



Rotorua ED Threatened/At Risk, Regionally Uncommon - Pt 3

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Made on the New Zealand Plant Conservation Network website: 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).

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 as well as non-vascular plants and fungi.

Funding to develop the website was provided by the New Zealand Government's Terrestrial and Freshwater Biodiversity Information System Programme (TFBIS). The website is run by a team of volunteers and is continually improving in both the richness of content and the range of functions it offers.

The species information used on the website has come from a variety of sources which are cited at the bottom of a species page.

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 John Barkla, Cathy Jones, Simon Walls, Nick Singers, Mike Thorsen and many others. The threatened fungi text was written by Eric Mackenzie and Peter Buchanan (Landcare Research) and aquatic plant information was supplied by Paul Champion from NIWA. Colin Ogle has contributed to the exotic species fact sheets.

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, Mike Thorse, Colin Ogle and John Sawyer.

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
- Educating people about plant life through the Network website
- Connecting people through our website, 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 team of botanists that between them have an extensive knowledge of the native plants of New Zealand.

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. 2018](#)). The main threat categories used are: Extinct, Nationally Critical, Nationally Endangered and Nationally 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 ['Conservation status of New Zealand indigenous vascular plants, 2017'](#) by [de Lange et al. \(2018\)](#).

Recently other committees have been established to review the status of non-vascular plants and have produced assessments for New Zealand mosses ([Rolfe et al., 2016](#)) as well as horworts and liverworts ([de Lange et al., 2015](#)).

Althenia bilocularis

SYNONYMS

Lepilaena bilocularis Kirk

FAMILY

Potamogetonaceae

AUTHORITY

Althenia bilocularis (Kirk) Cockayne

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

No

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Herbs - Monocots

NVS CODE

LEPBIL

CURRENT CONSERVATION STATUS

2012 | Threatened – Nationally Vulnerable | Qualifiers: RR, SO, Sp

PREVIOUS CONSERVATION STATUSES

2009 | At Risk – Naturally Uncommon | Qualifiers: SO

2004 | Sparse

DISTRIBUTION

Indigenous. Known from North, South and Chatham Islands. Also present in Australia.

HABITAT

Aquatic herb of lakes, brackish water, or slow-flowing rivers. Usually found in shallow fresh water habitats not far from the coast.

FEATURES

Annual, summer-green, submerged, rhizomatous herb forming small patches. Stems up to 20 cm long, thread-like, usually unbranched. Internodes 1-4 cm long. Leaves regularly alternate, leaf-base at first sheathing stem, to 4 mm long, becoming fibrous with age, leaf-blade 2.5-3.5 x 1 mm, entire, 1- or 3- nerved, with nerves extending to the squarely truncate tip. Flower enclosed within leaf-bases. Both sexes in separate positions on the same plant. Male on small 5 mm stalk (pedicel), stamen solitary, anther 2 x 0.6 mm, sickle-shaped, with 2 pollen sacs. Female shortly stalked (pedicellate), perianth-segments narrow-oblong, lacerate, 1.5 x 0.5 mm. Carpels 3(-4), style narrower than ovary, stigma funnel-shaped with long feathery margins. Seed (achene) 1.5-2 x 0.5 mm., asymmetrically oblong, yellow, smooth, narrowing above to style remnant c. 1 mm long.

SIMILAR TAXA

Althenia is most likely to be confused with *Zannichellia palustris* which is a superficially similar indigenous aquatic herb of much the same habitats. *Zannichellia* differs from *Althenia* by its much-branched floating habit, in having leaves arranged in false whorls of 3-4, and by the flowers arranged together within the sheathing bracts. Submerged plants of *Schoenus maschalinus* (Cyperaceae) are also superficially similar, but these are much branched, and will not flower when submerged.

FLOWERING

Flowers can be present throughout the year

FRUITING

Fruit can be present throughout the year

PROPAGATION TECHNIQUE

No information available.

