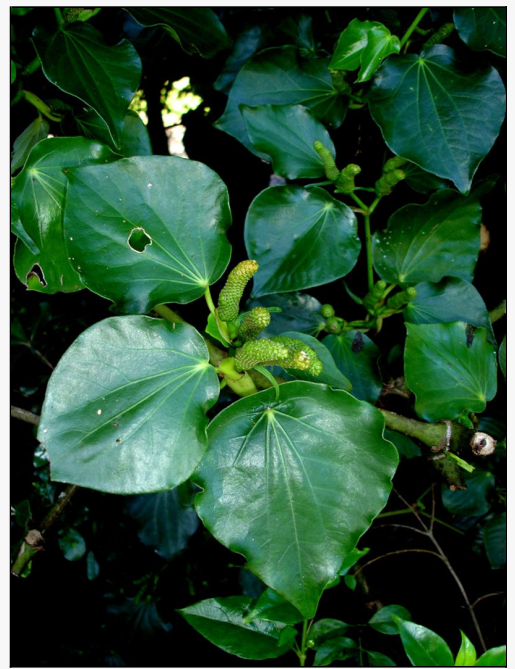
de Lange, P.J. 2012: Taxonomic notes on the New Zealand flora: new names in *Piper* (Piperaceae). *New Zealand Journal of Botany* DOI:10.1080/0028825X.2012.708904

Gardner, R.O. 1997: *Macropiper* (Piperaceae) in the south-west Pacific. *New Zealand Journal of Botany* 35: 293-307.

Jaramillo, M.A.; Callejas, R; Davidson, C.; Smith, J.F.; Stevens, A.C.; Tepe, E.J. 2008: A phylogeny of the tropical genus *Piper* using ITS and the chloroplast intron psbJ-petA. *Systematic Botany* 33: 647-660.

### For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=578](http://nzpcn.org.nz/flora_details.asp?ID=578)



**Caption:** *Macropiper excelsum* subsp. *peltatum* f. *delangei*  
**Photographer:** Peter de Lange



**Caption:** *Macropiper excelsum* subsp. *peltatum* f. *delangei*  
**Photographer:** Peter de Lange

## *Piper excelsum* subsp. *peltatum*

### Common Name(s):

kawakawa, pepper tree

### Current Threat Status (2012):

Naturally Uncommon

### Distribution:

Endemic. New Zealand: Poor Knights, Mokohinau Islands, Hen (Taranga), Great Barrier (Pitokuku Island), and also from Hauturu (Clark Island) near Whangamata

### Habitat:

Offshore islands in coastal forest.

### Features\*:

Shrub or small tree to at least 3 m tall; stems  $\pm$  erect (occasionally layering), not notably lenticellate, new shoots green (leaf nerves, petioles and new stems without reddish colouring), taste oily-aromatic and very peppery; pith of axes (including rachis of spike) usually without a mucilage core (but this sometimes present in sucker shoots), in older (leafless, secondarily thickened) stems the pith not more than 0.5 $\times$  stem diameter, and remaining intact in the largest trunks. Prophyll a collar to 0.5(-2.0) mm high. Leaf blades submembranous to firmly fleshy  $\pm$  suborbicular, at vegetative nodes to 100(-160) mm diameter, usually with 7 or 9 principal nerves, cordate at base, with a very narrow or closed sinus, occasionally basal lobes overlapping, or sometimes the blade peltate with the petiole inserted up to 5(-20) mm inside blade margin, upper surface of blade not bullate; petiole to 40(-60) mm long, c.0.4 $\times$  as long as blade, the sheath 0.3-1.0(-2) $\times$  as long as non-sheathing part, truncate-rounded at apex and not produced there, the non-sheathing part of petiole to 3.5 mm diam. Inflorescences solitary or 2-3 together on a short (rarely more than 10 mm long) axillary shoot, and (usually solitary) on the adjacent terminal shoot (occasionally this shoot not fertile); reduced leaf at apex of fertile shoot with a glabrous petiole and usually with a green oblong lamina at least 5 mm long, but lamina often  $\pm$  lacking, especially on terminal fertile shoot. Female inflorescence erect in flowering and remaining so into fruit, peduncle to c. 1.5 cm long, spike to 60(-100)  $\times$  c.6 mm diameter, with uniseriate usually 5-10-cellular hairs to 0.15 mm long on lower part of bract stalks and sparingly on rachis, these hairs not obvious on the peduncle just below the lowermost bracts; bracts peltate, bract heads 0.40-0.75 mm diameter; flowers at full emergence centred c.1.3 mm apart, emergent part of ovary ovoid; stigmas 3-4(-5), together c. 1.2 mm diameter. Male inflorescence erect, spike to c.110 mm long, proximally c.6 mm diameter, bracts and hairs as in female inflorescence; staminal filaments c. 0.25 mm long, anthers c.1.00  $\times$  0.75 mm wide. Ripe infructescence c.10 mm diameter; fruitlets coalescent, sunken apically about the persistent dark stigmas, exocarp and mesocarp orange; seed oblong to slightly obovoid, apiculate at apex, c.2.0  $\times$  1.5 dark brown, with (3-)4-5(-7) broad longitudinal furrows.

### Flowering:

September - December

### Fruiting:

October - August

### Threats:

Not Threatened. Listed because it is a narrow range offshore island endemic

### \*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange 30 August 2005. Description based on Gardner (1997).

### References and further reading:

de Lange, P.J. 2012: Taxonomic notes on the New Zealand flora: new names in *Piper* (Piperaceae). *New Zealand Journal of Botany* DOI:10.1080/0028825X.2012.708904

Gardner, R.O. 1997: *Macropiper* (Piperaceae) in the south-west Pacific. *New Zealand Journal of Botany* 35: 293-307.

Jaramillo, M.A.; Callejas, R; Davidson, C.; Smith, J.F.; Stevens, A.C.; Tepe, E.J. 2008: A phylogeny of the tropical genus *Piper* using ITS and the chloroplast intron psbJ-petA. *Systematic Botany* 33: 647-660.

