



Te Herenga Waka (VUW): Growing Our Future - species planted in 2022



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Made on the New Zealand Plant Conservation Network website: www.nzpcn.org.nz

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WHAT ARE WE DOING?

With your help, 17 different native plant species were planted in 2022. Over time, tōtara will grow to be the largest of the trees, sequestering the greatest amount of carbon, but in the short-term wharariki, kānuka and mānuka have an important role to play as fast-growing "pioneer" species. They create shelter for the other planted trees, attract birds, as well as shading-out grass so that the ground is receptive to an even greater variety of seeds that the wind and birds will disperse into the site. In short, we aren't just focused on carbon, we want the carbon to be alive, part of a biologically diverse habitat that supports native wildlife and people's opportunity to interact with nature.

RESEARCH

The way in which the tree species have been allocated into different planting zones is part of an experiment into the best method of ecological restoration to support the above goals, comparing survival, growth and natural regeneration in places planted with 40% mānuka, compared to 40% kānuka versus areas with neither.

For further information on the project see: <https://www.wgtn.ac.nz/growing-our-future>

Thank you for your help, we hope you enjoy the day and come back to visit in the future!

Stephen Hartley (Director), on behalf of Te Herenga a Waka's Centre for Biodiversity and Restoration Ecology

ACKNOWLEDGEMENTS

This information booklet was produced with the help of the New Zealand Plant Conservation Network (NZPCN).

Aristotelia serrata

COMMON NAME

makomako, wineberry

FAMILY

Elaeocarpaceae

AUTHORITY

Aristotelia serrata (J.R.Forst. et G.Forst.) W.R.B.Oliv.

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Dicotyledons

NVS CODE

ARISER

CHROMOSOME NUMBER

2n = 28

CURRENT CONSERVATION STATUS

2012 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2009 | Not Threatened

2004 | Not Threatened

BRIEF DESCRIPTION

Much-branched small tree with thin heart-shaped sharply toothed leaves flushed with pink on the underside

DISTRIBUTION

Endemic. North, South and Stewart Islands. Throughout, but less common in drier areas.

HABITAT

Lowland to montane forests. Often forming dense thickets following disturbance.

FEATURES

Dioecious tree to c. 10 m tall; trunk and branches upright, to 30 cm diam.; bark smooth, grey, spotted with lenticels; branchlets light to dark red, pubescent. Leaves opposite to subopposite; petiole slender, to 50 mm long, greenish often flushed pink; midvein conspicuous above, raised below; secondary veins obvious and raised below giving surface a wrinkled uneven appearance; lamina membranous, 5-12 x 4-8 cm, glabrate (pubescence may persist on veins below), broad-ovate, margin deeply doubly and irregularly sharply serrate, tip acuminate, base cordate to truncate, upper surface light or dark green, undersides pale green, frequently infused with purple or pink. Juvenile leaves larger. Inflorescences conspicuous, axillary, flowers 4-6 mm diam., in panicles 6-10 cm long, on slender pubescent pedicels 5-10 mm long. Sepals 4, ovate, c. 3 mm long, pubescent, pink; petals 4, 3-lobed (often deeply), c. 9 mm long, white to light pink to red. Stamens many, on glandular minutely pubescent disc, not exceeding petals. Ovary 3-4-celled, styles 3-4. Fruit a c. 8-seeded fleshy depressed-obovoid berry, 5 x 4 mm, bright red to black. Seed irregularly angled, ventral surface flattened, circular or broadly elliptic, 1.9-3.1 mm, surface irregular, aril absent.



Stokes Valley, Lower Hutt. Photographer: Jeremy Rolfe



Foliage. Photographer: Wayne Bennett

SIMILAR TAXA

Superficial similarity to *Entelea arborescens* which is only found in northern New Zealand and which has a single (usually) cork trunk and a less sharply-toothed margin. The leaves of this species are never pink-flushed. Superficial similarity also to *Hoheria* and *Plagianthus* species, but the bark of these species falls in thin stringy strips (this is also evident when branchlets are broken).

FLOWERING

September-December

FLOWER COLOURS

Red/Pink, White

FRUITING

November-January

LIFE CYCLE

Fleshy berries are dispersed by frugivory (Thorsen et al., 2009).

ETYMOLOGY

aristotelia: Named after Aristotle, the Greek philosopher and polymath

serrata: Saw-toothed

ATTRIBUTION

Description adapted from Allan (1961), Heenan and de Lange (2006), Eagle (2000) and Webb and Simpson (2001).

REFERENCES AND FURTHER READING

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

Heenan, P.B, de Lange, P.J. 2006. *Pseudowintera insperata* (Winteraceae), an overlooked and rare new species from northern New Zealand. NZ J. Botany 44: 89-98

Eagle, A. 2000. Eagle's complete trees and shrubs of NZ. Te Papa Press, Wellington

Webb, C.J. & Simpson, M.J.A. 2001. Seeds of NZ gymnosperms and dicotyledons. Manuka Press, Christchurch.

NZPCN FACT SHEET CITATION

Please cite as: de Lange, P.J. (Year at time of access): *Aristotelia serrata* Fact Sheet (content continuously updated). New Zealand Plant Conservation Network. <https://www.nzpcn.org.nz/flora/species/aristotelia-serrata/> (Date website was queried)

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/aristotelia-serrata/>

Austroderia toetoe

COMMON NAME

toetoe

SYNONYMS

Cortaderia toetoe Zotov

FAMILY

Poaceae

AUTHORITY

Austroderia toetoe (Zotov) N.P.Barker et H.P.Linder

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

Yes

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Grasses

NVS CODE

AUSTOE

CHROMOSOME NUMBER

2n = 90

CURRENT CONSERVATION STATUS

2012 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2009 | Not Threatened

2004 | Not Threatened

DISTRIBUTION

Endemic. Confined to the North Island where it grows from about Carters Beach (western Waikato) south to Wellington. There are reports of it from the Waitakere Ranges that require further investigation. It has been planted and has sparingly naturalised on Waiheke Island. Not naturally occurring in the Tongariro-Taupo region on the Volcanic Plateau, but has naturalised from plantings e.g. on the Pihanga Saddle.

HABITAT

Common in freshwater swamps and wet places from sea level to lower montane habitats. Often growing in association with flax/harakeke (*Phormium tenax*).



Ligule. Wainuiomata River mouth.
Photographer: Jeremy Rolfe



Toetoe. Photographer: John Smith-Dodsworth

FEATURES

Stout, tussock-forming grass up to 4 m tall when in flower. Leaf sheath glabrous, ivory with green midrib, copiously covered in white wax. Ligule 4 mm. Collar dark brown, upper surface clothed in short hairs. Leaf blade 2(-3) m x 3 cm, straw-yellow, light-green, rarely dark-green, undersides long hairy toward margins, upper surface with a thick weft of hairs at base, otherwise minutely hairy through, and rather harsh due to numerous prickly-teeth. Culm up to 4 m, inflorescence portion up to 1 m tall, stiff, erect, densely plumose. Spikelets numerous, 25 mm with 2-3 florets per spikelet. Glumes equal, 25 mm, > florets. Lemma 10 mm, 3-nerved, scabrid. Palea 6.5 mm, keels ciliate. Callus hairs 1.5 mm. Rachilla 0.5 mm. Flowers either perfect or female. Anthers of perfect flowers 4.8 mm, in females 2.8 mm. Ovary of perfect flowers 1 mm, stigma -styles 1.8 mm; female flowers with ovary 1.3 mm, stigma-style 3.5 mm. Seed 2.5-3 mm.

SIMILAR TAXA

Easily identified by the stout, erect, densely plumose inflorescences, and ivory leaf sheaths. Separated from South American Pampas grasses (*Cortaderia* species) by their spring or summer flowering, rather than autumn flowering habit, waxy leaf sheaths, and by the dead leaves which fold longitudinally, and disarticulate in their entirety - the South American species curl up toward the leaf base, ultimately decaying to a state resembling wood shavings. Pampas grasses can always be distinguished by their brittle leaves with a prominent midrib - fold a leaf across and it snaps or can be torn easily. *Austroderia* leaves have multiple ribs and cannot be torn across easily.

FLOWERING

November - February

FRUITING

October - March

LIFE CYCLE

Florets are wind dispersed (Thorsen et al., 2009).

PROPAGATION TECHNIQUE

Easily grown from fresh seed (as a revegetation exercise ripe seed heads can be pinned to soil surface, and if kept damp, soon germinate) and division of established plants.

THREATS

Abundant and not threatened. Often naturalising in suitable habitats.

WHERE TO BUY

Uncommon in cultivation and generally too robust for urban gardens. Occasionally offered by specialist native plant nurseries.

