

***Lepidium naufragorum* Garn.-Jones et D.A.Norton**

- Family:** Brassicaceae  
**Endemic to:** Westland.  
**Common name:** Westland scurvy grass.  
**Ranking:** B, Rare. **In cultivation:** Yes.  
**Descriptor:** A perennial, robust, tap-rooted, rosette with erect flowering stems.  
**Conservancy:** WC.  
**Habitat:** High fertility coastal islands and rocky headland associations with seals, penguins, and birds.  
**Threats:** Largely unknown as only recently described. Assumed to be the same as other coastal *Lepidium* spp. i.e. browse, weed encroachment, fungal disease, loss of seal and seabird colonies that provide habitat.

**Work undertaken to date**

Coastal Cress/Nau Recovery Plan has been published; Coastal Cress Recovery Group set up; taxonomic status determined; survey (West Coast); coastal habitat is known.

**Priority sites for survey**

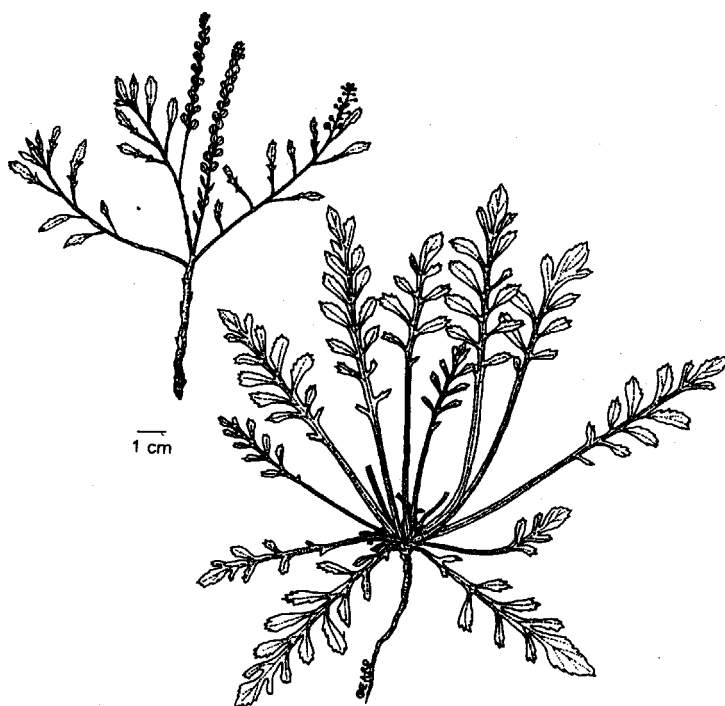
Fiordland, islands north of Point Elizabeth.

**Monitoring: objectives and priority sites**

Monitoring of a mainland site and an island site needed to determine population dynamics (Arnett Point/Knights Point?).

**Research questions**

What is the impact of *Albugo candida* on *L. naufragorum*? What are the specific threats to *L. naufragorum*?



**Management needs**

In cultivation from a number of provenances, more needed; threat mitigation once specific threats are identified, e.g. weed control; habitat restoration.

**Selected references**

- GarnockJones, P.J.; Norton, D.A. 1995. *Lepidium naufragorum* (Brassicaceae), a new species from Westland, and notes on other New Zealand coastal *Lepidium*. *New Zealand Journal of Botany* 33:43-51.  
Norton, D.A.; de Lange, P.J.; Garnock-Jones, P.J.; Given, D.R. 1997. The role of seabirds and seals in the survival of coastal plants: lessons from New Zealand *Lepidium* (Brassicaceae). *Bio-diversity and Conservation* 6:765-785.  
Norton, D.A.; de Lange, P.J. 1999. *National Coastal Cress/Nau Recovery Plan*. Department of Conservation; Wellington.

## ***Lepidium oleraceum* agg.**

<b>Family:</b>	Brassicaceae	
<b>Endemic to:</b>	New Zealand.	
<b>Common name:</b>	Nau, Cook's scurvy grass.	
<b>Ranking:</b>	B, Endangered.	<b>In cultivation:</b> Yes.
<b>Descriptor:</b>	Semi-woody, robust, shrubby cress.	
<b>Conservancy:</b>	NL, AU, WK, BP, WG, WL, NM, OT, SL, (CA, EC/HB).	
<b>Habitat:</b>	Occurs amongst seabird colonies on sites of high fertility, with burrowing birds etc.	
<b>Threats:</b>	Browsers (including insects and kiore); weed encroachment; lack of legal land protection; loss of associated seabird colonies; fungal disease ( <i>Albugo candida</i> ); collectors; habitat degradation (Waikato and Chatham Islands); introduced insect pests, e.g. grey cabbage aphid; seal and seabird trampling..	