### For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=579](http://nzpcn.org.nz/flora_details.asp?ID=579)



**Caption:** Aorangi Island, September 1998

**Photographer:** G. M. Crowcroft



**Caption:** *Macropiper excelsum* subsp. *peltatum* f. *peltatum* on Aorangi Island

**Photographer:** Gillian M. Crowcroft, October 1995

## *Piper excelsum* subsp. *psittacorum*

### Common Name(s):

kawakawa, pepper tree

### Current Threat Status (2012):

Naturally Uncommon

### Distribution:

Indigenous. Kermadec Islands (Raoul Island). Also Norfolk and Lord Howe Islands.

### Habitat:

Coastal forest where it is often an important component of the shrub layer.

### Features\*:

Dioecious shrub to small suckering tree up to 3 m tall, branching from base. Branches terete up to 40 mm diameter, initially bright green, maturing dull greenish-brown. Leaves mildly aromatic with a slight peppery taste when chewed; petioles u-shaped in cross-section, upper surface grooved, 20-80 mm long, green to yellow-green; lamina slightly bullate, 50-180 × 60-200 mm, pale green to dark green, rarely yellow-green, broadly ovate to suborbicular, base cordate, rounded or rarely with ends overlapping, apex distinctly acuminate, margins entire; main nerves 5-9, raised slightly above lamina surface. Inflorescence a solitary or paired spike bearing numerous, crowded flowers on a slender rachis, each flower subtended by a peltate scale 1.5-2.0 mm diameter; male spikes to 200 mm long, often faintly tapered, stamens 2-3; female spikes 40-80 mm long, style 3-4, minute; ovary ovoid. Fruiting spike 12-20 mm diameter, yellow or orange when ripe. Fruit fleshy, sweet, coalescent, with dimpled apex. Seeds 1.8-2.0 mm long, ellipsoid, grooved with 3-4 furrows, hard, peppery when crushed.

### Flowering:

August - November

### Fruiting:

Throughout the year

### Threats:

Not Threatened. Listed because in New Zealand it is only known from Raoul Island, where it is abundant.

### \*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange 30 August 2005. Description based on live plants (wild and cultivated) and herbarium specimens.

### References and further reading:

de Lange, P.J. 2012: Taxonomic notes on the New Zealand flora: new names in *Piper* (Piperaceae). *New Zealand Journal of Botany* DOI:10.1080/0028825X.2012.708904

Jaramillo, M.A.; Callejas, R; Davidson, C.; Smith, J.F.; Stevens, A.C.; Tepe, E.J. 2008: A phylogeny of the tropical genus *Piper* using ITS and the chloroplast intron psbJ-petA. *Systematic Botany* 33: 647-660.

### For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=580](http://nzpcn.org.nz/flora_details.asp?ID=580)



**Caption:** Raoul island

**Photographer:** John Barkla



**Caption:** Raoul island

**Photographer:** John Barkla

# *Piper melchior*

## Common Name(s):

Three Kings Kawakawa

## Current Threat Status (2012):

At Risk - Naturally Uncommon

## Distribution:

Endemic. Three Kings Islands: South West and West Islands only

## Habitat:

Coastal forest (mostly in shaded sites) where it is a locally common component of the shrub layer. Very rarely in petrel scrub.

## Features\*:

Shrub to c. 2 m tall; stems erect to leaning, copiously lenticellate; new shoots green, i.e., leaf nerves, petioles, and new stems with almost no wine colouring, taste only slightly oily-aromatic and not at all peppery; pith of axes (including inflorescence rachis) with central cells soon breaking down to form a 1 mm diam. core of mucilage, in older (leafless, secondarily thickened) stems the pith more than c. 0.3 × stem diameter and disintegrating after a few years. Prophyll a raised line of tissue or sometimes a collar to c.1 mm high. Leaf blades at vegetative nodes ± suborbicular to slightly obovate, to c.10(-18) mm diameter, usually with 9 principal nerves, cordate at base, usually with an open sinus (inner edges of basal lobes seldom touching or overlapping, nor leaf ever peltate), slightly bullate, upper surface with the finer reticulation slightly raised above the ground tissue; petiole to c. 5 cm long, c.0.4× as long as blade, sheathing part to c.(25-)30 mm long, (1-)2-3(-4)× as long as the non sheathing part, the sheath truncate-rounded at apex and not produced, non-sheathing part of the petiole c.4(-5) mm diameter. Inflorescence always solitary on a very short (to c.3 mm long) unbranched axillary shoot, the much-reduced leaf at apex of shoot with a short (0-5 mm) green oblong lamina on a vestigial sheathing petiole. Female inflorescence erect in flowering and remaining so into fruit; peduncle to c.15 mm long; spike to c.100 × c.6 mm diameter, with white 10-30-celled hairs to c.0.75 mm long on upper sides and edges of petiole of reduced leaf, and on the lower part of the bract-stalks and on the rachis, and usually conspicuous as an appressed cover on the peduncle around and just below the lowermost bracts; bract-heads c. 1.3 mm diam.; flowers at full emergence centred c. 1.6 mm apart, the emergent part of ovary subglobose; stigmas 3-4(-6), together 0.5-0.8 mm diam. (rarely more than 1 mm diameter). Male inflorescence erect, spike to c.130 × c.8 mm diameter distally in life (5.0-6.5 mm diameter when dry and somewhat flattened), hairs and bracts as in female inflorescence; staminal filaments 1.0-1.5 mm long, anthers c. 0.8 × 0.7 mm wide. Rachis of fruiting spike when ripe c.4 mm diameter, firmly fleshy, orange; ripe fruitlets subglobose, slightly depressed, c.4.5 mm diameter, free from one another and from the bracts and rachis; exocarp and mesocarp orange; seeds c.2.25 × 2.50 mm, ± subglobose in outline, dark brown, with 3-4(-6) rounded longitudinal ridges.