THREATS

As the result of field surveys it is clear that *Althenia bilocularis* is biologically sparse in its distribution. In the northern part of its range it seems to have been especially uncommon and there more than anywhere else is where it has undergone some range contraction. However, that loss is insufficient to justify its listing as Threatened.

TAXONOMIC NOTES

Althenia bilocularis was initially placed in the genus *Lepilaena*, as *L. bilocularis* by Thomas Kirk who discovered it and described it (Kirk 1896). Later Cockayne (1927) placed *Lepilaena bilocularis* in *Althenia*, a decision that was not followed by Moore & Edgar (1970). Subsequently using a combination of molecular and morphological data Ito et al. (2016) confirmed the opinion of Cockayne (1927) and resurrected his combination in *Althenia* and this is followed here.

ATTRIBUTION

Fact Sheet prepared for NZPCN by P.J. de Lange 14 April 2007: Description adapted from Moore and Edgar (1970).

REFERENCES AND FURTHER READING

- Cockayne, L.C. in Speight, R., Wall, A. & Laing, R.M. (ed.) 1927: Ecological botany of the Canterbury Plains. *Natural History of Canterbury*: 126
- Ito, Y.; Tanaka, N.; García-Murillo, P.; Muasya, A.M. 2016: A new delimitation of the Afro-Eurasian plant genus *Althenia* to include its Australasian relative, *Lepilaena* (Potamogetonaceae)—evidence from DNA and morphological data. *Molecular Phylogenetics and Evolution* 98: 261-270.
- Kirk, T. 1896: Art. LII: Notes on Certain Veronicas, and descriptions of new species. *Transactions and Proceedings of the New Zealand Institute* 28: 500.
- Moore, L.B.; Edgar, E. 1970: Flora of New Zealand. Vol. II. Government Printer, Wellington.

CITATION

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

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/althenia-bilocularis/>

Cyclosorus interruptus

SYNONYMS

Many including *Pteris interrupta* Willd., *Thelypteris interrupta* (Willd.) Iwatsuki, *Nephrodium propinquum* R.Br., *Nephrodium inaequilaterum* Colenso, *Nephrodium unitum* R.Br., *Cyclosorus gongyloides* (Schkuhr) Link; *Dryopteris gongyloides* var. *glabra* (Mett.) Domin; *Dryopteris gongyloides* sensu Cheeseman

FAMILY

Thelypteridaceae

AUTHORITY

Cyclosorus interruptus (Willd.) H.Itô

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

No

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Ferns

NVS CODE

CYCINT

CHROMOSOME NUMBER

2n = 72

CURRENT CONSERVATION STATUS

2012 | At Risk – Declining | Qualifiers: SO

PREVIOUS CONSERVATION STATUSES

2009 | At Risk – Declining | Qualifiers: SO

2004 | Gradual Decline

DISTRIBUTION

Indigenous: North Island, from Te Pahi to Kawhia Harbour, the Bay of Plenty (including Mayor Island), the Rotorua Lakes to Taupo and near East Cape. Also known from Australia and throughout the tropical and warm-temperate Pacific where it is not threatened.

HABITAT

A species of geothermal habitats, and frost-free, coastal and lowland wetlands, especially those dominated by raupo (*Typha orientalis*) and swamp millet grass (*Isachne globosa*).

FEATURES

A creeping fern with harsh, hairless, olive-green fronds to 800 mm long. Frond stalks are slender, up to 600 mm long by 5 mm wide, almost black at the base but becoming brownish. Frond leaflets (pinnae) occur in 9–15 pairs, the basal pair are larger and sickle-shaped with each successive pair becoming shorter. The spores are found in closely packed sori distributed nearer the midrib than the leaflet edge.



Cyclosorus interruptus at Tokerau Beach, Karikari Peninsula. Photographer: Bill Campbell



A photo by R.J. Stanley (2003).