### **Work undertaken to date**

Coastal Cress/Nau Recovery Plan has been published; Coastal Cress Recovery Group set up; extensive survey in Auckland Conservancy; survey at Sugar Loaf Islands, New Plymouth; Chatham Islands, coastal Wellington, Coromandel Islands, Northwest Nelson, Stephens Island, North Brothers Island, and Muttonbird, Snares, and Antipodes Islands; monitoring at Sugar Loaf and Chatham Islands; some taxonomic work (DNA trials on all *Lepidium* spp.); ecology known; population enhancement at one Sugar Loaf Island, at Mana Island, and attempts on the Chatham Islands.

### **Priority sites for survey**

Kermadec, Chatham, Solander Islands, Titi and Auckland Islands (Southland), Little Barrier, Sugar Loaf Islands; all recent historical sites since 1960s; small islands in the Sounds, Coromandel, western Waikato, and Te Taitapu Coast.

### **Monitoring: objectives and priority sites**

Monitor success of translocations to Matiu/Somes Island and Sugar Loaf Islands, and re-established historical sites on Little Barrier and elsewhere; monitor success of population enhancements at Sugar Loaf and Mana Islands; monitor numbers to see the influence of vegetation changes on small islands such as Mangere (Chathams group) where herbaceous species are yielding to a woody cover; monitor numbers to see the effects of vegetation change on *L. oleraceum* agg. on small islands; regularly inspect Mana and Kapiti Islands populations.

### **Research questions**

What is the taxonomy of the *L. oleraceum* agg.? What are the disturbance and nutrient regimes required to maintain populations of *L. oleraceum* agg in the wild?

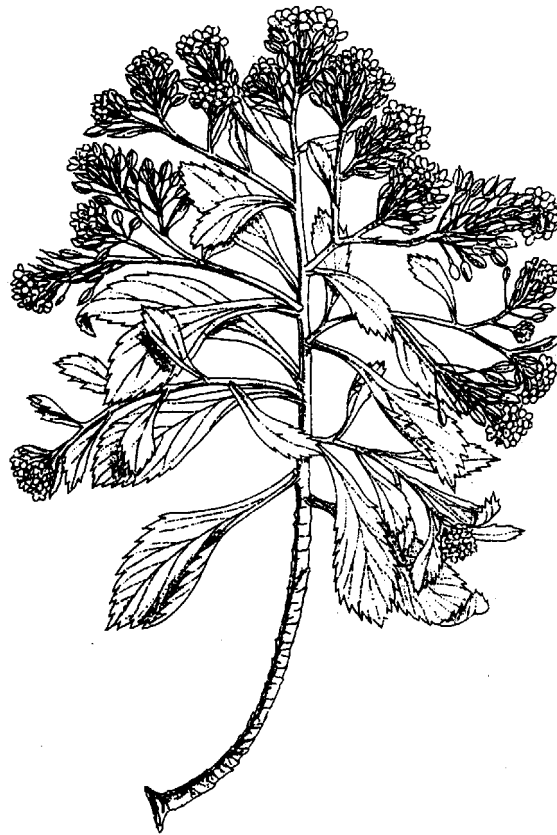
### **Management needs**

Translocation to Matiu/Somes Island, and enhancement of North Island populations; re-establish on Little Barrier and other historical sites once habitat requirements are known; disease control; strict quarantine in relation to pests when visiting offshore islands to prevent, e.g. diamond backed moth and grey cabbage aphid infestations; continue translocation efforts on Chatham Island,

e.g. Awatotara and Point Munning areas; to collect and maintain in cultivation material from a wide variety of populations; continue to collect seed from all populations for ex situ work.

### **Selected references**

- de Lange, P.J.; Norton, D.A. 1996. To what New Zealand plant does the vernacular "scurvy grass" refer? *New Zealand Journal of Botany* 34: 417-420.
- Garnock Jones, P.J.; Norton, D.A. 1995. *Lepidium naufragorum* (Brassicaceae), a new species from Westland, and notes on other New Zealand coastal species of *Lepidium*. *New Zealand Journal of Botany* 33: 43-51.
- Norton, D.A.; de Lange, P.J. 1999. *National Coastal Cress/Nau Recovery Plan*. Department of Conservation, Wellington.
- Norton, D.A.; de Lange, P.J.; Garnock Jones, P. J.; Given, D.R. 1997. The role of seabirds and seals in the survival of coastal plants: lessons from New Zealand *Lepidium* (Brassicaceae). *Biodiversity and Conservation* 6:765-785.
- Ogle, C.C. 1987. The retreat of Cook's scurvy grass. *Forest and Bird* 243: 26.