ATTRIBUTION

Fact sheet prepared for NZPCN by P.J. de Lange 1 October 2003. Description adapted from Edgar & Connor (2000).

REFERENCES AND FURTHER READING

Edgar, E.; Connor, H.E. 2000: Flora of New Zealand. Vol. V. Grasses. Manaaki Whenua Press, Christchurch.
Thorsen, M. J.; Dickinson, K. J. M.; Seddon, P. J. 2009. Seed dispersal systems in the New Zealand flora. *Perspectives in Plant Ecology, Evolution and Systematics* 11: 285-309

NZPCN FACT SHEET CITATION

Please cite as: de Lange, P.J. (Year at time of access): *Austroderia toetoe* Fact Sheet (content continuously updated). New Zealand Plant Conservation Network. <https://www.nzpcn.org.nz/flora/species/austroderia-toetoe/> (Date website was queried)

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/austroderia-toetoe/>

Brachyglottis repanda

COMMON NAME

rangiora, bushman's toilet paper, bushman's friend

SYNONYMS

Cineraria repanda G.Forst., *Senecio georgii* Endl. *Senecio forsteri* Hook.f., *Brachyglottis rangiora* Buchanan, *Brachyglottis rangiora* Hort., *Brachyglottis repanda* var. *fragrans* D.G.Drury, *Brachyglottis repanda* J.R.Forst. et G.Forst. var. *repanda*

FAMILY

Asteraceae

AUTHORITY

Brachyglottis repanda J.R.Forst. et G.Forst.

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Dicotyledons

NVS CODE

BRAREP

CHROMOSOME NUMBER

2n = 60

CURRENT CONSERVATION STATUS

2012 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2009 | Not Threatened

2004 | Not Threatened

BRIEF DESCRIPTION

Common large shrub or sometimes small tree with very large (5-15cm) thin mottled leaves with jagged edges and white underneath. New growth covered in tawny or white fuzz. Flowers small, white or cream, clustered into large conspicuous sprays.

DISTRIBUTION

Endemic. North Island throughout. South Island - north west Nelson to just south of Greymouth in the west, and near Kekerengu in the east. Naturalised on Banks Peninsula, Otago Peninsula, and on Stewart Island at Oban.

HABITAT

Common in coastal, lowland and lower montane shrubland and open forest. Often a pioneer species.



Wellington. Photographer: Jeremy Rolfe



Stokes Valley, Lower Hutt. Photographer: Jeremy Rolfe

FEATURES

Shrub to small tree up to 6 m or more tall. Trunk one or more arising from ground, covered in somewhat corky bark. Branches stout, spreading, rather brittle, initially densely clad in fine white to buff tomentum becoming glabrescent with age. Petiole stout, grooved, 80-100 mm long. Leaves leathery, 50-250(-300) X 50-20(-30) mm, dark green to pale green above, undersides clad in fine, appressed vivid white hairs, broad- to ovate-oblong, obtuse to subacute, obliquely cordate to truncate at base, margins distantly dentately lobed to sinuate. Inflorescence a much branched panicle. Capitula 5 mm diam., numerous, without ligules (discoid). Involucral bracts 3 mm long, narrow-oblong to narrow spatulate, margins scarious except at base. Florets 10-12, yellow. Seeds (cypsela) narrowly oblong-elliptic to oblong elliptic, 1-1.8 mm long, ribs 6, rounded, broad. Pappus 2-3 mm, buff-yellow, scabrid.

SIMILAR TAXA

This shrub is unlikely to be confused with any other indigenous plant, except its close relative the Three Kings endemic *B. arborescens*. That species differs from *B. repanda* by its thick corky bark, smaller, saddle-shaped leaves, smaller, less branched panicles, darker sulphur yellow florets, oblong seeds 2-2.3 mm with 12-13 ribs, and longer pappus ((2.5-) 3.5-4.5 mm)).

FLOWERING

(July-) August-October (-November)

FLOWER COLOURS

Cream, White

FRUITING

(October-) November-December (-January)

LIFE CYCLE

Pappate achenes are dispersed by wind (Thorsen et al., 2009).

PROPAGATION TECHNIQUE

Very easy from fresh seed and from semi-hardwood or hardwood cuttings. Fast growing but inclined to be short-lived. benefits from a hard prune after flowering.

ETYMOLOGY

brachyglottis: Name comes from the Greek words brachus meaning "short" and glottis meaning "the vocal apparatus of the larynx"

repanda: Means irregularly undulating or scalloped (describing leaf margins)

WHERE TO BUY

Commonly grown and offered by many commercial nurseries and native plant specialist growers. Several variegated forms are now available, as is a purple-leaved cultivar cv. *purpurea* said to have come from a wild plant on the banks of the Wanganui River.

CULTURAL USE/IMPORTANCE

The large leaves with their white, finely hairy undersides have served a dual purpose for many, as they make excellent toilet paper, and also can be written upon (with a ballpoint pen), thus allowing one to send rather novel letters.

ATTRIBUTION

Fact sheet prepared by P.J. de Lange for NZPCN (1 June 2013)

REFERENCES AND FURTHER READING

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

NZPCN FACT SHEET CITATION

Please cite as: de Lange, P.J. (Year at time of access): *Brachyglottis repanda* Fact Sheet (content continuously updated). New Zealand Plant Conservation Network.

<https://www.nzpcn.org.nz/flora/species/brachyglottis-repanda/> (Date website was queried)

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/brachyglottis-repanda/>

Coprosma propinqua var. propinqua

COMMON NAME

mingimingi

FAMILY

Rubiaceae

AUTHORITY

Coprosma propinqua A.Cunn. var. *propinqua*

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Dicotyledons

NVS CODE

COPPVP

CHROMOSOME NUMBER

2n = 44

CURRENT CONSERVATION STATUS

2012 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2009 | Not Threatened

2004 | Not Threatened

BRIEF DESCRIPTION

Very common bushy shrub (or low-growing mound in some coastal areas) with wide-angled branches bearing clusters of pairs of variably shaped dark green glossy narrow leaves. Young leaves with dark stalk. Adult leaves often curved sideways, 10-4mm long by 2-3mm wide, paler underneath and with 1-3 pits. Fruit pale blue.

FLOWER COLOURS

Green

LIFE CYCLE

Fleshy drupes are dispersed by frugivory (Thorsen et al., 2009).

ETYMOLOGY

coprosma: From the Greek kopros 'dung' and osme 'smell', referring to the foul smell of the species, literally 'dung smell'

propinqua: From the Latin propinquus 'near, neighbouring', meaning closely related to another species

REFERENCES AND FURTHER READING

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



Eastbourne. Photographer: Jeremy Rolfe



Pauatahanui Inlet. Photographer: Jeremy Rolfe

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/coprosma-propinqua-var-propinqua/>

Coprosma robusta

COMMON NAME

karamū, glossy karamū

SYNONYMS

?*Coprosma coffaeoides* Colenso

FAMILY

Rubiaceae

AUTHORITY

Coprosma robusta Raoul

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Dicotyledons

NVS CODE

COPROB

CHROMOSOME NUMBER

2n = 44

CURRENT CONSERVATION STATUS

2012 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2009 | Not Threatened

2004 | Not Threatened

BRIEF DESCRIPTION

Large bushy shrub with pairs of glossy leaves which have a small dark-tipped flap on the stem between the leaf bases. Leaves 7-12cm long, with a prominent ridge up the middle underneath and a furrow up the middle above. Fruit red, in tight clusters along twigs.

DISTRIBUTION

Endemic. North and South Islands. Naturalised on the Chatham Islands within a small area between Waitangi and Owenga.

HABITAT

Common throughout coastal, lowland and lower montane habitats within shrublands and open sites within forest.



Pistillate flowers. Boulder Hill, western Hutt hills, Lower Hutt. Photographer: Jeremy Rolfe



Pistillate flowers. Boulder Hill, western Hutt hills, Lower Hutt. Photographer: Jeremy Rolfe

FEATURES

Shrub or small tree up to 6 m tall. Branches numerous, stout, erect to somewhat spreading. Petioles stout, 10-20 mm long. Stipules fused towards base, obtuse, glabrous with one of two prominent, black, glandular denticles. Leaves 70-120 x 30-40-50 mm, leathery, dark green above, paler green beneath, glabrous, elliptic, elliptic-oblong to broad-ovate, acute or obtuse, apex mucronate. Venation reticulated, conspicuous. Male flowers in axillary many-flowered glomerules, corolla conspicuous, lobes triangular, acute, stamens 4-5, prominent. Females in compound clusters on peduncles 10-15 mm. Calyx and corolla much reduced, stigmas prominent. Drupe dark orange (rarely yellow), 8-8 x 4-5 mm, oblong to narrow-ovoid.

