



# NZPCN Conference 2015 Field Trip Macraes



## Table of Contents

Introduction	1
<i>Asplenium richardii</i>	2
<i>Carmichaelia crassicaulis</i> subsp. <i>crassicaulis</i>	3
<i>Chionochloa rigida</i> subsp. <i>rigida</i>	4
<i>Dracophyllum rosmarinifolium</i>	5
<i>Gaultheria macrostigma</i>	6
<i>Herpolirion novae-zelandiae</i>	7
<i>Kelleria dieffenbachii</i>	8
<i>Lycopodium fastigiatum</i>	9
<i>Pentachondra pumila</i>	10
<i>Polystichum vestitum</i>	11
<i>Ranunculus multiscapus</i>	12
<i>Wahlenbergia albomarginata</i> subsp. <i>albomarginata</i>	13

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

### Copyright

All images used in this book remain copyright of the named photographer. Any reproduction, retransmission, republication, or other use of all or part of this book is expressly prohibited, unless prior written permission has been granted by the New Zealand Plant Conservation Network ([info@nzpcn.org.nz](mailto:info@nzpcn.org.nz)). All other rights reserved.

Macraes is situated approximately 45 km north of Dunedin and 25 km inland. Perhaps best known for its huge gold mine, there is an area of c. 3000 ha of conservation interest comprising scenic reserves, conservation covenants and private land ranging in altitude from 400 m to 714 m a.s.l. In 2008 Mike Thorsen recorded 84 species of threatened and uncommon plants at Macraes which, using the threat classification system of that time, comprised 6 Acutely Threatened, 9 Chronically Threatened, 21 At Risk, 15 Regionally Significant and 32 Locally Notable taxa. Thorsen (2008) speculated that this area, for its size, had the highest diversity of threatened and uncommon plants of any area in New Zealand.

Apart from its outstanding vegetation there are two critically endangered skink species (grand and Otago skinks), a wealth of archaeological sites including Maori rock shelters, tool-making sites, and moa kill sites, remnants of early European gold mining and pastoral farming.

The vegetation is dominated by hybrid *Chionochloa* tussock grassland and short tussock grassland induced by Maori and European pastoralists. They cleared the original semi-arid podocarp forest, small-leaved shrubland on ridge crests, and the mesic broadleaf forest from hill slopes and drainages. Only remnants of these vegetation communities remain. Twenty-six species, thought to be shade-dependent shrubland or forest-floor inhabitants, are now restricted to underneath rock overhangs. Plant species diversity is very high, with 350 native species and 84 exotic species recorded from the site.

The plant diversity at Macraes is probably a result of its geographic placement and altitude, with representation from dryland Central Otago species, mesic eastern Otago lowland species, and montane species, and a wide range of landforms. These include shallowly-impounded ephemerally wet areas on broad peneplain ridge tops and deeply-incised drainages with a plethora of rock outcropping.

Many of the threatened species have significant populations and Macraes is a national stronghold for several species. However, some species have declined dramatically. The reasons are unknown for some, but for others (particularly inhabitants of ephemeral wetlands) it is thought that regrowth of taller (usually exotic) vegetation has swamped the smaller native species. This regrowth has occurred as a consequence of excluding stock from reserve areas by fencing. Conversely, fencing has benefited some shrub and tree species.

Adapted from Thorsen (2008). Where in New Zealand is the highest diversity of threatened plants? *Trilepidea* No. 58. September 2008. New Zealand Plant Conservation Network.

# *Asplenium richardii*

## Common Name(s):

Richards spleenwort

## Current Threat Status (2012):

Not Threatened

## Distribution:

Endemic. New Zealand: North (Mt Honokawa, Mt Ruapehu, and parts of the Kaimanawa Range), and South Islands (mainly east of the Main Divide)

## Habitat:

Montane to alpine. On basalt, limestone, schist and greywacke rock outcrops, cliff faces (where usually in crevices), amongst boulders, and on stream banks particularly under beech (*Nothofagus*) forest.