***Leptinella featherstonii* (Hook.f.) D.G.Lloyd et C.J.Webb**

- Family:** Asteraceae  
**Endemic to:** Chatham Islands.  
**Common name:** Chatham Islands button daisy.  
**Ranking:** B, Vulnerable. **In cultivation:** Yes.  
**Descriptor:** Woody shrub button-daisy with knotched, spatulate leaves. Two forms exist: the hairy Kaingaroa form; and the glabrous (non-hairy) offshore stack form.  
**Conservancy:** WL.  
**Habitat:** Grows on high fertility sites associated with seabirds and albatross islands.  
**Threats:** Collectors; loss of seabird colonies; lack of legal land protection (all known sites are privately owned); habitat degradation; weed encroachment; trampling by visitors; storm damage to adult plants.

**Work undertaken to date**

Very hard to grow and maintain; translocations and population enhancement trials underway on Chatham Island, little success to date; ecology studied in an honours project.

**Priority sites for survey**

Little Mangere and offshore rock stacks, Chathams group.

**Monitoring: objectives and priority sites**

Ongoing monitoring of Chatham site; monitor success of translocation sites on main Chatham Island; set up monitoring on at least one bird island to ascertain if seabird decline is having an impact on the hairy form of the plant; set up a monitoring system for the glabrous form.

**Research questions**

What is the taxonomic status of the hairy versus glabrous forms? Is the woody Chatham Island *L. featherstonii* worthy of generic segregation from the herbaceous species of *Leptinella*? What impact is the decline of seabird colonies having on the habitats and distribution of *L. featherstonii*?

**Management needs**

Advocacy to mitigate collection and trampling; continue trying to re-establish plants of the glabrous form; continue to re-establish plants of the hairy Kaingaroa form, including possible translocation of this form to South-East Island where *L. featherstonii* is absent, translocate Little Mangere plants to Mangere Island Nature Reserve; habitat restoration; secure legal land protection; weed control.

**Selected references**

- Ibell, G. 1990. Seed germination, plant establishment, growth and conservation of *Leptinella featherstonii* F.Muell (1864), a threatened coprophilic plant from the Chatham Islands. Unpublished Honours thesis, University of Canterbury.
- Lloyd, D.G. 1972. A revision of the New Zealand, Subantarctic, and South American species of *Cotula*, Section *Leptinella*. *New Zealand Journal of Botany* 10: 277-372.
- Lloyd, D.G. 1982. Variation and evolution of plant species on the outlying islands of New Zealand, with particular reference to *Cotula featherstonii*. *Taxon* 31: 478-487.
- Lloyd, D.G. 1987. The reinstatement of *Leptinella* at generic rank, and the status of the 'Cotuleae' (Asteraceae, Anthemideae). *New Zealand Journal of Botany* 25: 99-105.

***Leptinella rotundata* (Cheeseman) D.G.Lloyd et C.J.Webb**

- Family:** Asteraceae  
**Endemic to:** Northwestern North Island.  
**Common name:** Northland button daisy.  
**Ranking:** B, Rare. **In cultivation:** Yes  
**Descriptor:** Prostrate, coastal, mat-forming, round-leaved button-daisy.  
**Conservancy:** NL, (AU).  
**Habitat:** A cliff plant growing on base-rich rocks under low scrub, and in soil pockets on otherwise sheer cliffs.  
**Threats:** Coastal erosion; collectors; weed encroachment; habitat degradation by stock; sex bias in some populations limits sexual reproduction.

**Work undertaken to date**

Common in cultivation as inconstant males; translocations attempted in 1970s all failed through catastrophic events.

**Priority sites for survey**

Waitakere Ranges (need critical survey); basalt bluffs on the west coast of the Northland Peninsula.

**Monitoring: objectives and priority sites**

None required beyond annual, opportunistic survey of all known sites.