SIMILAR TAXA

Easily distinguished from all the other lowland, large-leaved *Coprosma* spp., by the seemingly entire leaves, which are finely toothed along the margins - this can be felt by dragging a finger tips along the leaf edge. Perhaps closest to *Coprosma macrocarpa* subsp. *minor*, with which it freely hybridizes, and from which the more simple leaf venation (not so reticulate), finely toothed leaf margins are useful distinctions.

FLOWERING

(July-) August-September (-November)

FLOWER COLOURS

Green, White

FRUITING

(March-) April-May (-July)

PROPAGATION TECHNIQUE

Very easy from fresh seed. Also easy from semi-hardwood cuttings. Fast growing and inclined to become weedy.

ETYMOLOGY

coprosma: From the Greek kopros 'dung' and osme 'smell', referring to the foul smell of the species, literally 'dung smell'

robusta: Sturdy

WHERE TO BUY

Not commonly cultivated but often naturalising from urban indigenous vegetation remnants. Fruit bird dispersed. Heavily fruiting females (which are often apomictic) can be very spectacular.

ATTRIBUTION

Fact sheet prepared by Peter J. de Lange (30 August 2004). Description adapted from Allan (1961).

NZPCN FACT SHEET CITATION

Please cite as: de Lange, P.J. (Year at time of access): *Coprosma robusta* Fact Sheet (content continuously updated). New Zealand Plant Conservation Network. <https://www.nzpcn.org.nz/flora/species/coprosma-robusta/> (Date website was queried)

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/coprosma-robusta/>

Cordyline australis

COMMON NAME

cabbage tree, tī, tī kōuka, palm lily

SYNONYMS

Dracaena australis Forst.f., *Dracaenopsis australis* (Forst.f.) Planchon

FAMILY

Asparagaceae

AUTHORITY

Cordyline australis (Forst.f.) Endl.

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Monocotyledons

NVS CODE

CORAUS

CHROMOSOME NUMBER

2n = 38

CURRENT CONSERVATION STATUS

2012 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2009 | Not Threatened

2004 | Not Threatened

BRIEF DESCRIPTION

Common palm-like tree with an erect trunk branching into tufts of tough long narrow pointed leaves and with bushy sprays of small white flowers. Bark rough. Leaves 30-100cm long, only slightly tapered at base, dead leaves often forming a skirt around branches. Fruit small, white.

DISTRIBUTION

Endemic. Common in the North, South and Stewart Islands. Probably naturalised on the Chatham Islands.

HABITAT

Widespread and common from coastal to montane forest. Most commonly encountered on alluvial terraces within riparian forest.



Cabbage tree. Photographer: DoC



Cabbage tree. Photographer: DoC

FEATURES

Tree up to 20 m tall, trunk stout, 1.5-2 m diam, many-branched above (prior to flowering, trunk slender and solitary, branching happens after the first flowering). Bark corky, persistent, fissured, pale to dark grey. Leaves numerous (0.2-)0.3-1(-1.5) x (0.2)-0.3(-0.6) m, dark to light green, narrowly lanceolate to lanceolate, erect to erecto-patent, scarcely inclined to droop, midrib indistinct. Petiole indistinct, short. Inflorescence a panicle. Peduncle stout, fleshy 40 mm or more in diam., panicle of numerous flowers, (0.6-)1(-1.8) x .3-0.6(-0.8) m, branching to third or fourth order, these well spaced, basal bracts green and leaf-like, ultimate racemes 100-200 mm long, 20 mm diam., bearing well-spaced to somewhat crowded, almost sessile to sessile flowers and axes. Flowers sweetly perfumed, perianth 5-6 mm diam., white, tepals free almost to base, reflexed. Stamens about same length as tepals. Stigma short, trifold.

SIMILAR TAXA

Could be confused with the northern, primarily offshore island *C. kaspar* and its close relative, the Norfolk Island *C. obtecta* (probably both these should be merged). From these it can be distinguished by the larger heavily branched tree form, narrower leaves with a rather smaller, ill-defined, flat petiole, and smaller seeds. *C. australis* is rather variable, and some northerly offshore islands forms of it are either hybrids with, or might be better placed with *C. kaspar*.

FLOWERING

(September-) October-December (-January)

FLOWER COLOURS

White

FRUITING

(December-) January-March

LIFE CYCLE

Fleshy berries are dispersed by frugivory (Thorsen et al., 2009).

PROPAGATION TECHNIQUE

One of the most widely cultivated New Zealand natives, very popular in Europe, Britain and the U.S.A. Easily grown from fresh seed (seedlings often spontaneously appear in gardens from bird-dispersed seed), emergent shoot, stem and even trunk cuttings. Very hardy and will tolerate most soils and moisture regimes but dislikes long periods of drought. Excellent in pots and tubs. Numerous cultivars exist that will suit any situation.

THREATS

Populations have been decimated from some parts of the country due to a mysterious illness linked to a Myoplast Like Organism (MLO) which is believed to cause the syndrome known as Sudden Decline. Plants stricken with this illness suddenly, and rapidly, wilt, with the leaves falling off still green. If the bark is peeled off the base of the tree near the soil line blackened or rotten spots are typically present. Once stricken with Sudden Decline there is no cure and the trees can die within days. Recently there has been some evidence to suggest the severity of Sudden Decline is lessening.

ETYMOLOGY

cordyline: From the Greek *kordyle* 'club'

australis: Southern

WHERE TO BUY

Common in cultivation, and widely sold both within New Zealand and around the world.

NOTES ON THEIR STATUS

Cabbage trees, because they are very resilient are often the last indigenous plant to persist within cleared land. However, even these specimens will over time die, and unless such remnants are fenced as the young seedlings are greedily eaten by livestock. Cabbage trees remain a common and thriving species within much of the more highly modified ecosystems of coastal and lowland New Zealand. Recently there has been some evidence to suggest the severity of Sudden Decline is lessening.

FORAGING FOR CABBAGE TREE

Click on the Radio New Zealand National logo to listen to This Way Up. Simon Morton interviews Johanna Knox about foraging for *Cordyline australis* - the cabbage tree or *Ti Kouka* (duration: 13'35").

ATTRIBUTION

Fact sheet prepared by P.J. de Lange for NZPCN (1 June 2013)

REFERENCES AND FURTHER READING

Beever, R. et al. 1996. Sudden decline of cabbabe tree. *NZ Journal of Ecology*, 20(1): 53-68

Duguid, F. 1976. *Cordyline australis* at Lake Kopureherehe. *Wellington Botanical Society Bulletin*, 39: 46-47

Thorsen, M. J.; Dickinson, K. J. M.; Seddon, P. J. 2009. Seed dispersal systems in the New Zealand flora.

Perspectives in Plant Ecology, Evolution and Systematics 11: 285-309

NZPCN FACT SHEET CITATION

Please cite as: de Lange, P.J. (Year at time of access): *Cordyline australis* Fact Sheet (content continuously updated). New Zealand Plant Conservation Network. <https://www.nzpcn.org.nz/flora/species/cordyline-australis/> (Date website was queried)

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/cordyline-australis/>

Kunzea robusta

COMMON NAME

rawirinui, kānuka

SYNONYMS

None - first described in 2014

FAMILY

Myrtaceae

AUTHORITY

Kunzea robusta de Lange et Toelken

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Dicotyledons

CHROMOSOME NUMBER

$2n = 22$

CURRENT CONSERVATION STATUS

2018 | Threatened – Nationally Vulnerable

PREVIOUS CONSERVATION STATUS

2013 | Not Threatened

BRIEF DESCRIPTION

Widespread, common tree of North and South Islands. Bark usually basally detached long leathery strips. Branches bearing masses of green leaves and clusters of small white flowers. Branchlets usually copiously covered in silky, appressed hairs. Leaves variable in size (up to 28 mm long), soft to grasp. Flowers borne in 'corymbiform' clusters, white with a red centre. Fruit a small dry capsule 2.2–4.6 × 3.2–5.3 mm.

DISTRIBUTION

Endemic. New Zealand: North and South Islands.

HABITAT

Coastal to lowland shrubland, regenerating forest and forest margins, also present in montane forest, ultramafic shrubland and very occasionally present in subalpine shrubland (up to 900 m a.s.l.).



Mohaka River viaduct.



Stokes Valley, Lower Hutt.