SIMILAR TAXA

Could only be confused with *Pneumatopteris pennigera* with which it sometimes grows. However, this species has longer, narrower pale green, soft hairy fronds of even length and shape that wilt easily. *Pneumatopteris pennigera* also occupies different habitats, being found on stream-banks in kahikatea remnants, and on shaded limestone overhangs and cave entrances.

FLOWERING

Spore bearing fronds may be found throughout the year

FLOWER COLOURS

No flowers

FRUITING

Spore bearing fronds may be found throughout the year

LIFE CYCLE

Minute spores are wind dispersed (Thorsen et al., 2009).

PROPAGATION TECHNIQUE

Easily grown from division of whole plants. Can be grown from fresh spore. Frost tender, and does best in damp or waterlogged ground.

THREATS

Drainage, land development and fern collectors.

ETYMOLOGY

interruptus: Interrupted in some way

WHERE TO BUY

Sold by a few specialist native plant nurseries. Not widely grown.

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* 11: 285-309

CITATION

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

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

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/cyclosorus-interruptus/>

Tupeia antarctica

COMMON NAME

Taapia, pirita, white mistletoe, tupia

SYNONYMS

Viscum antarcticum G.Forst., *V. pubigerum* A.Cunn., *Tupeia cunninghamii* Miq. *T. pubigera* Miq.

FAMILY

Loranthaceae

AUTHORITY

Tupeia antarctica (G.Forst.) Cham. et Schlecht

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

Yes

ENDEMIC GENUS

Yes

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Trees & Shrubs - Dicotyledons

NVS CODE

TUPANT

CHROMOSOME NUMBER

2n = 24

CURRENT CONSERVATION STATUS

2012 | At Risk – Declining | Qualifiers: CD

PREVIOUS CONSERVATION STATUSES

2009 | At Risk – Declining | Qualifiers: CD

2004 | Gradual Decline

BRIEF DESCRIPTION

Rounded shrub to 1m wide growing on other trees with white bark, finely hairy rounded twigs (lens needed), fleshy variously-shaped bright green leaves and whiteish to pinkish fruit. Leaves 10-70mm long. Flowers tiny.

DISTRIBUTION

Endemic to the North and South Islands.

HABITAT

Forest or scrub (often in regenerating vegetation), where it is parasitic on a wide range of hosts including tarata, karo, *Coprosma* species, putaputaweta, fivefinger, white maire and broom.

FEATURES

A shrubby semi-parasite to 1 m diameter. Leaves are oppositely arranged, variable in shape, 10 to 70 by 10 to 40 mm, slightly fleshy and bright green. Stems are always rounded in cross section near the tips, have pale white to grey bark, and downy or hairy branchlets. Flowers are tiny, greenish-yellow. Fruit are fleshy, white to pink, 5 to 7 mm diameter.



Tupeia antarctica from the Catlins.
Photographer: John Barkla



Close up of foliage. Photographer: Chris Ecroyd

SIMILAR TAXA

Peraxilla colensoi, *P. tetrapetala* and *Trilepidea adamsii* all have colourful flowers. *Ileostylus micranthus* has tiny, yellow-green flowers, a 'bent' style, yellow fruit and young stems that are squarish in cross-section and have multiple attachments to its host. All these species are hairless.

FLOWERING

Flowers from October to December.

FLOWER COLOURS

Green, Yellow

FRUITING

Fruit appear from December to March.

PROPAGATION TECHNIQUE

Difficult. Has been grown successfully by some people but many others have failed. Best success is achieved with seed that has been sown fresh (within one to two days of harvesting) onto a suitable host.

THREATS

Possum browse is the primary threat to this species. Insect browse, habitat destruction, loss of pollinating and seed-dispersing native birds, collectors, vandalism and fungal disease also threaten this species.