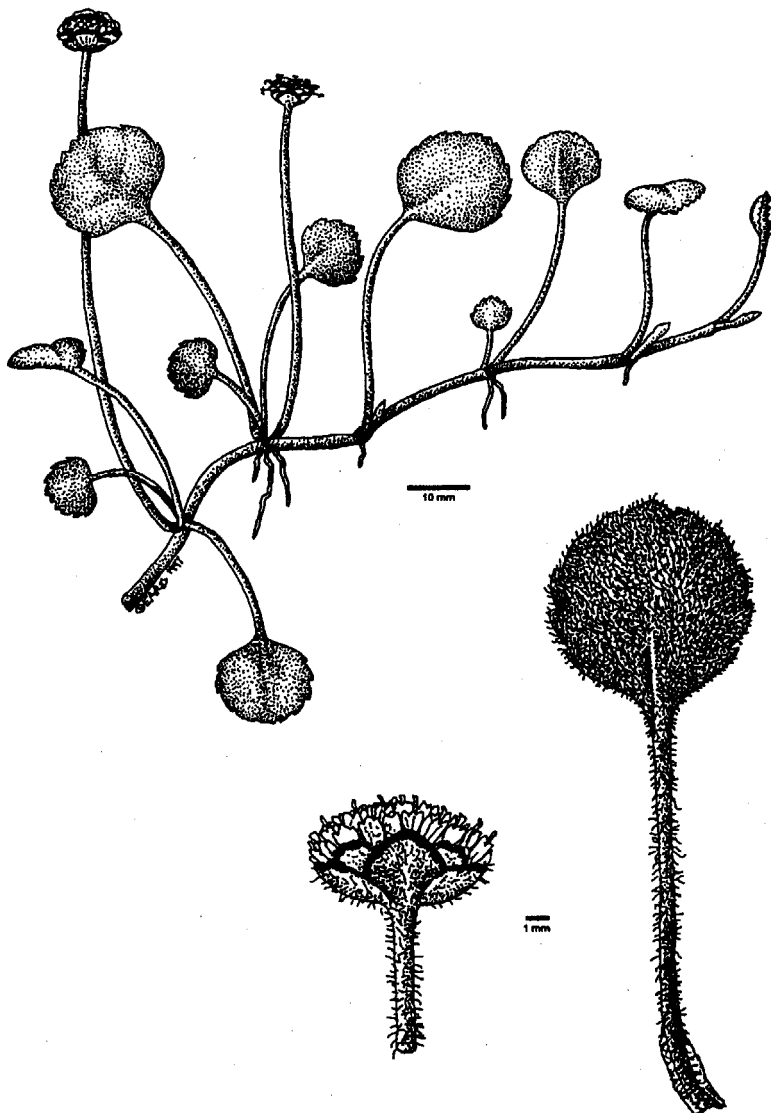
**Research questions**

**Management needs**

Secure better land protection at Mitimiti site; advocacy with the public to prevent collection; weed control at sites; translocation of inconstant males to sites with females at Hokianga and Mitimiti; advocacy with stock owners to prevent habitat degradation.

**Selected references**

- Lloyd, D.G. 1972. A revision of the New Zealand, Subantarctic, and South American species of *Cotula*, Section *Leptinella*. *New Zealand Journal of Botany* 10: 277-372.
- Lloyd, D.G. 1987. The reinstatement of *Leptinella* at generic rank, and the status of the 'Cotuleae' (Asteraceae, Anthemideae). *New Zealand Journal of Botany* 25: 99-105.



***Lycopodiella serpentina* (Kunze) B.Ollg.**

- Family:** Lycopodiaceae  
**Endemic to:** Indigenous to New Zealand, South Australia, and New Caledonia.  
**Common name:** Bog clubmoss.  
**Ranking:** B, Vulnerable. **In cultivation:** No.  
**Descriptor:** Diminutive clubmoss.  
**Conservancy:** NL, WK.  
**Habitat:** Very acid peat with a high water table.  
**Threats:** Drainage; collectors (at some sites); peat mining; eutrophication; weed encroachment.

**Work undertaken to date**

Opportunistic survey at Waikato (Kopouatai); attempts at cultivation.

**Priority sites for survey**

Kaimaumu; Ahipara.

**Monitoring: objectives and priority sites**

Whangamarino wetlands/Ahipara population dynamics.