## Flowering:

August - November

## Fruiting:

Throughout the year

## Threats:

Although abundant within its island habitat this species is listed because it occupies a small geographic range

## \*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange 30 August 2005. Description based on Gardner (1997).

## References and further reading:

de Lange, P.J. 2012: Taxonomic notes on the New Zealand flora: new names in *Piper* (Piperaceae). *New Zealand Journal of Botany* 50(4): 485-487

Gardner, R.O. 1997: *Macropiper* (Piperaceae) in the south-west Pacific. *New Zealand Journal of Botany* 35: 293-307.

Jaramillo, M.A.; Callejas, R.; Davidson, C.; Smith, J.F.; Stevens, A.C.; Tepe, E.J. 2008: A phylogeny of the tropical genus *Piper* using ITS and the chloroplast intron psbJ-petA. *Systematic Botany* 33: 647-660.

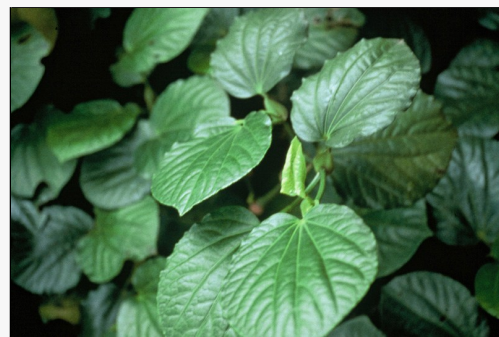
## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=581](http://nzpcn.org.nz/flora_details.asp?ID=581)



**Caption:** South West Island, October 1991

**Photographer:** Peter de Lange



**Caption:** South West Island, October 1991

**Photographer:** Peter de Lange

# *Pisonia brunoniana*

## Common Name(s):

Parapara

## Current Threat Status (2012):

At Risk - Relict

## Distribution:

Indigenous. Kermadecs (Raoul), Three Kings, North Island (mainly offshore islands) but known on the mainland in scattered locations from the Whangape Harbour to Mangawhai. Historical records show it was around Auckland, on the Coromandel Peninsula and at East Cape.

## Habitat:

Coastal forest. Now mainly found on rodent-free offshore islands where it can be a very important component of the understorey of mixed-broadleaf forest.

## Features\*:

Spreading, usually multi-trunked and freely coppicing tree rarely exceeding 8 x 2 m in height. Main trunk up to 800 mm dbh, clad in firm, grey-brown to green-brown bark, usually with numerous dormant epicormic buds present. Branches at first erect, then spreading, rather brittle. Leaves opposite or in whorls. Petioles up to 40 mm, stout, fleshy, red-green to green; lamina 100-600 x 50-200 mm, green, yellow-green, or dark-green suffused with red (new growth often pink), glabrous, oblong to obovate-oblong, obtuse, margins entire, sinuate, sometimes lobed. Inflorescence a many-flowered, terminal, paniculate cyme with subtending, deciduous, leaf-like bracts. Pedicels finely covered in red-brown pubescence, stout, fleshy up to 20 mm long. Flowers usually monoecious, up to 10 mm long, calyx funnellform, 5-lobed, usually plicately folded, perianth greenish-white to white, pubescent to glabrescent. Stamens 6-8, anthers scarcely exerted. Fruit a 5-ribbed, hardened, narrowly elliptic to elliptic perianth 25-40 mm long; ribs exuding an extremely viscid exudates. Achene usually narrowly oblong to oblong-elliptic usually 5-angled, 16-20 mm long, dark red-brown to brown.

## Flowering:

August - December

## Fruiting:

August - July

## Threats:

Within the mainland part of its range, Parapara is virtually extinct. Its large leaves are especially palatable to browsing animals such as possums, goats and other feral livestock. However the main threat to accessible mainland populations is the irresponsible behaviour of ignorant people who have cut down trees because of their ability to trap small passerines. On rodent-free offshore islands it is common but has declined on those supporting these vermin. As more northerly islands are being made rodent-free parapara is making a spectacular come back.

## \*Attribution:

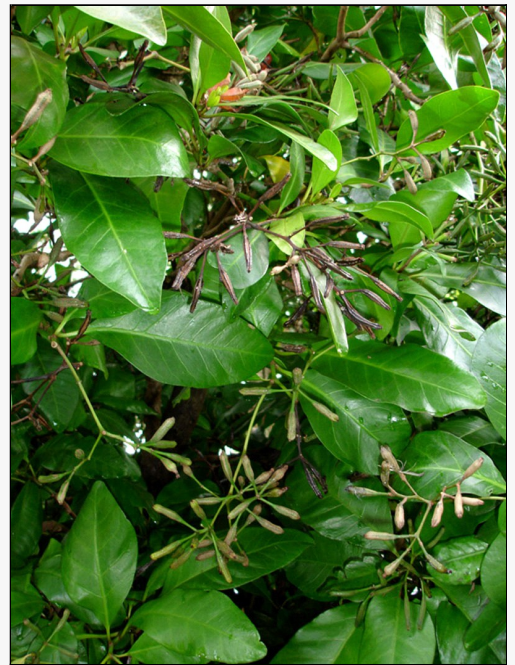
Fact Sheet prepared for NZPCN by P.J. de Lange 1 September 2004. Description modified from Allan (1961) supplemented with observations made from herbarium and fresh specimens.

## References and further reading:

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

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=299](http://nzpcn.org.nz/flora_details.asp?ID=299)



**Caption:** *Pisonia brunoniana* in heavy fruit

**Photographer:** Peter de Lange



**Caption:** *Pisonia brunoniana*

**Photographer:** Peter de Lange

# *Pittosporum ellipticum*

## Current Threat Status (2012):

At Risk - Naturally Uncommon

## Distribution:

Endemic. North Island from Te Pahi to Mt Pirongia in the west and about the Karangahake and Waioeka Gorges in the East.