ETYMOLOGY

tupeia: Named after Tupaia (c. 1725 – December, 26 1770) who was a Tahitian Polynesian navigator and arioi (a kind of priest), originally from the island of Ra'iatea in the Pacific Islands (see Chamisso & Schlechtendal, 1828).

antarctica: Antarctic

CULTURAL USE/IMPORTANCE

This species will on occasion extend into beech forest where it has been found parasitic on red mistletoe (*Peraxilla tetrapetala*). Favoured indigenous hosts include *Pseudopanax arboreus*, *Carpodetus serratus*, *Nestegis cunninghamii*, *Pittosporum eugenoides*, *P. tenuifolium*, and *Coprosma* spp. At present the species has been recorded from 48 hosts (11 exotic) spread through 32 genera and 20 families (de Lange et al. 1997), though this figure needs revision as since that time many more hosts have been reported.

ATTRIBUTION

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

REFERENCES AND FURTHER READING

Chamisso, L.K.A.; Schlechtendal, D.F.L. 1828: Lorantheae pp. 203-204. *Linnaea* 3(3): 200-219.

de Lange, P.J.; Norton, D.A.; Molloy, B.P.J. 1997: An annotated checklist of New Zealand mistletoe (Loranthaceae) hosts. Pp. 83-104. In: de Lange P.J.; Norton, D.A. (eds.) *New Zealand's loranthaceous mistletoes*. Conference proceedings. Wellington, Department of Conservation.

CITATION

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

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/tupeia-antarctica/>

Nephrolepis flexuosa

SYNONYMS

Nephrolepis var. *pseudolauterbachii* Hovenkamp et Miyam. appears to be a new name for the same species in the Polynesian part of its range;
Nephrolepis auriculata (L.) Trimen

FAMILY

Nephrolepidaceae

AUTHORITY

Nephrolepis flexuosa Colenso

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

No

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Ferns

NVS CODE

NEPFLE

CHROMOSOME NUMBER

2n = 164

CURRENT CONSERVATION STATUS

2018 | At Risk – Naturally Uncommon

PREVIOUS CONSERVATION STATUSES

2012 | At Risk – Declining | Qualifiers: RR, SO

2009 | At Risk – Declining | Qualifiers: RR, SO

2004 | Range Restricted

DISTRIBUTION

Indigenous. Known with certainty from New Zealand, Raoul, Norfolk and Lord Howe Islands, and also Fiji and Rarotonga. This species may also be in Samoa and Sri Lanka and it is probably wide ranging throughout the Indian and Pacific Oceans. It may also be in Australia.

HABITAT

Abundant in coastal forest and scrub on Raoul Island, otherwise in New Zealand confined to the North Island where it is only known from active geothermal fields from about Kawerau south to the Rotorua Lakes District to Lake Taupo, where it reaches a world southern limit at Tokaanu near Turangi.

FEATURES

Rhizomes short, erect, stoloniferous. Stolons without tubers. Fronds pinnate, at first erect but tending to droop with age (0.1-)0.8-1(-1.5) m x (10-)20(-50) mm (including stipes); yellow-green to dark green, narrowly lanceolate, gradually tapering toward apex; rachis bearing subulate scales, margins fringed with many short hair-like processes. Pinnae in 50-60(-80) or more pairs, deltoid-oblong or oblong, sessile, closely adjacent and overlapping rachis, often with an enlarged basal auricle. Sterile pinnae (5-)10-15(-25) x (4-)6(-10) mm; margins entire to subentire, crenulate or serrated towards apex. Fertile pinnae distinctly shorter, margins crenulate (rarely serrated). Sori submarginal, indusia reniform, opening toward pinna apex.



Craters of the Moon. Photographer: John Smith-Dodsworth



Craters of the Moon. Photographer: John Smith-Dodsworth

SIMILAR TAXA

Frequently confused with the naturalised and highly aggressive *N. cordifolia*, from which it is easily distinguished by its non-tuberous habit. Both species also differ by their chromosome number, $2n = 82$ in *N. cordifolia* and $2n = 164$ in *N. flexuosa*, and by their spore morphology and size. *N. flexuosa* tends to have narrower more gracile fronds which are typically drooping, while those of *N. cordifolia* are wider, stouter and invariably rigidly erect.