**Research questions**

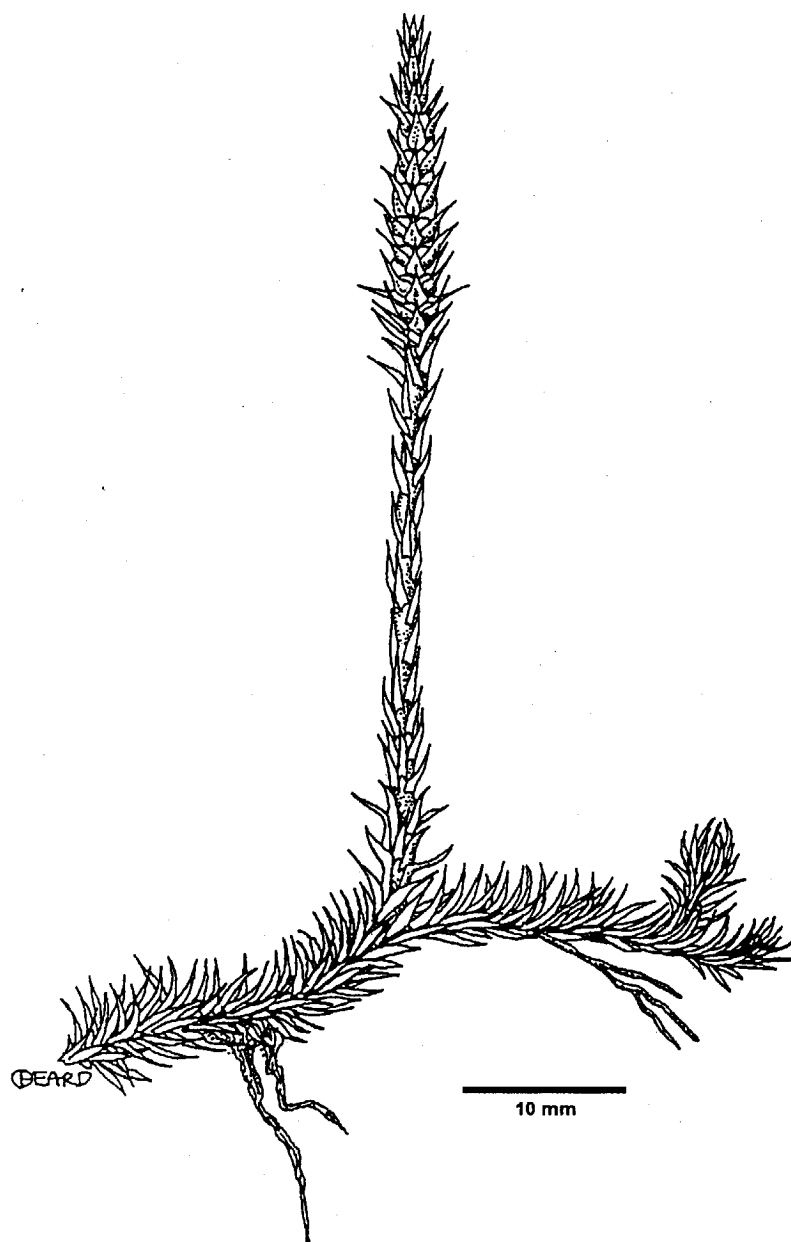
Existing research programme re: fire for regeneration (Science and Research Unit). What is the effect of fertiliser drift on bogs?

**Management needs**

Maintain water tables at high levels; advocacy with the public to prevent collection of plants; habitat restoration; advocacy with farmers at Kopouatai re: use of fertilisers drifting into the bog; weed management to prevent habitat modification.

**Selected references**

Wilson, C.M.; Given, D.R. 1989. *Threatened Plants of New Zealand*. DSIR Publishing, Wellington.



## ***Montigena novae-zelandiae* (Hook.f.) Heenan**

<b>Family:</b>	Fabaceae (the only species in the <i>Montigena</i> genus).	
<b>Endemic to:</b>	Eastern South Island.	
<b>Common name:</b>	Scree pea.	
<b>Ranking:</b>	B, Rare.	<b>In cultivation:</b> Yes.
<b>Descriptor:</b>	Rhizomatous, summer-green, small, grey, pinnate-leaved herb.	
<b>Conservancy:</b>	NM, CA, OT.	
<b>Habitat:</b>	Scree and tussockland.	
<b>Threats:</b>	Collectors; trampling by stock and wild animals; lack of legal land protection.	

### **Work undertaken to date**

Taxonomic status reviewed; opportunistic survey during Protected Natural Area Programme surveys; annual monitoring since 1995 of Long Gully population; second population of several hundred individuals discovered in Long Gully/Mt Ida in summer of 1997/98.