## Habitat:

Most usually associated with kauri (*Agathis australis*) forest, often on ridge lines, slips scars or in secondary regrowth within cut over kauri forest. Outside this forest type it is often found in association with tanekaha (*Phyllocladus trichomanoides*), towai (*Weinmannia silvicola*) or kamahi (*Weinmannia racemosa*). In all situations it prefers relatively open vegetation, where it typically forms apparently evenly-aged cohorts.

## Features\*:

Small gynodioecious tree up to 8 m tall but usually less. Trunk and branches dark brown, young branchlets clad in fine, appressed rust-coloured tomentum. Leaves alternate, crowded at tips of branches. Petioles 4-15 x 1.5-2 mm, densely invested in appressed, rust-coloured tomentum. Lamina 30-97 x 15-50 mm, yellow-green to dark green above, pale red-green or reddish-yellow beneath, elliptic-oblong, ovate or obovate, apex and base acute or obtuse, margin entire; emergent and expanding leaves densely invested in appressed, rust-coloured tomentum, soon becoming glabrate above and sparsely tomentose to glabrate beneath, coriaceous. Flowers in terminal 2-6-flowered fascicles; pedicels 5-14 mm, accrescent in fruit, rusty orange to rust-grey tomentose, subtended by several caducous, rusty-tomentose 1-2 mm long bud scales. Sepals linear, acuminate, 8-11 x 2-2.7 mm, rusty-tomentose, ciliate; petals 14-19.5 x 3-3.5 mm, oblanceolate-linear, subacute, recurved at tips, reddish-brown, chocolate or dark golden yellow; stamens 7-11 mm, anthers 1-3 mm. Ovary 2.5-7.5 x 1.5-4.5 mm, invested in rust-coloured hairs, style 1.5-6.5 mm long, stigma capitate or tuncate. Capsules, woody, subglobose, 3 or 2-valved, 15-20 x 13-17 mm, covered in rust-brown to rust-grey tomentum. Mucilage yellow-red to orange. Seeds 25-36 (with many aborted), reddish-brown, somewhat irregular in outline.

## Flowering:

July - October

## Fruiting:

August - January (though fruit is long persistent and may be seen year round)

## Threats:

Not directly threatened though it is generally very uncommon throughout its range, and where found it is often known from one or two trees. However, there are exceptions, for example the species is common along the ridge lines of Mt Manaia, Bream Head and in the Waitakere Ranges (especially near Anawhata and Destruction Gully).

## \*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange 30 August 2006. Description adapted from Cooper (1956).

## References and further reading:

Cooper, R.C. 1956: The Australian and New Zealand species of *Pittosporum*. *Annals of the Missouri Botanical Garden* 43: 87-188

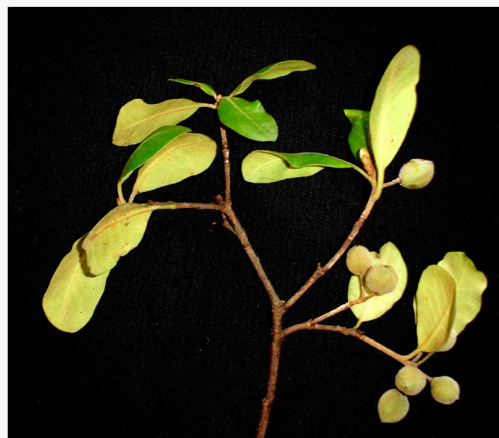
## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=300](http://nzpcn.org.nz/flora_details.asp?ID=300)



**Caption:** Foliage

**Photographer:** Peter de Lange



**Caption:** *Pittosporum ellipticum* close up of foliage and fruits

**Photographer:** Peter de Lange

# *Pittosporum fairchildii*

## Common Name(s):

Fairchild's kohuhu

## Current Threat Status (2012):

Naturally Uncommon

## Distribution:

Endemic. New Zealand: Three Kings Islands where it is known from North East, Great (Manawa Tawhi), South East and West islands.

## Habitat:

Coastal forest and sheltered cliff faces. Usually found in the forest understorey, though on occasion it may grow within open petrel scrub.

## Features\*:

Gynodioecious shrub to small tree 3-6 m tall. Trunk stout, sometimes with 2 or more arising from ground grey-black, lenticillate. Branches erect to spreading, grey-black; branchlets similar clad in grey to brownish-grey tomentum, emergent shoots and immature branchlets white-tomentose, all soon becoming glabrous. Leaves alternate, usually crowded toward branch and branchlet apices. Petioles 3-8 x 0.5-2 mm, white to brown-tomentose. 40-70 x 20-38 mm, dark to light green above, much paler beneath, obovate, elliptic-obovate, elliptic-oblong or oblanceolate, apex obtuse or acute, base acute, margins entire; surfaces white to brown-tomentose when young, soon glabrous above but remaining finely tomentulose below when mature; very coriaceous, sometimes revolute. Flowers in terminal 2-4-flowered fascicles; pedicels 12-20 mm, accrescent in fruit, brown-tomentose, subtended by a whorl of leaves and caducous, ciliate, 5-10 mm long, bud scales. Sepals 4-7 x 2-3.5 mm, lanceolate, acute, brown-tomentose outside, glabrous within, ciliate. Petals 9-14 x 2.5-4.5 mm, lanceolate-oblong, subacute, free, spreading from about half their length, purple, chocolate or white. Stamens 7-8.5 mm, anthers 1.5-2.5 x 0.5-1.3 mm, sagittiform or elliptic-oblong. Ovary 2.5-6 x 2-4 mm, brown-tomentose; style 3-4 mm, stigma capitate or truncate. Capsules 20-25 mm diameter, 3-valved, subglobose, finely brown tomentose, glabrate, smooth to finely rugose; valves green maturing pale yellow, coriaceous to almost fleshy, scarcely opening at maturity. Mucilage bright yellow. Seeds 20-30, black, round.

## Flowering:

May -  
September

## Fruiting:

August - June (may be present  
throughout the year)

## Threats:

Not threatened. However, it occupies a rather small geographic area and so qualifies for Range Restricted status.