## Features\*:

Rhizome short, stout, erect, bearing dark brown subulate scales up to  $20 \times 2$  mm. Stipes 50-150 mm long, brown on underside, green above, densely covered in subulate scales with filiform apices. Laminae ovate to narrowly ovate,  $100-250 \times 40-120$  mm, dark green, relatively thin, normally tripinnate. Raches green, very scaly, slightly grooved. Pinnae 10-15 crowded and overlapping pairs, ovate to narrowly ovate, sub-acute, stalked,  $20-80 \times 10-40$  mm. Secondary pinnae stalked, ovate,  $10-20 \times 10-15$  mm, again pinnate or pinnatifid. Ultimate segments linear, acute or sub-acute, up to 8 mm long. Pinnae and pinnules not flattened in one plane but spreading in three dimensions. Sori 2-4 mm long, submarginal.

## Flowering:

Not applicable - spore producing

## Fruiting:

Not applicable - spore producing

## Threats:

Not Threatened

## \*Attribution:

Description from Brownsey (1977).

## References and further reading:

Brownsey, P.J. 1977: A taxonomic revision of the New Zealand species of *Asplenium*. *New Zealand Journal of Botany* 15: 39-86.

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=1526](http://nzpcn.org.nz/flora_details.asp?ID=1526)



**Caption:** Arthurs Pass

**Photographer:** John Smith-Dodsworth



**Caption:** Arthurs Pass

**Photographer:** John Smith-Dodsworth

# *Carmichaelia crassicaulis* subsp. *crassicaulis*

**Common Name(s):**  
coral broom

**Current Threat Status (2012):**  
At Risk - Declining

**Distribution:**  
South Island: east of the main divide.

**Habitat:**  
Upland and subalpine grassland, scrub and rock.

**Features\*:**  
Rigid shrub up to 2m tall. Branches stout, erect, yellowish-green, deeply grooved with numerous parallel hair-lined grooves. Branchlets similar but somewhat flattened, up to 1cm or more diameter, new growth densely covered in white hairs. Juvenile leaves almost round, adult leaves oblong. Plants nearly leafless when mature. Flowers creamy coloured, 6mm long, up to 20 in a tight cluster. Flower stalks and sepals covered in thick, soft, white hair. Seed pods 6-7mm long, rounded, usually one-seeded.

**Flowering:**  
December - January

**Fruiting:**  
March - May

**\*Attribution:**  
Fact Sheet Prepared for NZPCN by: P.J. de Lange 28 October 2009.  
Description based on Allan (1961)

**References and further reading:**  
Allan, H.H. 1961: Flora of New Zealand. Vol. I. Wellington, Government Printer.

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

**For more information, visit:**  
[http://nzpcn.org.nz/flora\\_details.asp?ID=152](http://nzpcn.org.nz/flora_details.asp?ID=152)



**Caption:** Pods and seeds  
**Photographer:** John Barkla



**Caption:** Old Woman Range  
**Photographer:** John Barkla



## *Chionochloa rigida* subsp. *rigida*

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

narrow-leaved snow tussock

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

Not Threatened

### **Threats:**

Not Threatened

### **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

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

[http://nzpcn.org.nz/flora\\_details.asp?ID=1671](http://nzpcn.org.nz/flora_details.asp?ID=1671)



**Caption:** Leaf base, Mt Watkin

**Photographer:** John Barkla



**Caption:** Mavora Lakes - January

**Photographer:** John Barkla

# *Dracophyllum rosmarinifolium*

## Common Name(s):

common grass tree, inaka

## Current Threat Status (2012):

Not Threatened

## Distribution:

Endemic. New Zealand: North (Taranaki Ranges) and South Islands (throughout the South Island)

## Habitat:

*Dracophyllum rosmarinifolium* is a shrub inhabiting montane woodland and shrubland to subalpine or alpine grassland, herbfield, fellfield or bog land within mountain gullies, mountain slopes and ridges, bluffs, plateaus and also valley floors.