FLOWERING

Spore bearing fronds may be found throughout the year

FLOWER COLOURS

No flowers

FRUITING

Spore bearing fronds may be found throughout the year

PROPAGATION TECHNIQUE

Easy from division of whole plants, and also from fresh spores, which take about 6-8 months to fertilise and produce young plants.

THREATS

Very common on Raoul Island. In the North Island it is confined to active geothermal fields where it can be locally common, though more often than not it is scarce. At least one population near Kawerau is threatened by the spread of *N. cordifolia* which has become well established at that site. Many populations are threatened by the spread of black berry (*Rubus fruticosus* agg.) and other weeds, and at least one has gone extinct over the last ten years.

ETYMOLOGY

nephrolepis: Kidney scale

flexuosa: Flexuous

WHERE TO BUY

Very rarely available from some specialist native plant nurseries.

TAXONOMIC NOTES

Hovenkamp & Miyamoto (2005) treat *Nephrolepis flexuosa* as a synonym of *N. cordifolia* var. *cordifolia*. For *N. cordifolia* they indicate that the presence or absence of tubers has no taxonomic importance. They then recognise a distinct non-tuberous variety *N. cordifolia* var. *pseudolauterbachii* from the mid Pacific islands. However plants of ar. *pseudolauterbachii* from Fiji had already been referred to *N. flexuosa* by de Lange et al. (2005), treated in that paper as distinct from *N. cordifolia* s.s. because of its lack of tubers, larger spores and distinctive tetraploid chromosome number ($2n = 164$). Thus the relegation of *N. flexuosa* by Hovenkamp & Miyamoto (2005) into synonymy with diploid *N. cordifolia*, yet apparent recognition of it (*N. flexuosa*) as the tetraploid var. *pseudolauterbachii* is inconsistent. At this stage NZPCN see no reason not to retain *N. flexuosa* as a valid indigenous New Zealand species.

ATTRIBUTION

Fact Sheet by P.J. de Lange 7 December 2005. Description based on Brownsey and Dodsworth (2000) supplemented with observations made from herbarium specimens

REFERENCES AND FURTHER READING

Brownsey, P.J.; Smith-Dodsworth, J.C. 2000: New Zealand ferns and allied plants. David Bateman Ltd, Auckland
de Lange, P.J.; Gardner, R.O.; Sykes, W.R.; Crowcroft, G.M.; Cameron, E.K.; Stalker, F.; Christian, M.L.; Braggins, J.E. 2005: Vascular flora of Norfolk Island: some additions and taxonomic notes. *New Zealand Journal of Botany* 43: 563-596.
Hovenkamp, P.H.; Miyamoto, F. 2005: A conspectus of the native and naturalized species of *Nephrolepis* (Nephrolepidaceae) in the world. *Blumea* 50: 279-322.

CITATION

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

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/nephrolepis-flexuosa/>

Hypolepis dicksonioides

COMMON NAME

Giant hypolepis, ground fern (Norfolk Island only)

SYNONYMS

Hypolepis tenuifolia sensu Hook.f.; *Hypolepis tenuifolia* var. *pellucida* (Colenso) Hook.; *Cheilanthes dicksonioides* Endl.; *Cheilanthes pellucida* Colenso; *Hypolepis endlicheriana* C.Presl

FAMILY

Dennstaedtiaceae

AUTHORITY

Hypolepis dicksonioides (Endl.) Hook.