FEATURES

Trees 8–30 m tall. Trunk 1–6, 0.10–1.0 m d.b.h. Bark stringy, or coarsely tessellated, coriaceous, firmly attached above, detaching basally, often hanging semidetached; peeling upwards along trunk in narrow to broad, tabular strips up to 4 m long. Branches initially erect, soon arching outwards and spreading; branchlets numerous, slender; sericeous, indumentum copious, hairs either long or short antrorse-appressed; if long, then weakly flexuose 0.15–0.38 mm long; if short, not flexuose, 0.09–0.15 mm long. In eastern Coromandel Peninsula and coastal East Cape to Mahia Peninsula, branchlet indumentum in mixtures of divergent 0.03–0.08 mm long hairs, and sparse, 0.1–0.2 mm long, antrorse-appressed hairs. In the Rangitikei region, branchlet hairs of seedling and juveniles divergent, short 0.04–0.10 μm long. Leaves sessile to shortly petiolate, light green or dark green above, paler beneath; oblanceolate, broadly oblanceolate, broadly lanceolate, lanceolate to linear-lanceolate, rarely elliptic to obovate; apex subacute to acute, rarely obtuse, rostrate or shortly apiculate, base attenuate to narrowly attenuate; lamina margin initially finely covered with a thin, interrupted band of spreading to antrorse-appressed hairs not or rarely meeting at apex; hairs shedding with age. Lamina of juvenile plants from coastal areas and northern North Island 14.6–28.4 \times 1.6–2.5 mm; from inland areas, 3.2–6.3 \times 0.7–1.5 mm; adult lamina of plants from coastal areas and northern North Island 4.9–20.1 \times 0.9–3.0 mm; from inland areas, 5.8–12.3 \times 1.2–2.2. Inflorescence mostly a compact corymbiform to shortly elongate 1–30-flowered botryum up to 60 mm long; extending near end of flowering season as an 4–12-flowered, elongate botryum up to 80 mm long;. Pherophylls deciduous or persistent; squamiform grading into foliose; squamiform pherophylls 0.4–1.2 \times 0.3–0.6 mm, broadly to narrowly deltoid or lanceolate, apex acute, subacute to obtuse, margins finely ciliate; foliose pherophylls 6.0–17.9 \times 1.1–1.8 mm, elliptic, oblanceolate, broadly lanceolate to lanceolate, apex obtuse, base attenuate; margin densely covered by antrorse-appressed hairs. Pedicels 1.2–5.2 mm long at anthesis. Flower buds pyriform to obconic, apex flat or weakly domed prior to bud burst; calyx valves not meeting. Flowers 4.3–12.0 mm diameter. Hypanthium 2.1–4.1 \times 3.0–5.2 mm, broadly obconic to turbinate, sometimes cupular, rim bearing five persistent calyx lobes. Hypanthium surface when fresh faintly ribbed and sparingly dotted with pink or colourless oil glands, these drying dull yellow-brown or brown; either finely pubescent with the ribs and veins conspicuously covered in longer silky, antrorse-appressed hairs, or glabrous; hypanthium similar when dry though with the ribs more strongly defined and clearly leading up to calyx lobes. Calyx lobes 5, coriaceous, 0.52–1.1 \times 0.60–1.4 mm, broadly ovate, ovate-truncate to broadly obtuse, glabrate. Receptacle green or pink at anthesis, darkening to crimson after fertilisation. Petals 5–6, 1.5–3.8 \times 1.3–3.6 mm, white, rarely pink, orbicular, suborbicular to ovate, apex rounded to obtuse, oil glands colourless. Stamens 15–58 in 2 weakly defined whorls, filaments white. Anthers 0.38–0.63 \times 0.18–0.32 mm, ellipsoid to ovoid-ellipsoid or deltoid. Pollen white. Anther connective gland prominent, light pink, salmon pink, yellow to orange when fresh, drying dark orange, orange-brown or dark brown, spheroidal, finely rugulose or papillate. Ovary 5–6 locular. Style 2.0–3.5 mm long at anthesis, white or pinkish-white; stigma broadly capitate, flat, greenish-white or pale pink, flushing red after anthesis. Fruits 2.2–4.6 \times 3.2–5.3 mm, maturing greyish white, obconic, broadly obconic to \pm turbinate, rarely cupular; hairy, (rarely glabrous). Seeds 0.9–1.1 \times 0.35–0.48 mm, oblong, oblong-obovate, oblong-elliptic; testa semi-glossy, orange-brown to dark brown, surface coarsely reticulate.

SIMILAR TAXA

Kunzea robusta is usually a tall tree (up to 30 m tall) inhabiting coastal to montane successional forested habitats; with the adult leaf surfaces glabrous except for the margins and midrib which are more or less finely covered with a thin, often interrupted band of deciduous hairs tending toward glabrate; and with inflorescences that are initially corymbiform, often elongating toward end of flowering season; and bearing foliose and squamiform, mostly deciduous pherophylls .

FLOWERING

August–June

FLOWER COLOURS

Red/Pink, White

FRUITING

Jul–May

PROPAGATION TECHNIQUE

Easily grown from fresh seed. Can be grown with great difficulty from semi-hardwood cuttings.

THREATS

Myrtle Rust (*Austropuccinia psidii*) is an invasive fungus which threatens native myrtle species - learn more myrtlerust.org.nz

ETYMOLOGY

kunzea: Named after Gustav Kunze (4 October 1793, Leipzig -30 April 1851), 19th century German botanist from Leipzig who was a German professor of zoology, an entomologist with an interest mainly in ferns and orchids

robusta: Sturdy

TAXONOMIC NOTES

Due to website space limitations the description of *Kunzea robusta* provided here is much abridged from that offered in de Lange (2014). As circumscribed by de Lange (2014) remains a variable species, and that treatment recognises three races which may warrant further study. *Kunzea robusta* is the most widespread, common New Zealand species, and it is not only highly variable, but readily forms hybrids with other *Kunzea* in disturbed habitats. Nevertheless, even in hybrid zones branchlet hairs and bark characters will help distinguish this species.

ATTRIBUTION

Fact Sheet prepared for NZPCN by P.J. de Lange 10 September 2014. Description modified from de Lange (2014).

REFERENCES AND FURTHER READING

de Lange, P.J. 2014: A revision of the New Zealand *Kunzea ericoides* (Myrtaceae) complex. *Phytokeys* 40: 185p doi: 10.3897/phytokeys.40.7973.

NZPCN FACT SHEET CITATION

Please cite as: de Lange, P.J. (Year at time of access): *Kunzea robusta* Fact Sheet (content continuously updated). New Zealand Plant Conservation Network. <https://www.nzpcn.org.nz/flora/species/kunzea-robusta/> (Date website was queried)

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/kunzea-robusta/>

Leptospermum scoparium var. scoparium

COMMON NAME

mānuka, kahikātoa

SYNONYMS

None - a myriad of varieties have been proposed none of which has been strictly synonymised within *L. scoparium*. Allan (1961) discusses some of these, and accepted one (var. *incanum*). A modern taxonomic assessment of *Leptospermum scoparium* is urgently needed.

FAMILY

Myrtaceae

AUTHORITY

Leptospermum scoparium J.R.Forst. et G.Forst. var. *scoparium*

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

No

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Dicotyledons

CHROMOSOME NUMBER

$2n = 22$

CURRENT CONSERVATION STATUS

2018 | At Risk – Declining

PREVIOUS CONSERVATION STATUSES

2012 | Not Threatened

2009 | Not Threatened

2004 | Not Threatened

BRIEF DESCRIPTION

Common small prickly shrub or small tree with flaky bark and more or less hairy new growth and bearing masses of oval pointed leaves and white or pinkish red-centred flowers. Leaves hard, 5-20mm long by 1-8mm wide, prickly to grasp. Flowers to 25mm wide. Fruit a dry 5-7mm wide capsule.

DISTRIBUTION

Indigenous to New Zealand and Australia. Most Australian forms of *L. scoparium* do not match the range seen in New Zealand. However, plants from Tasmania are very similar to, if not identical with some South Island forms, differing in having a lignotuber, wider leaf bases, and longer, more pungent leaf apices. *Leptospermum scoparium* was also collected once from Rarotonga by Thomas Cheeseman in the 1800s. It has not been found there since. Its biostatus on that island is unclear.

HABITAT

Abundant from coastal situations to low alpine habitats.