## Features\*:

Multi-stemmed shrub 0.3–1.0 m tall. Branches erect to spreading and much-branched. Bark on old branches grey to dark grey, finely to deeply fissured, young stems reddish brown. Leaves erect to spreading, light to olive green; lamina sheath 2.0–8.5 × 2.5–4.0 mm; shoulders rounded to truncate and margins membranous, ciliate; lamina 8.0–55.0 × 0.59–1.5 mm linear to linear-subulate; adaxial surface glabrous, occasionally rugose, with a tuft of short scabrid hairs at base; margins serrulate with 70–80 teeth per 10 mm; apex obtuse to acute and triquetrous. Inflorescence a terminal solitary erect flower; shorter than leaves; inflorescence bract shorter to equaling flower, 5.0–13.0 × 1.0–2.0 mm, narrowly ovate-lanceolate at base, adaxial surface scabrid at base; margins serrulate. Flowers sessile. Sepals 4.5–12.0 × 1.2–2.5 mm, lanceolate to ovate-lanceolate, equaling to longer than corolla tube, top half rarely shortly pubescent; margins ciliate. Corolla white turning pale yellow with age, occasionally light pink; corolla tube 4.0–7.0 × 1.5–2.0 mm, cylindrical; corolla lobes reflexed, 2.0–2.5 × 1.2–2.0 mm, triangular, shorter than corolla tube, apex inflexed, subacute to acute; apical ridge present, adaxial surface papillate. Stamens inserted on corolla tube in the upper third, filaments 0.3–0.5 mm long; anthers included, 0.7–1.0 mm long, oblong, initially pink turning light yellow. Ovary 1.7–2.0 × 1.0–2.0 mm, obovate, apex round; nectary scales 0.7–1.5 × 0.4–0.7 mm rectangular, apices retuse to irregularly toothed; style included, 1.5–2.5 mm long, glabrous, not lengthening in fruit; stigma capitate. Fruit 3.7–4.0 × 3.8–4.0 mm, obovoid, light brown, apex round, glabrous. Seeds 0.8–1.0 mm long yellowish brown, ovoid, with the testa slightly reticulate.

## Flowering:

October – May

## Fruiting:

December - August

## Threats:

Not Threatened

## \*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange (6 June 2012).  
Description adapted from Venter (2009)

## References and further reading:

Venter, S. 2009: A taxonomic revision of the genus *Dracophyllum* Labill. (Ericaceae). Unpublished Phd Thesis, Victoria University of Wellington, 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

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=1815](http://nzpcn.org.nz/flora_details.asp?ID=1815)



**Caption:** *Dracophyllum rosmarinifolium*

**Photographer:** Jane Gosden



**Caption:** *Dracophyllum rosmarinifolium*

**Photographer:** John Smith-Dodsworth

## *Gaultheria macrostigma*

**Common Name(s):**

prostrate snowberry

**Current Threat Status (2012):**

Not Threatened

**Threats:**

Not Threatened

**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

**For more information, visit:**

[http://nzpcn.org.nz/flora\\_details.asp?ID=1917](http://nzpcn.org.nz/flora_details.asp?ID=1917)



**Caption:** Mt Arthur

**Photographer:** Jane Gosden



**Caption:** Mt Arthur

**Photographer:** Jane Gosden



## *Herpolirion novae-zelandiae*

**Common Name(s):**

grass lily, sky lily

**Current Threat Status (2012):**

Not Threatened

**Threats:**

Not Threatened

**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

**For more information, visit:**

[http://nzpcn.org.nz/flora\\_details.asp?ID=2152](http://nzpcn.org.nz/flora_details.asp?ID=2152)



**Caption:** Lammerlaw Range  
**Photographer:** John Barkla



**Photographer:** John Barkla

## *Kelleria dieffenbachii*

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

Not Threatened

### **Threats:**

Not Threatened

### **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

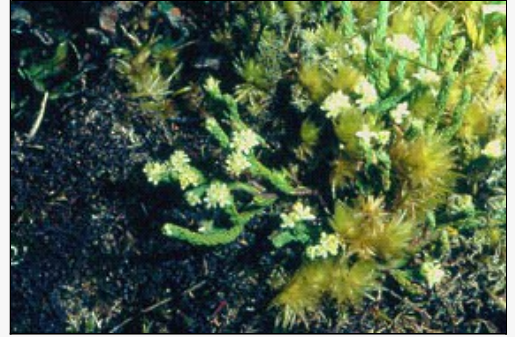
### **For more information, visit:**

[http://nzpcn.org.nz/flora\\_details.asp?ID=2178](http://nzpcn.org.nz/flora_details.asp?ID=2178)



**Caption:** Habitat, Mid Dome, Southland

**Photographer:** Jesse Bythell



**Caption:** Mt Te Moehau, November

**Photographer:** John Smith-Dodsworth

# *Lycopodium fastigiatum*

## Common Name(s):

alpine clubmoss, mountain clubmoss

## Current Threat Status (2012):

Not Threatened

## Distribution:

Indigenous. New Zealand: North, South, Stewart, Chatham, Antipodes, Campbell and Auckland Islands (from Te Moehau and Mt Pirongia south). Also Australia.