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

No

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Ferns

NVS CODE

HYPDIC

CHROMOSOME NUMBER

2n = 208

CURRENT CONSERVATION STATUS

2012 | At Risk – Naturally Uncommon | Qualifiers: EF, SO, Sp

PREVIOUS CONSERVATION STATUSES

2009 | At Risk – Naturally Uncommon | Qualifiers: SO, EF

2004 | Sparse

DISTRIBUTION

Indigenous. Kermadec Islands (Raoul, Macauley Islands). New Zealand: Three Kings, North, South and Rekohu (Chatham Island). Known in the North Island from Te Pahi south to Wellington but mainly coastal and absent from large parts of the island (it has also been recorded as a 'weed' in Auckland, Hamilton, Tauranga and Wellington). Locally common around Geothermal areas of the Taupo Volcanic Zone. In the South Island known only from the coast north-west Nelson and northern Westland. Present on Norfolk, Samoa, Tahiti. Cook and the Marquesas islands.

HABITAT

A weedy species of coastal, lowland and geothermal habitats. Naturally short-lived, plants may appear as and when suitable habitat is generated following disturbance. As such this species has also appeared in urban situations and can from time to time be found growing in cities on rock walls, in bark gardens, or even protruding from cracks in asphalt pavements. It has also been recorded as a weed in garden centres.



November. Photographer: John Smith-Dodsworth



Macauley Island. Photographer: John Barkla

FEATURES

Rhizome long-creeping, (3–)4–8 mm diam., densely covered in pale brown hairs near growing apex, more scattered and becoming red-brown elsewhere, giving rise to stipes at intervals of 1.0–2.8 m. Stipes (0.15–)0.2–1.0 m long, (2–)5–15 mm diam., red-brown at base, becoming pale red-brown or yellow-brown above, bearing red-brown hairs at very base, soon replaced by colourless glandular and eglandular hairs (up to 5 mm long on uncoiling fronds); two dark, prominent, vertical bands on opposite sides of stipe. Laminae broadly ovate or elliptic (0.02–)0.035–1.35 × (0.015–)0.035–1.1 m, bipinnate at apex, 4 or 5-pinnate at base. Rachis yellow-brown at base, green at apex, bearing colourless glandular and eglandular hairs (up to 3 mm long). Primary pinnae in 15–30 pairs, opposite or subopposite, lower pair arising at 3–50° to stem; longest pair below middle, usually basal, (110–)200–700 × (70–)140–450 mm; lowest ones (50–)100–400 mm apart, middle ones 2–5 mm apart; upper ones narrowly ovate, lower ones ovate. Secondary pinnae ovate, (45–)70–300 × 30–150 mm, those on the lower pinnae decreasing markedly in length along the pinnae. Tertiary pinnae ovate, (16–)20–80 × (7–)10–35 mm, midrib winged. Quaternary pinnae narrowly ovate, 7–16 × 2–6 mm, shallowly incised on smaller specimens, divided into 4–5 pairs of ultimate segments on larger specimens. Veins reaching margin at a tooth apex, or sometimes ending just short of margin. Hairs: colourless glandular and eglandular hairs on midribs and veins of both lamina surfaces but absent from margins, 0.3–1.5 mm long. Sori on upper margin of each ultimate segment, situated at vein endings, protected by obvious reflexed flaps (green at base, membranous at apex, incised); protected from earliest stages. Spores pale brown, echinate.

SIMILAR TAXA

Could only be confused with *H. ambigua* from which it can be immediately recognised by its very much larger, more finely divided, extremely glandular sticky, deltoid fronds, thicker stipes, and conspicuous reflexed membranous indusia. The fronds are often so sticky that insects, dirt, feathers and hair is trapped on them.

FLOWERING

Not applicable - spore producing

FLOWER COLOURS

No flowers

FRUITING

Not applicable - spore producing

LIFE CYCLE

Minute spores are wind dispersed (Thorsen et al., 2009).