Southern Taranua Range. Photographer: Jeremy Rolfe



Taken in Coromandel, February. Photographer: John Smith-Dodsworth

FEATURES

Decumbent shrub, subshrub, shrub, or small tree up to 5 m in height and in decumbent forms 2-4 m across. Bark light grey to charcoal grey, peeling in long papery flakes, these curling with age. Wood red. Branches numerous erect, spreading or decumbent, arising from base, sometimes sprouting adventitious roots and/or layering on contact with soil. Young branches, young leaves and flower buds densely to sparingly clad in long silky, white hairs. Leaves leathery, pale to dark green, glabrescent to glabrous, linear-filiform, narrowly lanceolate, lanceolate, oblanceolate, to elliptic or obovate (5-)10-15(-20) x 1-2-5(-8) mm, invariably apex drawn out into a long stiff, pungent point, midrib usually distinct sometimes obscure, leaf margin finely crenate, veins simple, scarcely branched. Flowers solitary in leaf axils, (8-)10-20(-25) mm diam. Receptacle dark red, crimson or pink. Petals white, sometimes flushed pink or dark red. Stamens numerous.

SIMILAR TAXA

With the exception of *L. scoparium* var. *incanum* a broad circumscription of the the New Zealand forms of manuka (*L. scoparium*) has been adopted. In this sense, manuka could only be confused with kanuka (*Kunzea* spp.) and Great Barrier Island kanuka (*Kunzea sinclairii*), from which it can be easily distinguished by the hard, persistent, circular, nut-like fruits, with non persistent sepals, sharp-tipped minutely denticulate leaves, and flowers which appear to be solitary.

FLOWERING

Throughout the year

FLOWER COLOURS

Red/Pink, White

FRUITING

The capsules are long persistent so invariably mature plants possess at least some capsules.

PROPAGATION TECHNIQUE

Very easy from fresh seed. Seed must be sown fresh, even if left for a few weeks before sowing viability can drop, especially if seed is allowed to dry out. Difficult from cuttings.

THREATS

Although widespread and common, some stands are at risk from clearance for farmland or through felling for firewood. The recent (2017) arrival of myrtle rust (*Austropuccinia psidii*) may pose a more serious threat to *Leptospermum* (see below). See myrtlerust.org.nz for more information about this invasive fungus.

ETYMOLOGY

leptospermum: Slender seed

scoparium: Like a broom

WHERE TO BUY

Commonly cultivated. However many garden forms are horticultural selections based on crosses between *L. scoparium* var. *incanum* and white or red-flowered *L. scoparium* var. *scoparium*. Some seem to represent natural variations, others may stem from deliberate crosses with Australian forms of *L. scoparium* and allied species. Recently a number of Australian *Leptospermum* have been introduced into New Zealand, and these have been deliberately crossed with manuka.

MYRTLE RUST THREAT

Myrtle rust (*Austropuccinia psidii*) was first detected in New Zealand in 2017. As there is as yet no known effective treatment for that rust. Overseas indications are that this rust is having a serious impact on Myrtaceae worldwide, including causing such severe declines in some that extinction of some species and genera seems inevitable. As such the New Zealand Threat Listing Panel elected to list all indigenous Myrtaceae using the 'Precautionary Principle' as 'Threatened' (de Lange et al. 2018). Hopefully this assessment will be proved wrong. As of 2018 there have been very few occurrences of myrtle rust on *Leptospermum*. However, the rust is still in its early establishment phase. Australian experience suggests it may take 10 or more years to truly establish which New Zealand Myrtaceae will be most affected.

ATTRIBUTION

Fact Sheet prepared for NZPCN by P.J. de Lange 1 February 2004. Description by P.J. de Lange.

REFERENCES AND FURTHER READING

de Lange, P.J.; Rolfe, J.R.; Barkla, J.W.; Courtney, S.P.; Champion, P.D.; Perrie, L.R.; Beadel, S.M.; Ford, K.A.; Breitwieser, I.; Schönberger, I.; Hindmarsh-Walls, R.; Heenan, P.B.; Ladley, K. 2018: Conservation status of New Zealand indigenous vascular plants. 2017. *New Zealand Threat Classification Series 22*: 1–82.

Gardner, R. 2002. Notes towards an excursion Flora .Manuka *Leptospermum scoparium* myrtaceae. Auckland Botanical Society Journal, 57: 147-149

NZPCN FACT SHEET CITATION

Please cite as: de Lange, P.J. (Year at time of access): *Leptospermum scoparium* var. *scoparium* Fact Sheet (content continuously updated). New Zealand Plant Conservation Network.

<https://www.nzpcn.org.nz/flora/species/leptospermum-scoparium-var-scoparium/> (Date website was queried)

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/leptospermum-scoparium-var-scoparium/>

Melicytus ramiflorus

COMMON NAME

māhoe, hinahina, whitey wood

SYNONYMS

Melicytus ramiflorus J.R.Forst. et G.Forst. subsp. *ramiflorus*

FAMILY

Violaceae

AUTHORITY

Melicytus ramiflorus J.R.Forst. et G.Forst.

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Dicotyledons

NVS CODE

MELRAM

CHROMOSOME NUMBER

2n = 32

CURRENT CONSERVATION STATUS

2012 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2009 | Not Threatened

2004 | Not Threatened

BRIEF DESCRIPTION

Common small tree with a knobby pale trunk and thin light green toothed leaves that have the vein network much more visible on the paler underside. Leaves 5-20cm long, tapering to tip. Flowers greenish, in clusters along twigs. Fruit purple.

DISTRIBUTION

Endemic subspecies. Three other subspecies occur, one endemic to Norfolk (probably a different species), one to Fiji and one to Samoa. In addition forms from Raoul Island (Kermadec Islands Group) and the Three Kings and eastern Northland may warrant formal recognition. Research into this variation is in progress.

HABITAT

Abundant small tree of coastal, lowland, and lower montane forests throughout the country.



Otari Wilton's Bush, Wellington. Photographer: Jeremy Rolfe



Otari Wilton's Bush, Wellington. Photographer: Jeremy Rolfe

FEATURES

Shrub or small tree up to 15 m tall. Trunk 1 or more, 0.6-0.8 m diam, typically much branched from near base. Wood soft, white. Bark greyish-white, underbark bright green. Branchlets numerous, twiggy, rather brittle. Petioles 20 mm or more long. Leaves, firmly fleshy, 50-150 x 30-50 mm, light or dark green, lanceolate-oblong to elliptic oblong, apex acute to acuminate (rarely obtuse), leaf margins coarsely serrated (very rarely subentire, or irregularly coarsely toothed). Inflorescence 2-10 flowered fascicles arising from branchlets or leaf axils. Flowers 3-4 mm diam., female or inconstant male (flowers types on separate plants) borne on slender pedicels 5-10 mm long. Bracts subtending flowers, calyx lobes minute, petals greenish-yellow, yellow (rarely cream), lanceolate, apex obtuse. Anthers sessile, stigma 4-6-lobed. Fruit a violet, dark blue or purple berry, 4-5 mm diam., obovoid to globose. Seeds 3-6 per berry.

SIMILAR TAXA

Most frequently confused with *M. macrophyllus* which differs by the leathery, somewhat fleshy dark green, often mottled purple, obovate-oblong leaves with rather coarse serrations. Flowers are also larger (6.5-8 mm diam.) and the broader petals are usually white. *M. macrophyllus* is a species of kauri forests, and is not known with certainty south of Auckland City. The Waikari Creek (near Dunedin) record cited in the New Zealand Flora is the result of specimen mislabelling.

FLOWERING

November - February

FLOWER COLOURS

Green, Yellow

FRUITING

November - March

PROPAGATION TECHNIQUE

Easy from fresh seed. Can be grown from semi-hardwood cuttings but generally slow without a mist unit.

ETYMOLOGY

melicytus: From the Greek meli (honey) and kytos (hollow container), referring to the staminal nectaries of the flowers. Literally "honey-cave"

ramiflorus: Branch-flowering

WHERE TO BUY

Commonly cultivated and often available from commercial nurseries. In many urban areas abutting indigenous forest mahoe self naturalises into gardens. The fruits are bird dispersed, so plants can also appear many kilometres from forest remnants.

TAXONOMIC NOTES

Past treatments have recognised four subspecies in *M. ramiflorus*, subsp. *oblongifolius* of Norfolk Island, subsp. *fastigiata* of Fiji and subsp. *samoensis* of Samoa. Recent treatments, particularly that of Art Whistler have advocated that all of these subspecies should be regarded as distinct species. NZPCN has followed this recent opinion.

ATTRIBUTION

Fact sheet prepared by P.J. de Lange for NZPCN (1 June 2013)

NZPCN FACT SHEET CITATION

Please cite as: de Lange, P.J. (Year at time of access): *Melicytus ramiflorus* Fact Sheet (content continuously updated). New Zealand Plant Conservation Network. <https://www.nzpcn.org.nz/flora/species/melicytus-ramiflorus/> (Date website was queried)

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/melicytus-ramiflorus/>

Olearia solandri

COMMON NAME

coastal tree daisy

SYNONYMS

Eurybia solandri Hook.f., *Olearia consimilis* Colenso, *Olearia fasciculifolia* Colenso, *Olearia quinquefida* Colenso

FAMILY

Asteraceae

AUTHORITY

Olearia solandri (Hook.f.) Hook.f.