## \*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange 30 August 2006. Description adapted from Cooper (1956).

## References and further reading:

Cooper, R.C. 1956: The Australian and New Zealand species of *Pittosporum*. *Annals of the Missouri Botanical Garden* 43: 87-188

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=621](http://nzpcn.org.nz/flora_details.asp?ID=621)



**Caption:** *Pittosporum fairchildii* fruit and foliage

**Photographer:** Peter de Lange



**Caption:** *Pittosporum fairchildii* showing fruits and leaf undersides

**Photographer:** Peter de Lange

# *Pittosporum huttonianum*

## Common Name(s):

Hutton's kohuhu

## Current Threat Status (2012):

At Risk - Naturally Uncommon

## Distribution:

Endemic. North Island, Great Barrier Island, and the Coromandel Peninsula to about the Karangahake Gorge in the east. Also present from Te Akau south to about the Tawaroa Forest in the western Waikato.

## Habitat:

Coastal to lower montane (1-700 m a.s.l.). Common in regenerating forest, or along ridge lines, on cliff tops, along slip scars, rock tors and in limestone country fringing razorbacks and dolines (tomo) shafts. Rarely as a sparse understorey component of mature forest.

## Features\*:

Gynodioecious, small, broad crowned trees up to 10 m tall. Trunk stout, grey-black to brown, lenticillate. Branches spreading. Branchlets dark brown, at first covered with floccose white, white-grey to faintly fulvous tomentum, glabrate. Leaves alternate, crowded toward branchlet apices. Petioles 5-15 x 1-3 mm, at first covered with appressed white tomentum, soon glabrate. Leaf buds copiously covered with white, white-grey or faintly fulvous tomentum. Lamina 40-120 x 20-60 mm, dark green above paler beneath, elliptic-oblong, obovate-oblong, apex and base acute to obtuse, margins entire, undulate or revolute emergent leaves copiously covered with white, floccose tomentum, soon glabrate. Flowers terminal, axillary or solitarily, usually in (1-)2-4-flowered fascicles; pedicels up to 20 mm long, accrescent in fruit, white-tomentose, usually subtended by 1 or more cataphylls and 2-10 mm long, caducous, tomentulose or glabrous bud scales. Sepals 6-9 x 2-3 mm, oblong, acute, outer surface covered with floccose white tomentum, inner glabrous. Petals 12-18 x 3-4.5 mm, red, magenta, purple or white, oblanceolate, linear-oblanceolate, obtuse to subacute, free from base, recurved from about the middle; stamens 6-10 mm, anthers 1.5-4.5 x 0.8-1.5 mm. Ovary 2.5-5 x 1-3.5 mm, copiously white-tomentose; style 2-5.5 mm long, stigma capitate or truncate. Capsules 12-20 mm diameter, (2-)3-valved, trigonous, apiculate, coriaceous to woody, at first white-tomentose soon glabrate, somewhat rugose. Mucilage orange to orange-red. Seeds 16-25, reddish-black to black, of irregular shape.

## Flowering:

October - November

## Fruiting:

November - October (fruit present throughout the year)

## Threats:

Not Threatened

## \*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange 30 August 2006. Description adapted from Cooper (1956).

## References and further reading:

Cooper, R.C. 1956: The Australian and New Zealand species of *Pittosporum*. *Annals of the Missouri Botanical Garden* 43: 87-188

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=1136](http://nzpcn.org.nz/flora_details.asp?ID=1136)



**Caption:** Kauaeranga valley, November

**Photographer:** John Smith-Dodsworth



## *Pittosporum kirkii*

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

Kirk's kohuhu, thick-leaved kohukohu

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

At Risk - Declining

### **Distribution:**

Endemic to the northern half of the North Island, from Mangonui to Raetihi.

### **Habitat:**

Usually epiphytic, rarely terrestrial in coastal to montane forest.

### **Features\*:**

A small, gynodioecious, openly-branched shrub to 4 m tall with stout, purplish branches. Leaves are crowded towards the tips of the branch on 10 mm long stalks. The leaf blade is thick and fleshy, and broadens towards a rounded tip; leaves are 50–100 mm long by 20–30 mm wide. Flowers are either solitary or in clusters of up to four at the tips of branches, bright yellow and appear in November. Fruit are oval, woody capsules up to 40 mm long that split in half to reveal black seeds sitting in yellow sticky pulp, and appear in January.

### **Flowering:**

October to December

### **Fruiting:**

January to May

### **Threats:**

Forest clearance, possum browse.

### **\*Attribution:**

Fact sheet prepared for NZPCN by P.J. de Lange 30 August 2006. Description adapted from Cooper (1956).

### **References and further reading:**

Cooper, R.C. 1956: The Australian and New Zealand species of *Pittosporum*. *Annals of the Missouri Botanical Garden* 43: 87-188

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

[http://nzpcn.org.nz/flora\\_details.asp?ID=140](http://nzpcn.org.nz/flora_details.asp?ID=140)



**Caption:** Capsules - Waipoua Forest

**Photographer:** Kirsty Myron



**Caption:** Mt Taranaki

**Photographer:** Bill Clarkson

# *Pittosporum pimeleoides* subsp. *pimeleoides*

## Common Name(s):

None known

## Current Threat Status (2012):

At Risk - Naturally Uncommon

## Distribution:

Endemic, New Zealand, North Island, mainly in the east from Karikari Peninsula south to about Whangarei in the east and Waipoua Forest in the west.

## Habitat:

Usually associated with kauri (*Agathis australis*) forest, often in secondary regrowth, along ridge lines and in shrublands caused by past fires, slips or other natural or human-induced disturbance mechanisms. Also found in coastal shrubland, or in gumland scrub. Very rarely it grows in riparian vegetation, in which case it occupies sites prone to frequent flooding.