PROPAGATION TECHNIQUE

Easily grown from fresh spores. Inclined to become invasive and weedy in garden situations. Despite this the extremely robust, strongly deltoid, bright green fronds are rather attractive. It is naturally rather short-lived but rapidly establishes by spores in ideal situations. It is frost tender although established plants merely die back during winter.

THREATS

Hypolepis dicksonioides is a short-lived, naturally ephemeral, opportunistic species, which requires frequent disturbance to create fresh habitats to colonise. As such it is naturally uncommon, and biologically sparse. In the main islands of New Zealand it is usually scarce. However, on the Kermadec Islands, especially Macauley Island it forms the dominant vegetation.

ETYMOLOGY

hypolepis: From the greek hypo (under) and lepis (scale), referring to the position of the sori on the ferns

ATTRIBUTION

Fact sheet prepared for NZPCN by P.J. de Lange (1 February 2005). Description from Brownsey & Chinnock (1984).

REFERENCES AND FURTHER READING

Brownsey, P.J.; Chinnock, R.J. 1984: A Taxonomic revision of the New Zealand species of *Hypolepis*. *New Zealand Journal of Botany* 22: 43-80.

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

CITATION

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

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

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/hypolepis-dicksonioides/>

Christella dentata

COMMON NAME

Christella

SYNONYMS

Polypodium dentatum Forsskal, *Dryopteris dentata* (Forsskal) C.Chr., *Thelypteris dentata* (Forsskal) St John, *Cyclosorus dentatus* (Forsskal) Ching, *Polypodium nymphale* G.Forst.

FAMILY

Thelypteridaceae

AUTHORITY

Christella dentata (Forssk.) Brownsey et Jermy

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

No

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Ferns

NVS CODE

CHRDEN

CHROMOSOME NUMBER

2n = 144

CURRENT CONSERVATION STATUS

2012 | At Risk – Naturally Uncommon | Qualifiers: PD, SO

PREVIOUS CONSERVATION STATUSES

2009 | Threatened – Nationally Critical | Qualifiers: CD, SO

2004 | Threatened – Nationally Critical

DISTRIBUTION

Indigenous. Kermadec Islands (Raoul Island), New Zealand (North Island). A pan tropical species ranging from Crete throughout the warmer parts of the world to New Zealand. In New Zealand known only from Kaitaia north, although somewhat similar plants have been found twice near Kawhia and Piopio (now extinct at either location), and there are forms of unknown origin present in horticulture which have naturalised in Auckland, Hamilton and Wanganui. *Christella dentata* is a widespread and variable old world species, showing a wide range of local variation. Many of these variants have been given formal names but acceptance of these is not universal. New Zealand plants appear to be the same form as that commonly found in eastern Australia and Norfolk Island.

HABITAT

A short-lived fern of recently disturbed ground. In New Zealand proper the typical form of *C. dentata* is found naturally only in the far north in the warm, frost-free situations such as coastal wetlands, along river banks and in alluvial forest remnants. The same form is abundant on the Kermadec Islands (on Raoul Island only)



In Cultivation from Kaitaia Beach.
Photographer: John Smith-Dodsworth



Auckland. Mar 2007. Photographer: Peter de Lange

FEATURES

Somewhat soft and delicate fern, producing numerous tufts of pinnate fronds from a stout, somewhat woody, creeping rhizome. Rhizome, usually semi-exposed, covered in the frond base remnants. Fronds not long-persistent, broadly ovate to oblong in outline, up to 2 m long (usually much less), pale green to yellow-green, soft, wilting easily when broken, all parts clad in soft velvety hairs. Primary pinnae, with the exception of the basal prominently hastate pair, alternating along rachis, oblong to lanceolate, 300-1000 x 130-400 mm, with longest pinnae located within the central portion of the frond, subsequent pairs decreasing in size toward either end of frond. Secondary pinnae prominently lobed, lobes, oblong, apex bluntly truncate. Sori are arranged in up to 7 pairs on the pinnae lobes. Sorus covered by a heart- to kidney-shaped indusia.