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Dicotyledons

NVS CODE

OLESOL

CHROMOSOME NUMBER

2n = 108

CURRENT CONSERVATION STATUS

2012 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2009 | Not Threatened

2004 | Not Threatened

BRIEF DESCRIPTION

Bushy shrub with square yellow sticky twigs bearing clusters of dark green leaves with a downturned margin and that are white underneath inhabiting coastal areas south to the northern South Island. Leaves 5-10mm long by 1-2mm wide. Flowers white. Seeds fluffy.

DISTRIBUTION

Endemic. North and the northern South Island.

FLOWER COLOURS

White

ETYMOLOGY

olearia: Named after Johann Gottfried Olearius, a 17th-century German scholar, writer of hymns and author of *Specimen Florae Hallensis*

solandri: Named after Daniel Carlsson Solander (19 February 1733 - 13 May 1782) who was a Swedish naturalist and an apostle of Carl Linnaeus.

MORE INFORMATION



Turakirae Head. Photographer: Jeremy Rolfe



Turakirae Head. Photographer: Jeremy Rolfe

<https://www.nzpcn.org.nz/flora/species/olearia-solandri/>

Ozothamnus leptophyllus

COMMON NAME

tauhinu

SYNONYMS

Calea leptophylla G.Forst., *Cassinia leptophylla* (G.Forst.) R.Br., *Olearia xanthophylla* Colenso, *Cassinia fulvida* var. *montana*; *Cassina glossophylla* Cass., *Cassinia retorta* A.Cunn., *Cassinia vauvilliersii* var. *serpentina* Cockayne & Allan

FAMILY

Asteraceae

AUTHORITY

Ozothamnus leptophyllus (G.Forst.) Breitw. et J.M.Ward

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Dicotyledons

NVS CODE

OZOLEP

CHROMOSOME NUMBER

2n = 26-28

CURRENT CONSERVATION STATUS

2012 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2009 | Not Threatened

2004 | Not Threatened

BRIEF DESCRIPTION

Grey or yellow-green bushy shrub.

FLOWER COLOURS

White

ETYMOLOGY

leptophyllus: With slender leaves

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/ozothamnus-leptophyllus/>



Pencarrow coast, Wellington Harbour.
Photographer: Jeremy Rolfe



Pencarrow coast, Wellington Harbour.
Photographer: Jeremy Rolfe

Phormium cookianum subsp. hookeri

COMMON NAME

mountain flax, wharariki

SYNONYMS

Phormium hookeri Hook.f.

FAMILY

Asphodelaceae

AUTHORITY

Phormium cookianum subsp. *hookeri* (Hook.f.) Wardle

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Herbs - Monocots

NVS CODE

PHOHOO

CHROMOSOME NUMBER

2n = 32

CURRENT CONSERVATION STATUS

2012 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2009 | Not Threatened

2004 | Not Threatened

DISTRIBUTION

Endemic. Common throughout New Zealand. Local in Northland. And often found inland on cliff faces and exposed rock ledges in the northern part of its range, becoming the dominant coastal flax south of Paekakariki.

HABITAT

Common from lowland and coastal areas through montane forest to subalpine habitats, usually but not exclusively on cliff faces and open rocky or boulder-strewn ground.



Eastbourne. Photographer: Jeremy Rolfe



Phormium cookianum subsp. *hookeri* in Te Urewera. Photographer: John Smith-Dodsworth

FEATURES

Stout liliaceous herb, 1-1.5(-2) m tall. Leaves numerous, arising from fan-like bases. Individual leaves stiff near base and semi-erect, becoming decurved or pendulous from basal third to half of length, 1(-1.5) x 20-80 mm, olive-green to yellow-green. Lamina margin, entire, somewhat thickened and finely pigmented red, orange-red or black. Inflorescence 1(-2) m tall, somewhat woody and fleshy when fresh, long persistent, drying pale grey, with the fibrous interior becoming progressively more exposed. Peduncle 20-30 mm diam., inclined, red-green to grey-green, glabrous. Flowers 25-40 mm long, tubular, greenish or yellow, sometimes flushed orange; tips of inner tepals markedly recurved. Ovary erect. Capsules 100-200 mm long, dark green, trigonous in cross-section, pendulous, tapering toward tip, twisted, initially fleshy becoming papery with age, long persistent. Seeds 8-10 x 4-5 mm, black, elliptic, flat and plate-like, margins frilled or twisted.

SIMILAR TAXA

Distinguished from *Phormium tenax* by the pendulous, twisted capsules. Differing from subsp. *cookianum* by the longer, "floppy" uniformly olive green leaves which lack the dark-pigmented band present on the leaf lamina of subsp. *cookianum*. In the wild this is primarily a plant of cliff faces, boulder fields and talus slopes. It also often grows within grey-scrub. Very rarely it is sympatric with subsp. *cookianum*.

FLOWERING

(September-) October-November (-January)

FLOWER COLOURS

Green, Yellow

FRUITING

(November-) December (-March)

PROPAGATION TECHNIQUE

Very easy from fresh seed. Most commonly grown by the division of rooted "fans" from established plants.

ETYMOLOGY

phormium: Basket or basketwork

cookianum: After Captain Cook

hookeri: Named after Sir Joseph Dalton Hooker (born 1817) - a world famous botanist who travelled on the Antarctic expedition of 1839 under the command of Sir James Ross and wrote "Handbook of New Zealand Flora" published in 1864-67 describing many specimens sent to Kew by collectors. He died in 1911 and has a memorial stone at Westminster Abbey London.

WHERE TO BUY

Commonly cultivated. Some colour variants and variegated forms are grown, and some garden centres only stock these.

ATTRIBUTION

Fact sheet prepared by P.J. de Lange for NZPCN (1 June 2013)

NZPCN FACT SHEET CITATION

Please cite as: de Lange, P.J. (Year at time of access): *Phormium cookianum* subsp. *hookeri* Fact Sheet (content continuously updated). New Zealand Plant Conservation Network.

<https://www.nzpcn.org.nz/flora/species/phormium-cookianum-subsp-hookeri/> (Date website was queried)

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/phormium-cookianum-subsp-hookeri/>

Pittosporum eugenioides

COMMON NAME

tarata, lemonwood

SYNONYMS

Pittosporum elegans Raoul, *P. microcarpum* Putt.

FAMILY

Pittosporaceae

AUTHORITY

Pittosporum eugenioides A.Cunn.

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Dicotyledons

NVS CODE

PITEUG

CHROMOSOME NUMBER

2n = 24

CURRENT CONSERVATION STATUS

2012 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2009 | Not Threatened

2004 | Not Threatened

BRIEF DESCRIPTION

Tree bearing light green wavy-edge oval leaves and with a contrasting pale green central vein, dense sprays of yellow flowers and small dry fruits. Leaf buds covered in dark-edged scales. Fruit pointed, 5-6mm long which splits into two to show a papery layer covering black sticky seeds.

DISTRIBUTION

Endemic. Common in the North and South Islands.

HABITAT

Common tree of regenerating and mature forest in coastal to montane situations.



Female flowers. Oct 2006. Photographer: Peter de Lange



Female flowers. Oct 2006. Photographer: Peter de Lange

FEATURES

Gynodioecious tree up to 12 m tall but usually much less. Trunk 0.6-1 m diam, stout, clad in persistent pale-grey bark, branches numerous, erect then spreading. Leaf buds sticky, resinous. Leaves borne on slender petioles 10-20 mm long, alternate, 50-100(-150) x 25-40 mm, yellow-green, green, more or less blotched and mottled with paler green or yellow-green (sometimes white), somewhat leathery, glossy, smelling strongly when crushed of ivy or resin, elliptic to elliptic-oblong, apex acute to subacute; leaf margin undulate (very rarely not so), midrib pale green. Inflorescences terminal, numerous, subcorymbose compound umbels. Flowers pale yellow to yellow, very fragrant. Peduncles 10-20 mm, pedicels 5 mm, both sparsely hairy. Sepals 2 mm, ovate to narrow-ovate, pale caducous. Petals 5, 5-7 mm long, narrow-oblong. Capsules 2-valved (rarely 3), 5-6 mm, ovoid to elliptic, caducous, seeds immersed in dark yellow viscid pulp, whole structure covered in long persistent papery endocarp.