## Features\*:

Spindly to much branched, erect to semi-erect, gynodioecious shrub 0.6-2.5 m tall. Trunk 1 or more arising from the ground, these and the branches typically rather slender, wiry, pliant, coloured brown; branchlets similar but at first densely clad in greyish-white to brown tomentum becoming glabrous with age. Leaves alternate, often in distinct whorls (semi-verticillate). Petioles up to 5 mm long, hairy. Lamina 5-50 x 3-5(-10), pale green, red-green or dark green above, paler beneath, linear-oblong, linear, oblanceolate or elliptic (very rarely broadly elliptic), apex acuminate or obtuse, base attenuate, margins entire or finely crenulate, surfaces sparsely hairy with ciliolate margins when young, becoming glabrous with age, coriaceous. Flowers usually terminal, 4-12 fascicled, female flowers often solitary. Pedicels 2-9 mm, filiform, puberulent, accrescent in fruit, subtended by a whorl of leaves and several 2-3 mm long, caducous, glabrous, ciliolate bud scales. Sepals 2.5-4 x 0.5-1 mm, linear, acuminate, glabrous. Petals 7-9 mm, yellow with a central or margin red stripe, rarely completely yellow or cream, linear, acuminate, fused in a tube to about the middle, then spreading and reflexed. Stamens 2.5-6.5 mm, anthers 0.5-2 mm. Ovary 1-2 x 1-1.5 mm, villous, style 1.5-3.5 mm, Stigma capitate, 2-lobed or truncate. Capsules 2-valved, 6-12 x 4-6 mm, green at first brown when mature, ovoid, acuminate, coriaceous, initially covered in long grey hairs otherwise glabrate. Mucilage yellow to dark orange. Seeds 5-18, glossy black, of irregular shape.

## Flowering:

March - August

## Fruiting:

June - May (old fruit long persistent)

## Threats:

A rather widespread but naturally uncommon, biologically sparse species. Once regarded as highly threatened it is now known to be secure at many sites. However, some coastal populations and also those growing within scrub or gumland have been lost to land development.

## \*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange 30 August 2006. Description adapted from Cooper (1956).

## References and further reading:

Cooper, R.C. 1956: The Australian and New Zealand species of *Pittosporum*. *Annals of the Missouri Botanical Garden* 43: 87-188

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=301](http://nzpcn.org.nz/flora_details.asp?ID=301)



**Caption:** *Pittosporum pimeleoides* at Whatuwhiwhi, Karikari Peninsula

**Photographer:** Bill Campbell



**Caption:** *Pittosporum pimeleoides* east of Taipa River

**Photographer:** Bill Campbell

# *Pittosporum virgatum*

## Current Threat Status (2012):

At Risk - Naturally Uncommon

## Distribution:

Endemic. New Zealand, North and Great Barrier islands, from the Mangamuka and Herekino Ranges south and east to Great Barrier and the Coromandel Peninsula. Reaching its southern limit at about the Kauaerange Valley (there are unconfirmed reports of its occurring slightly further south of there).

## Habitat:

Usually associated with kauri (*Agathis australis*) forest, often on ridge lines, slips scars or in secondary regrowth within cut over kauri forest. Outside this forest type it is occasionally found in association with tanekaha (*Phyllocladus trichomanoides*), towai (*Weinmannia silvicola*) or kamahi (*Weinmannia racemosa*). In all situations it prefers relatively open vegetation, where it typically forms apparently even-aged cohorts.

## Features\*:

Slender gynodioecious trees up to 8 m tall. Growth form initially narrowly columnar, becoming more spreading with age. Trunks slender grey brown, branches in distinct whorls in old specimens confined to the upper portion of the tree, bark brown, branchlets slender, pliant, brown at first covered with appressed rust-brown tomentum, soon glabrate. Petioles 1-7 x 0.5-1 mm, hairy. Leaves crowded toward branchlet ends, alternate; juvenile or lower leaves 10-40 x 1-7 mm, dark green or yellow-green, linear, entire or variously lobed, sometimes pinnate, both surfaces initially covered in rust-brown tomentum, soon glabrate; intermediate leaves 13-55 x 9-30 mm, lanceolate, narrowly linear, oblong or obovate, usually lobed or deeply divided both surfaces covered in rust-brown indumentum, soon glabrate; adult leaves 18-70 x 4-30 mm, oblong, oblanceolate, sometimes linear or linear-lanceolate, elliptic oblong, entire or sinuate, often lobed; margins flat to undulate. Flowers in 1-6-flowered, terminal fascicles, or solitary. Pedicels 5-9 mm, accrescent in fruit, covered in rust-brown indumentum, subtended by an approximate whorl of leaves, and 1-3 rust-tomentose caducous scales. Sepals 3.5-6.5 x 1-2.5 mm, oblong or linear-lanceolate, acute, rusty-brown tomentose. Petals 6-13 x 2-3 mm, linear-oblanceolate to linear-oblong, acute, fused in a tube for half of length, tips reflexed, dark red, purple, pink, white or golden yellow; stamens 4-7 mm, anthers sagittiform or oblong-ovate, ovary 2-4 x 1-2.5 mm, rusty-brown tomentose; style 1-5 mm, stigma capitate and obscurely 2-4-lobed. Capsules 11-16 x 10-13 mm, 2(-3)-valved, subglobose to subpyriform, apiculate, coriaceous. Mucilage bright yellow to orange-yellow. Seeds 1-16, dull black of irregular shape.

## Flowering:

September - November

## Fruiting:

July - August (may be present all year round)

## Threats:

Aside from Great Barrier Island where this species is abundant it appears to have always been a sporadically occurring local species of northern kauri dominated forests. While its current distribution suggests that it is biologically sparse, it is vulnerable to possum browsing and some populations were probably lost or reduced by kauri logging. Recent observation in some parts of Northland that had been regarded as mainland stronghold suggest that this species is now seriously threatened. *Pittosporum virgatum* is likely to receive a higher threat listing in the near future.