SIMILAR TAXA

Cyclosorus interruptus though similar is smaller, scarcely creeping, and has long persistent, hairless, leathery, deltoid fronds, which are less deeply divided. *Pneumatopteris pennigera* is also similar and has been found growing with *Christella*. *Christella* differs from that species by its widely creeping habit, and softer, very hairy fronds with oblong rather than ovate secondary pinnae. In New Zealand *Christella dentata* comprises two races, the one described here, and a second race which is mostly confined to geothermally active areas (though it also occurs in Te Pahi) in the North Island. This race known as the "Geothermal Race" also extends to the Kermadec Islands (Raoul Island), and possibly occurs elsewhere in the Pacific. The "Geothermal Race" differs from the form of *C. dentata* described above by having a shortly creeping rhizome, the plants producing overtime an erect, caudex (trunk) the base of which is typically covered in vegetative buds. The fronds often appear narrower than the typical form of *C. dentata* described above, and may be more densely covered in milky white hairs. The "Geothermal Race" is considered by many botanists to be a distinct, possibly unnamed species (see Taxonomic Notes below).

FLOWERING

Spores may be found throughout the year

FLOWER COLOURS

No flowers

FRUITING

Spores may be found throughout the year

LIFE CYCLE

Seeds are dispersed by ballistic projection, wind and water (Thorsen et al., 2009).

PROPAGATION TECHNIQUE

Very easily grown by the divisions of whole plants and from spores. In warm sheltered gardens this species frequently naturalises. It is frost sensitive. Although in New Zealand it is primarily a species of wetlands, in cultivation it can, and will grow in almost any soil and moisture regime.

THREATS

In New Zealand proper currently known from just one natural site, this is protected as a QE II covenant. At this site it is threatened by natural succession and the rank growth of weeds following fencing of the forest remnant in which it grows (de Lange et al. 2010). Current management at the QEII site involves handweeding plants, and population enhancement. *Christella dentata* is however abundant on Raoul Island (see also Distribution and Taxonomic Notes).

ETYMOLOGY

dentata: Toothed

WHERE TO BUY

Specimens of Northland origin are held by several botanic gardens, universities and private fern growers. Occasionally this species is offered for sale by commercial nurseries, though in these cases it is not always certain whether the plants on sale are of New Zealand origin.

TAXONOMIC NOTES

Two races of *Christella* exist in New Zealand. The first of these has a widely creeping, brittle, usually buried rhizome (and is the race discussed mostly by this fact sheet), the second has shortly creeping rhizomes, with well established plants developing a stout caudex over time, the bases of which are often covered in vegetative buds. The first race is naturally confined to a few sites near Kaitaia (Awanui) and on Raoul Island (where it is abundant). However, the same form is also naturalised in Auckland and Hamilton cities, and possibly also Whanganui. The second race, because in the North Island it is mostly associated with geothermally active sites is widely known as the "geothermal race". However, the same race also occurs on Raoul Island (where it grows with the first race), and possibly also at Te Pahi (and at one time near Kawhia and Piopio). Taxonomic resolution of these forms, in isolation, in New Zealand would be unwise, especially as *C. dentata* is widely distributed across much of the world and extremely variable within that range. Therefore pending a thorough revision of the species, as an interim measure it seems best to acknowledge that in New Zealand *C. dentata* is variable, and that two races exist but that further action on their status without a global context is possibly beyond our scope.

ATTRIBUTION

Fact sheet prepared for NZPCN by P.J. de Lange (12 October 2003). Description modified from de Lange et al. (2010).

REFERENCES AND FURTHER READING

de Lange, P.J.; Heenan, P.B.; Norton, D.A.; Rolfe, J.R.; Sawyer, J.W.D. 2010: Threatened Plants of New Zealand. Christchurch, Canterbury University Press. 471pp.
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

CITATION

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MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/christella-dentata/>