SIMILAR TAXA

Well marked from all other indigenous and exotic *Pittosporum* spp. in New Zealand, by the yellow-green, mottled lanceolate leaves with undulating margins, and pale-yellow to yellow flowers arranged in subcorymbose compound umbels.

FLOWERING

October - December

FLOWER COLOURS

Yellow

FRUITING

October - January

PROPAGATION TECHNIQUE

Easy from fresh seed. Can be grown from semi-hardwood cuttings.

ETYMOLOGY

pittosporum: Pitch seed

eugenioides: Like *Eugenia*, a species of myrtle

WHERE TO BUY

Commonly cultivated and available from most garden centres, and then often as a variegated form rather than the pure plant. Occasionally seen for sale in European and English garden centres.

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

Gardner, R. 1999. Notes towards an excursion Flora. *Pittosporum eugenioides* as a wild plant. *Auckland Botanical Society Journal*, 54, 1

NZPCN FACT SHEET CITATION

Please cite as: de Lange, P.J. (Year at time of access): *Pittosporum eugenioides* Fact Sheet (content continuously updated). New Zealand Plant Conservation Network.

<https://www.nzpcn.org.nz/flora/species/pittosporum-eugenioides/> (Date website was queried)

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/pittosporum-eugenioides/>

Pittosporum tenuifolium

COMMON NAME

kohukohu, kōhūhū, black matipo

SYNONYMS

Trichilia monophylla Richard, *Pittosporum fasciculatum* Hook.f., *Pittosporum tenuifolium* subsp. *fasciculatum* (Hook.f.) Kirk, *Pittosporum tenuifolium* var. *fasciculatum* (Hook.f.) Kirk, *Pittosporum colensoi* var. *fasciculatum* (Hook.f.) Cheeseman, *Pittosporum tenuifolium* Sol. ex Gaertn. subsp. *tenuifolium*

FAMILY

Pittosporaceae

AUTHORITY

Pittosporum tenuifolium Sol. ex Gaertn.

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Dicotyledons

NVS CODE

PITTEN

CHROMOSOME NUMBER

2n = 24

CURRENT CONSERVATION STATUS

2012 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2009 | Not Threatened

2004 | Not Threatened

BRIEF DESCRIPTION

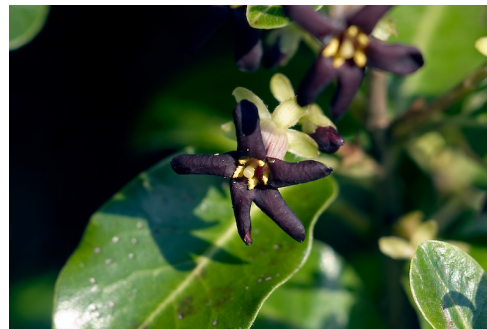
Small tree with very dark twigs bearing pale green shiny wavy thin leaves and very dark flowers and 12mm wide capsules that split into two or three to show the black sticky seeds. Leaves usually 2-4cm long.

DISTRIBUTION

Endemic and widespread throughout country.

HABITAT

A small tree of coastal to montane shrubland and forested habitats. Preferring successional habitats.



Bartons Bush, Trentham, Upper Hutt.
Photographer: Jeremy Rolfe



Bartons Bush, Trentham, Upper Hutt.
Photographer: Jeremy Rolfe

FEATURES

Shrub or small gynodioecious tree up to 10 m tall (usually much less). Trunk 0.3-0.4(-0.6) m diam., stout, clad in dark grey-black or brown persistent bark. Branches numerous, erect then spreading. Branchlets and young leaves pubescent, hairs pale yellow or cream. Petioles short, somewhat fleshy. Leaves alternate, (10-)30(-70) x (5-)10(-20) mm, leathery, pale-green to dark green above, lighter below, oblong, oblong-ovate or elliptic-obovate, apex obtuse to acute, rarely acuminate, margins entire, often undulose. Flowers solitary or in axillary cymes, rather fragrant, especially at night. Pedicels stout, pale green, fleshy, bracts entire, lanceolate, caducous. Sepals narrowly ovate-oblong, subacute to obtuse, silky hairy. Petals 12 mm long, lanceolate, dark red, black (rarely yellow or white). Capsules 2-valved (rarely 3), subglobose, valves woody, black when mature, long persistent. Seeds immersed in sticky, red or yellow viscid pulp.

FLOWERING

October - November (-December)

FLOWER COLOURS

Black, Red/Pink

FRUITING

January - March

PROPAGATION TECHNIQUE

Easy from fresh seed. Can be grown from semi-hardwood cuttings.

ETYMOLOGY

pittosporum: Pitch seed

tenuifolium: Thin leaf

WHERE TO BUY

Very common in cultivation. Kohuhu and cultivars are commonly sold by commercial nurseries and are also grown throughout the world.

ATTRIBUTION

Fact sheet prepared for NZPCN by P.J. de Lange 10 January 2004. Description adapted from Allan (1961).

REFERENCES AND FURTHER READING

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

NZPCN FACT SHEET CITATION

Please cite as: de Lange, P.J. (Year at time of access): *Pittosporum tenuifolium* Fact Sheet (content continuously updated). New Zealand Plant Conservation Network.

<https://www.nzpcn.org.nz/flora/species/pittosporum-tenuifolium/> (Date website was queried)

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/pittosporum-tenuifolium/>

Podocarpus totara var. totara

COMMON NAME

tōtara

SYNONYMS

Podocarpus totara G.Benn. ex D.Don

FAMILY

Podocarpaceae

AUTHORITY

Podocarpus totara G.Benn. ex D.Don var. totara

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Gymnosperms

NVS CODE

PODTOT

CHROMOSOME NUMBER

2n = 34

CURRENT CONSERVATION STATUS

2012 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2009 | Not Threatened

2004 | Not Threatened

DISTRIBUTION

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

HABITAT

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

FEATURES

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



Totara. Photographer: DoC



Totara bark. Photographer: DoC

SIMILAR TAXA

Most frequently confused with *Podocarpus laetus* with which it may co-occur and with which it frequently hybridises. From that species *P. totara* var. *totara* can be distinguished by its thicker bark, less pungent leaf tips, and most readily by the leaf bud which is the same diameter as the branchlet, and by the narrower, lanceolate bracts surrounding the emergent leaves. See also Gardner (1990) in references below.

FLOWERING

(August-) October (-December)

FLOWER COLOURS

No flowers

FRUITING

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

PROPAGATION TECHNIQUE

Easily grown from fresh seed and hard-wood cuttings.

THREATS

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

ETYMOLOGY

podocarpus: Foot or stalk fruit

totara: After the Maori name, totara

CULTURAL USE/IMPORTANCE

The distinctive red, somewhat oily wood was the timber of preference for use by Maori for constructing canoes (waka), and carvings. The stringy bark was harvested to make bags in which to hold preserved birds.

ATTRIBUTION

Fact sheet prepared by P.J. de Lange for NZPCN (1 June 2013)

REFERENCES AND FURTHER READING

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

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

Landcare Research. Nga Tipu Whakaoranga - Maori Plant Use Database.

<http://maoriplantuse.landcareresearch.co.nz/WebForms/default.aspx>

NZPCN FACT SHEET CITATION

Please cite as: de Lange, P.J. (Year at time of access): *Podocarpus totara* var. *totara* Fact Sheet (content continuously updated). New Zealand Plant Conservation Network.

<https://www.nzpcn.org.nz/flora/species/podocarpus-totara-var-totara/> (Date website was queried)

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/podocarpus-totara-var-totara/>

Pseudopanax arboreus

COMMON NAME

fivefinger, five finger, whauwhaupaku

SYNONYMS

Panax arboreus Murray, *Panax arboreus* Murray var. *arboreus*, *Neopanax arboreus* (Murray) Philipson var. *arboreus*, *Pseudopanax arboreus* (Murray) Philipson

FAMILY

Araliaceae

AUTHORITY

Pseudopanax arboreus (L.f.) Allan

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

Yes

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Dicotyledons

NVS CODE

PSEARB

CHROMOSOME NUMBER

2n = 48

CURRENT CONSERVATION STATUS

2012 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2009 | Not Threatened

2004 | Not Threatened

BRIEF DESCRIPTION

Small bushy tree with glossy green fleshy toothed leaves arranged in fans of 5 (occ. up to 7) leaflets. Fruit purple, in obvious clusters

DISTRIBUTION

Endemic. Widespread (though rare in Central Otago). North and South Islands

HABITAT

Coastal to montane (10-750 m a.s.l.). Moist broadleaf forest. Frequently epiphytic. A frequent component of secondary forest. Streamsides and forest margins.