## \*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange 30 August 2006. Description adapted from Cooper (1956).

## References and further reading:

Cameron, M. 1944. On the trail of *Pittosporum virgatum*. Wellington Botanical Society Bulletin, 8: 1-2

Cooper, R.C. 1956: The Australian and New Zealand species of *Pittosporum*. Annals of the Missouri Botanical Garden 43: 87-188

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=302](http://nzpcn.org.nz/flora_details.asp?ID=302)



**Caption:** Whangaroa Harbour, November 1992

**Photographer:** G. M. Crowcroft



**Caption:** Whangaroa Harbour, November 1992

**Photographer:** G. M. Crowcroft

## *Plagianthus regius* subsp. *chathamicus*

### Common Name(s):

Chatham Island ribbonwood

### Current Threat Status (2012):

At Risk - Recovering

### Distribution:

Endemic. Chatham Islands (Rekohu (Chatham), Rangiauria (Pitt), Mangere, Little Mangere and Rangatira (South East Island))

### Habitat:

Found on free draining, fertile soils throughout the main islands. Often an important species on soils derived from limestone, and basalt. This tree avoids poorly drained soils and peat.

### Features\*:

Elegant deciduous tree up to 15 m tall. Soft, heart-shaped, serrated, lime green leaves with soft hairs. Flowers greenish, plants dioecious. Fibrous bark that peels in lace-like strips. Flowers from October to February and fruits are produced from December to June.

### Flowering:

October - February

### Fruiting:

December - June

### Threats:

Sheep, cattle and horses browse foliage and seedlings, preventing regeneration. Cattle strip bark, which can kill even large trees. Pigs root up seedlings and saplings and may browse them as well. Possums browse foliage, flowers and seedlings. Land clearance for farming and fire pose additional threats.

### \*Attribution:

Fact Sheet prepared for NZPCN by P.J. de Lange 1 August 2003.

### References and further reading:

de Lange, P.J. 2008: *Plagianthus regius* subsp. *chathamicus* (Malvaceae) - a new combination for the Chatham Islands endemic tree. *New Zealand Journal of Botany* 46: 381-386.

### For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=141](http://nzpcn.org.nz/flora_details.asp?ID=141)



**Caption:** Nikau Bush, Chatham Island. Feb 1995.

**Photographer:** Geoff Walls



**Caption:** Te Awatea Scenic Reserve, Chatham Island. Mar 1999.

**Photographer:** Geoff Walls

# *Plagiochila bazzanioides*

## Common Name(s):

liverwort

## Current Threat Status (2009):

At Risk - Naturally Uncommon

## Distribution:

Endemic. Originally described as endemic to Rangitoto Island, this species has turned up on the Paparoa Range (2004) on Chatham Island (2007) and at North Cape (2011). It is probably quite widespread, and has simply been overlooked.

## Fruiting:

Fruiting period unknown

## Threats:

Not threatened. Although regarded as a narrow-range endemic, recent discoveries outside its type locality (Rangitoto Island) suggest that this species is better classified as a Naturally Uncommon, Sparse species - a ranking which was later adopted by Glenny et al. (2011).

## \*Attribution:

Fact Sheet Prepared for NZPCN by: P.J. de Lange 3 January 2009.

## References and further reading:

Glenny, D.; Fife, A.J.; Brownsey, P.J.; Renner, M.A.M.; Braggins, J.E.; Beaver, J.E.; Hitchmough, R. 2011: Threatened and uncommon bryophytes of New Zealand (2010 Revision). *New Zealand Journal of Botany* 49: 305-327.

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=5067](http://nzpcn.org.nz/flora_details.asp?ID=5067)



**Caption:** Rangitoto Island. Feb 2011.

**Photographer:** Jeremy Rolfe (specimen collected by P. J. de Lange)



**Caption:** Rangitoto Island. Feb 2011.

**Photographer:** Jeremy Rolfe (specimen collected by P. J. de Lange)

# *Planchonella costata*

## Common Name(s):

tawapou

## Current Threat Status (2012):

At Risk - Relict

## Distribution:

Indigenous. Norfolk Island and New Zealand where it found in the North Island only from Te Pahi south to the Manukau and Coromandel Peninsula after which it occurs in scattered sites as far south as East Cape in the East and Kawhia Harbour in the west. Some of these southerly occurrences are associated with Pa sites, and as the glossy seeds were used as necklaces by Maori it is possible that this species was planted over some parts of its southern North Island range. Tawapou is common on rodent-free offshore islands in the Hauraki Gulf, around the Coromandel Peninsula, Great Barrier Island, and on the Mokohinau, Poor Knights, Hen & Chickens and Three Kings Islands.

## Habitat:

Strictly coastal where it is usually a minor (rarely dominant) component of coastal forest on rocky headlands and talus slopes, windswept ridge-lines, forested islands and islets. Usually associated with pohutukawa (*Metrosideros excelsa*), puriri (*Vitex lucens*), karaka (*Corynocarpus laevigatus*), whau (*Entelea arborescens*), kowhai (*Sophora chathamica*), tawaroa (the northern wide-leaved form of *Beilschmedia tawa*) and on offshore islands such as the Three Kings, Poor Knights, Mokohinau Islands with coastal maire (*Nestegis apetala*), *Streblus* spp., and *Hoheria* spp.

## Features\*:

Tree up to 18 m. tall; trunk up to 1 m diameter; bark firm (not flaking), greyish-white to grey-brown, finely furrowed; branches numerous, erect and scarcely spreading, closely packed; branchlets clad in appressed hairs and ± lactescent (exuding milky fluid). Leaves initially pubescent (pubescence comprising fine, matted greyish to grey-brown hairs), lactescent, petioles 8-12 mm long, rather stout and rigid. Lamina 40-150 × 20-50 mm, yellow-green to dark green, elliptic-to obovate-oblong, entire, very coriaceous, adaxially lustrous, when mature glabrous except on abaxial midrib, apex obtuse or retuse, base cuneately narrowed. Lateral veins numerous, set at a rather wide angle to midrib. Flowers axillary and/or cauliflorous, solitary or rarely 2 together, 3.8-6.2 mm diameter; [peduncles 6-12 mm long, rather stout and rigid ± curved; calyx 4(-5)-toothed, teeth narrowly to broadly ovate, pubescent, obtuse; hairs centrally affixed. Corolla greenish to yellow-green, slightly > calyx, deeply 4-5-partite; lobes obovate-oblong, 3.8-4.1 mm. long. Stamens 5, filaments thick; staminodes 5, subulate. Ovary 4-5-loculed. Fruit fleshy, 25-50 mm long, ovoid to ellipsoid, maturing dark purple-black, dark red or orange-yellow. Seeds 1-4, 22-48 mm long, curved, rather hard, testa black, glossy.