## Habitat:

Coastal to alpine (in northern part of North Island range strictly montane) in frost flats, subalpine and geothermal scrub, alpine herbfield, grassland and peat bogs.

## Features\*:

Rhizome mostly buried, creeping, bearing scattered, appressed scale-leave. Aerial branches erect (occasionally prostrate with branchlets upturned), rigid 30-400 mm tall, much-branched. Leaves spirally arranged, imbricate, decurrent, 3-5 mm long. 0.6-1.0 mm wide, linear to linear-lanceolate, incurved, green, yellow-green or orange (especially when in exposed situations). Strobili erect, terminal, projecting above the foliage, 20-70(-100) mm long, 1-3 aggregated on a common peduncle with widely scattered appressed scale leaves. Sporophylls imbricate, peltate, lanceolate, pale to dark brown or somewhat orange, with paler membranous margins. Description adapted from Chinnock (1998) and Brownsey & Smith-Dodsworth (2000).

## Flowering:

N.A.

## Fruiting:

N.A.

## Threats:

Not Threatened

## \*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange 20 March 2011. Description adapted from Chinnock (1998) and Brownsey & Smith-Dodsworth (2000).

## References and further reading:

Brownsey, P.J.; Smith-Dodsworth, J.C. 2000: New Zealand Ferns and Allied Plants. Auckland, David Bateman

Chinnock, R.J. 1998: Lycopodiaceae. Flora of Australia 48: 66-85.

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=2194](http://nzpcn.org.nz/flora_details.asp?ID=2194)



**Caption:** Mt Cook.

**Photographer:** John Barkla



**Caption:** East Ahuriri.

**Photographer:** John Barkla

## *Pentachondra pumila*

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

Not Threatened

### **Threats:**

Not Threatened

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

[http://nzpcn.org.nz/flora\\_details.asp?ID=1104](http://nzpcn.org.nz/flora_details.asp?ID=1104)



**Caption:** Mount Climie, Upper Hutt. Feb 2013.

**Photographer:** Jeremy Rolfe



**Caption:** Mount Climie, Upper Hutt. Feb 2013.

**Photographer:** Jeremy Rolfe



# *Polystichum vestitum*

## Common Name(s):

punui, prickly shield fern

## Current Threat Status (2012):

Not Threatened

## Distribution:

Endemic. New Zealand: North, South, Stewart, Chatham, Snares, Antipodes, Campbell, Auckland, Macquarie Islands. In the North Island scarce north of Auckland and the Coromandel Peninsula.

## Habitat:

Coastal to alpine. In the northern part of its range *P. vestitum* is confined to montane regions or cold ('temperature inversion') situations, further south it progressively extends to lower altitudes; in the South Island it ranges from coastal to alpine regions. *Polystichum vestitum* is a species of exposed habitats, such as forest margins, gully floors and tussock grasslands, but it also commonly extends into forest in colder, wetter parts of New Zealand.

## Features\*:

Rhizome erect, sometimes forming a trunk up to 0.9 m tall. Stipe 90–410 mm long. Stipe and rachis densely clothed with scales of diverse form. Larger rachis scales usually ovate-lanceolate (those from the mid rachis 340–1620 mm at their mid length) to lanceolate-acicular (Chatham Islands and these from the mid rachis 180–780 mm at their mid length); usually bicolorous, with an obvious dark brown centre surrounded on all sides by pale brown margins, but dark centre sometimes much reduced (Chatham Islands, Subantarctic Islands and islands around Stewart Island especially) such that the rachis scales are uniformly pale brown; apex usually long and tapering; usually without marginal projections except for plants from the Chatham Islands, in which they may be very well developed; usually underlain by pale bristle-like scales. Lamina 0.23–2.0 m, long, 90–350(–480) mm; narrowly elliptic to narrowly oblong; bipinnate; adaxially usually dark green (sometimes purple-green), abaxially paler. Primary pinnae in 20–62 pairs, oblong. Secondary pinnae all stalked except those towards the apex of primary pinnae; with sharply pointed apex and prominent marginal teeth and/or crenulations. Sori round. Indusia peltate, ± flat, ± round; with entire although sometimes undulate and/or scalloped margins; central dark area usually insignificant (< 10% surface area, and usually < 5%).