Stokes Valley, Lower Hutt. Photographer: Jeremy Rolfe



Stokes Valley, Lower Hutt. Photographer: Jeremy Rolfe

FEATURES

Us. Dioecious. Small multi-branched tree to 8 m tall, branches and branchlets brittle. Leaves alternate, leaflets 5-7 (us. 5), palmate. Petioles c. 15-20 cm long, sheathing branchlet at base. Petiolules c. 3-5 cm long, pale green. Leaflets obovate-oblong to oblong-cuneate, thinly coriaceous, coarsely serrate-dentate, acute or acuminate to obtuse; midveins and main lateral veins obvious above and below; terminal lamina 10-20 x 4-7 cm. Inflorescence and panicle, terminal, compound; flowers usually unisexual; 8-20 primary rays (branchlets), up to 10 cm long; 15-20 secondary rays; umbellules with 10-15 flowers in each. Calyx truncate or obscurely 5-toothed; flowers c. 5 mm diam., sweet-scented; petals 5, white to pink flushed, ovate to triangular, acute; stamens 5, obvious, filaments c. = petals; ovary 2-loculed, each containing 1(-2) ovules; style branches 2, spreading. Fruit fleshy, 5-8 mm diam., style branches retained on an apical disc, very dark purple, laterally compressed. Seeds 2(-3) per fruit, wrinkled, 3-6 mm long.

SIMILAR TAXA

Similar to other *Pseudopanax* species, but has a greater number of leaflets borne on distinct petiolules. Vegetatively similar to *Schefflera digitata* (pate) which has thinner, finely serrate and larger leaflets with usually 7 leaflets per leaf.

FLOWERING

June to August

FLOWER COLOURS

Red/Pink, White

FRUITING

August to February

PROPAGATION TECHNIQUE

Easy from fresh, cleaned, seed

THREATS

Not Threatened. In places the petiolules of *Pseudopanax arboreus* (and other fleshy-leaved *Pseudopanax* species) are a conspicuous element of possum (*Trichosurus vulpecula*) diet and the forest floor can become littered with discarded leaflets.

ETYMOLOGY

pseudopanax: False cure

arboreus: From the Latin arbor 'tree', meaning tree-like

TAXONOMIC NOTES

This species was transferred back to *Neopanax* Allan by: Frodin, D.G.; Govaerts, R. 2003: World Checklist and Bibliography of Araliaceae, The Cromwell Press, European Union.

ATTRIBUTION

Description adapted from Allan (1961) and Webb and Simpson (2001).

REFERENCES AND FURTHER READING

Allan, H.H. 1961. Flora of NZ, Vol. I. Government Printer, Wellington

Webb, C.J. & Simpson, M.J.A. 2001. Seeds of NZ gymnosperms and dicotyledons. Manuka Press, Christchurch.

NZPCN FACT SHEET CITATION

Please cite as: de Lange, P.J. (Year at time of access): *Pseudopanax arboreus* Fact Sheet (content continuously updated). New Zealand Plant Conservation Network.

<https://www.nzpcn.org.nz/flora/species/pseudopanax-arboreus/> (Date website was queried)

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/pseudopanax-arboreus/>

Veronica stricta var. stricta

COMMON NAME

koromiko

SYNONYMS

Veronica stricta Benth., *Veronica salicifolia* var. *stricta* (Benth.) Hook.f., *Hebe salicifolia* var. *stricta* (Benth.) Cockayne et Allan, *Veronica parkinsoniana* Colenso, *Hebe parkinsoniana* (Colenso) Cockayne, *Veronica salicifolia* var. *longiracemosa* Cockayne, *Hebe salicifolia* var. *longiracemosa* (Cockayne) Cockayne et Allan, *Hebe stricta* var. *atkinsonii* (Cockayne) L.B.Moore, *Hebe stricta* (Benth.) L.B.Moore var. *stricta*

FAMILY

Plantaginaceae

AUTHORITY

Veronica stricta Benth. var. *stricta*

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Dicotyledons

NVS CODE

HEBSVS

CHROMOSOME NUMBER

2n = 40, 80

CURRENT CONSERVATION STATUS

2012 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2009 | Not Threatened

2004 | Not Threatened

BRIEF DESCRIPTION

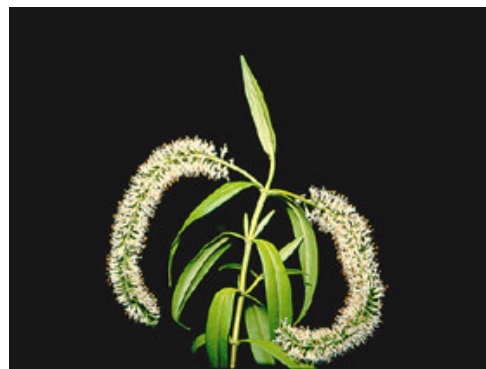
Common bushy shrub bearing pairs of narrow pointed thin leaves inhabiting the North and South Islands. Leaves variable, to 127mm long, widest around middle and tapering towards narrow tip, margin hairy (lens needed). Leaf bud with no gap at base. Flowers white or pinkish, spike to 22cm long.

DISTRIBUTION

Endemic to the North and northern South Island. Somewhat local in the far North, otherwise common and widespread in the North Island. Only locally common in the northern South Island.

HABITAT

Common in successional habitats from coastal areas to lower montane habitats.



Rotorua, February. Photographer: John Smith-Dodsworth



Rotorua, February. Photographer: John Smith-Dodsworth

FEATURES

Shrub or small tree (1-)2(-4) m tall. Branchlets finely pubescent. Stem internodes longer than stem diameter. Leaf bud without sinus. Leaves, spreading, 50-100(-120) mm, dull green to yellow-green (not glossy), lanceolate, linear-lanceolate, somewhat leathery, apex often acuminate, leaf margin usually entire, occasionally toothed. Inflorescence lateral, racemose, much longer than leaves, drooping, sometimes spiraled, all parts except flower finely pubescent. Flowers sweetly (sometimes over powerfully so) scented, lilac, mauve or white. Corolla tube 6 mm, exceeding calyx, narrow, cylindric, lobes rounded. Capsules < 5 mm long, pendent, all parts pubescent.

SIMILAR TAXA

Veronica stricta var. *stricta* (including *Hebe stricta* var. *atkinsonii* - which has not valid name in *Veronica*) differ from the other varieties primarily by the open branching habit, dull-surfaced, somewhat leathery leaves, and by the longer stem internodes. Support for the ongoing recognition of *Hebe stricta* var. *atkinsonii* is doubtful. For those who wish to distinguish it, *Veronica stricta* var. *stricta* differs from var. *atkinsonii* by the calyx-lobes, bracts and usually capsules, being finely pubescent, and with the racemes (and capsules) usually drooping.

FLOWERING

(July-) August (-October) but flowering can also occur sporadically throughout the year

FLOWER COLOURS

Violet/Purple, White

FRUITING

(September-) November (-January) but seed capsules may be found throughout the year

LIFE CYCLE

Seeds are wind dispersed (Thorsen et al., 2009).

PROPAGATION TECHNIQUE

Easy from fresh seed and semi hardwood cuttings.

ETYMOLOGY

veronica: Named after Saint Veronica, who gave Jesus her veil to wipe his brow as he carried the cross through Jerusalem, perhaps because the common name of this plant is 'speedwell'. The name Veronica is often believed to derive from the Latin vera 'truth' and iconica 'image', but it is actually derived from the Macedonian name Berenice which means 'bearer of victory'.

stricta: From the Latin strictus 'upright, stiff'

WHERE TO BUY

Commonly cultivated, though not often now seen for sale within commercial nurseries.

TAXONOMIC NOTES

Veronica stricta var. *stricta* as currently circumscribed remains a very variable species with both diploid ($2n = 40$) and tetraploid ($2n = 80$) cytotypes known. Further study into this variation is needed.

ATTRIBUTION

Fact Sheet Prepared by P.J. de Lange (1 February 2005). Description based on Allan (1961) - see also Bayly & Kellow (2006).

REFERENCES AND FURTHER READING

Allan H.H. 1961: *Flora of New Zealand. Vol. 1*, Wellington, Government Printer.

Bayly M. and Kellow A. 2006: *An Illustrated Guide to New Zealand Hebes*. Te Papa Press: Wellington.

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

NZPCN FACT SHEET CITATION

Please cite as: de Lange, P.J. (Year at time of access): *Veronica stricta* var. *stricta* Fact Sheet (content continuously updated). New Zealand Plant Conservation Network.

<https://www.nzpcn.org.nz/flora/species/veronica-stricta-var-stricta/> (Date website was queried)

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/veronica-stricta-var-stricta/>