## Flowering:

September - November

## Fruiting:

December - June

## Threats:

Not Threatened

## \*Attribution:

Description adapted from Allan (1961) by P. J. de Lange.

## References and further reading:

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

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=2227](http://nzpcn.org.nz/flora_details.asp?ID=2227)



**Caption:** Te Pahi. Oct 2009.

**Photographer:** Jeremy Rolfe



**Caption:** Te Pahi. Oct 2009.

**Photographer:** Jeremy Rolfe

# *Poa billardierei*

## Common Name(s):

Sand tussock, hinarepe

## Current Threat Status (2012):

At Risk - Declining

## Distribution:

North Island, South Island, Chatham Island (apparently absent from Chatham Island now despite being formerly abundant). Also found in temperate Australia.

## Habitat:

Coastal dunes; sandy and rocky places near the shore, especially foredunes and dune hollows.

## Features\*:

Yellow-green tussocks up to about 70 cm tall. Leaves fine, rolled, somewhat drooping (coarser than silver tussock), initially green, often fading at tips to silver, and drying to golden-straw colour. Seed heads no longer than leaves; seeds relatively large, barley-like, leaving a characteristic zig-zag look to the remaining head when fallen. Flowers in early summer and the seed are produced in late summer. It could be confused with *Poa chathamica* which has blue-green or grass-green flat leaves and an open seed head which overtops the foliage. It could also be confused with marram grass which has similar foliage but large cat's tail-like seed heads which overtop the foliage.

## Flowering:

Early summer

## Fruiting:

Mid to late summer

## Threats:

Mammalian grazing and browsing (palatable to sheep, cattle, goats and horses). Competition from marram grass. Coastal development and use of vehicles. The combined impact of browsing and competition from marram grass is believed to have caused the loss of the species from the Chatham Islands.

## \*Attribution:

Fact Sheet prepared for NZPCN by P.J. de Lange 2 September 2003.

## References and further reading:

Cameron, E.K. 1991. *Austrofestuca* an extinct addition to the Waitakere Flora. *Auckland Botanical Society Journal*, 46: 20.

Mitcalfe, B., Horne, C. 2002. Rediscovery of a nationally rare tussock in Makara Foreshore Reserve, Owhariu Bay, Wellington. *Wellington Botanical Society Bulletin* 48: 23-24

Soreng, R.J.; Gillespie, L.J.; Jacobs, S.W.L. 2009: *Saxipoa* and *Sylvipoa* - two new genera and a new classification for Australian *Poa* (Poaceae: Poinae). *Australian Systematic Botany* 22: 401-412.

Stanley, R. 2001. Sand tussock *Austrofestuca littoralis* update on the Auckland populations. *Auckland Botanical Society Journal*, 56: 21-22

Thorsen, M. J.; Dickinson, K. J. M.; Seddon, P. J. 2009. Seed dispersal systems in the New Zealand flora. *Perspectives in Plant Ecology, Evolution and Systematics* 2009 Vol. 11 No. 4 pp. 285-309

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=148](http://nzpcn.org.nz/flora_details.asp?ID=148)



**Caption:** *Austrofestuca littoralis*  
**Photographer:** Kevin Matthews



**Caption:** Kapowairua, Spirits Bay  
**Photographer:** Gillian Crowcroft

# *Pomaderris hamiltonii*

## Common Name(s):

Pale-flowered kumarahou

## Current Threat Status (2012):

At Risk - Naturally Uncommon

## Distribution:

Endemic. North Island only, vicinity of Warkworth and Omaha, near Kaiiua and Miranda and on Great Barrier Island

## Habitat:

Coastal to lowland in open successional habitats and shrubland. Often found along roadside cuttings where the constant disturbance provides an ideal habitat.

## Features:

Shrub to small tree 3-6 m tall. branches upright rarely spreading, branches slender, bark dark brown, finely rugose. Seedling leaves dark green and glossy above, pale, and dull beneath, margins finely toothed. Leaves of seedlings, juveniles and adults petiolate, petioles pliant, dark green to brown green, somewhat rugose, at first finely covered in stellate hairs, trending to glabrous with age. Adult leaves 20-80 x 10-40 mm, dark green above (not glossy), pale grey-green beneath, elliptic to elliptic-ovate; upper surface glabrous except for sparse, simple hairs present toward the sunken midrib; lower surface covered with fine, grey stellate indumentum, with larger simple and stellate veins on midrib and veins; margins entire, sometimes revolute; stipules 4-5 mm long, caducous. Inflorescence a terminal, open, many-branched corymb. Calyx reflexed, pale greenish; tube with scattered long, white, simple hairs until after anthesis. Petals cream; limb broad. Anthers oblong. Ovary with stellate hairs at apex, wholly immersed in calyx tube at anthesis, 1/2 immersed at fruiting. Fruit cocci opening by percula, occupying 1/2 of their inner faces.

## Flowering:

(August-) October (-November)

## Fruiting:

(November-) December - January

## Threats:

Many populations occur on roadside cuttings where they are at constant risk from road maintenance crews, roadside spraying, and road widening. Some populations have been lost through natural succession

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=306](http://nzpcn.org.nz/flora_details.asp?ID=306)



**Caption:** Ex. cult Kaiiua Road, November 1992

**Photographer:** G. M. Crowcroft



**Caption:** Ex. cult Kaiiua Road, November 1992

**Photographer:** G. M. Crowcroft