## Flowering:

Not Applicable - Spore Producing

## Fruiting:

Not Applicable - Spore Producing

## Threats:

Not Threatened

## \*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange (13 November 2012). Description adapted from Perrie et al. (2003).

## References and further reading:

de Lange, P.J.; Heenan, P.B.; Rolfe, J.R. 2011: Checklist of vascular plants recorded from the Chatham Island Islands. Department of Conservation, Wellington. 57pp.

Perrie, L.R.; Brownsey, P.J.; Lockhart, P.J.; Large, M.F. 2003B: Morphological and genetic diversity in the New Zealand fern *Polystichum vestitum* (Dryopteridaceae), with special reference to the Chatham Islands. *New Zealand Journal of Botany* 41: 581-602.

## For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=2223](http://nzpcn.org.nz/flora_details.asp?ID=2223)



**Caption:** *Polystichum vestitum*

**Photographer:** John Barkla



**Caption:** Stokes Valley, Lower Hutt.

**Photographer:** Jeremy Rolfe

## *Ranunculus multiscapus*

**Common Name(s):**

Grassland buttercup

**Current Threat Status (2012):**

Not Threatened

**Threats:**

Not Threatened

**For more information, visit:**

[http://nzpcn.org.nz/flora\\_details.asp?ID=1234](http://nzpcn.org.nz/flora_details.asp?ID=1234)



**Caption:** Hunter Mountains, Fiordland

**Photographer:** Jesse Bythell



**Caption:** Crown range, November

**Photographer:** John Smith-Dodsworth

## *Wahlenbergia albomarginata* subsp. *albomarginata*

### Common Name(s):

New Zealand harebell, harebell

### Current Threat Status (2012):

Not Threatened

### Distribution:

Endemic. New Zealand: South Island (in the east from Marlborough to Central Otago)

### Habitat:

Lowland to subalpine in tussock-grassland, on river terraces and amongst rocks.

### Features\*:

Perennial herb with radical, rosulate tufts of leaves, sometimes alternate on elongated stems (shade form). Leaves concolorous or paler beneath, yellow-green, green to red-green, turning glaucous on drying; more or less petiolate, lamina 10 × 2 to 40 × 10 mm, linear to elliptic, gradually narrowed to petiole as long as the lamina or longer, margins entire or subentire, thickened, teeth if present, inconspicuous. Flowers insect-pollinated, narrowly campanulate-rotate, corolla pale flax blue to pale blue-violet, often with white zoning and deeper coloured veins, or all white, 12-17 mm diameter, 10-20 mm long, corolla tube 4 × 3 to 10 × 6 mm, lobes 6 × 3 to 12 × 5 mm; style equal in length to corolla tube, lobes 2 or 3. Calyx lobes less than ¼ corolla length; capsule domed cylindrical, 6-8 × 4 mm. Seeds 0.5 mm long, ellipsoid, smooth, glossy brown when mature.

### Flowering:

November – April

### Fruiting:

December - April

### Threats:

Not Threatened

### \*Attribution:

Fact Sheet prepared for NZPCN by P.J. de Lange 12 June 2007. Description from Petterson (1997).

### References and further reading:

Petterson, J.A. 1997: Revision of the genus *Wahlenbergia* (Campanulaceae) in New Zealand. *New Zealand Journal of Botany* 35(1): 9-54

### For more information, visit:

[http://nzpcn.org.nz/flora\\_details.asp?ID=1360](http://nzpcn.org.nz/flora_details.asp?ID=1360)



**Caption:** Mt Hutt, January  
**Photographer:** John Smith-Dodsworth