### **Priority sites for survey**

Canterbury; Mid Clarence Valley, Western Molesworth (Nelson/Marlborough); opportunistic survey, especially during tenure review.

### **Monitoring: objectives and priority sites**

Stoat Creek in Clarence Valley to establish stability and recruitment in the population.

### **Research questions**

Taxonomy ongoing. What is the population and reproductive ecology of *M. novae-zelandiae*? What impact does stock have on *M. novae-zelandiae* populations? Does competition occur with exotic swards?

### **Management needs**

Advocacy to stop collection and mitigate trampling; wild animal control; secure legal land protection especially through pastoral lease tenure review.

### **Selected references**

- Heenan, P.B. 1997. Fruit anatomy of *Clianthus puniceus* and *Swainsona novae-zelandiae* (Fabaceae-Galegeae). *New Zealand journal of Botany* 35: 119-123.
- Heenan, P.B. 1998a. Phylogenetic analysis of the *Carmichaelia* complex, *Clianthus*, and *Swainsona* (Fabaceae), from Australia and New Zealand. *New Zealand journal of Botany* 36: 21-40.
- Heenan, P.B. 1998b. *Montigena* (Fabaceae), a new genus endemic to New Zealand. *New Zealand Journal of Botany* 36: 41-51.
- Lee, A.T. 1948. The genus *Swainsona*. *Contributions from the New South Wales National Herbarium 1*: 131-271.
- Simpson, MJA 1987 *Swainsona novae-zelandiae*. *Journal of the Canterbury Alpine Garden Society*, October. Pp. 6-7.
- Thompson, J. 1993. A revision of the genus *Swainsona* (Fabaceae). *Telopea* 5: 427-581.

***Myosotidium hortensia* (Decne) Baill.**

- Family:** Boraginaceae (the only species in the *Myosotidium* genus).  
**Endemic to:** Chatham Islands.  
**Common name:** Chatham Island forget-me-not, kopakopa, kopukapuka, giant forget-me-not.  
**Ranking:** B, Rare. **In cultivation:** Yes.  
**Descriptor:** Glossy-leaved megaherb, up to 1 m in diameter, with pale to dark blue flowers which become purplish with age.  
**Conservancy:** WL.  
**Habitat:** Coastal bluffs, sand dunes, forest margins, and occasionally above high tide on sandy beaches and limestone bluffs (one place).  
**Threats:** Lack of legal land protection; stock (trampling, browse), especially cattle; weed encroachment (marram grass, *Ammophila arenaria*) on dune sites.

**Work undertaken to date**

Some site protection; monitoring of marram/forget-me-not association at Henga Scenic Reserve; restoration plantings in several protected areas on the Chathams, using several provenances; survey of most of the Chatham beaches and some areas of southern bluffs. Also a reasonable knowledge of Pitt Island beaches and South East and Mangere Islands.

**Priority sites for survey**

Southern cliffs of Chatham Island and offshore rock stacks.

**Monitoring: objectives and priority sites**

Ongoing at Henga Scenic Reserve - interaction with marram grass; ongoing west of Kaingaroa - monitoring disturbance by animals, high seas.

**Research questions**

**Management needs**

Secure legal land protection of other wild sites in the north of Chatham Island; animal control; reintroduction to dune sites in protected areas; control of marram grass at dune sites.

**Selected references**

- Greenwood, R.M. 1992. Some differences between plants of the Chatham Islands and the New Zealand mainland. *New Zealand Journal of Ecology* 16: 51-52.  
Wilson, C.M.; Given, D.R. 1989. *Threatened Plants of New Zealand*. DSIR Publishing, Wellington.



***Myosotis albosericea* Hook.f.**

- Family:** Boraginaceae
- Endemic to:** Dunstan Mountains.
- Common name:** Yellow forget-me-not.
- Ranking:** B, Rare. **In cultivation:** Yes.
- Descriptor:** Silver-leaved, yellow-flowered forget-me-not.
- Conservancy:** OT.
- Habitat:** Very dry loess caps, schist on crest of the Dunstan Mountains.
- Threats:** Trampling from sheep and hares; susceptible to catastrophic events as *M. albosericea* is a very localised endemic occurring in naturally low numbers; lack of legal land protection.

**Work undertaken to date**

Intensely monitored on the Dunstan Range.

**Priority sites for survey**

Dunstan Range; opportunistic survey.

**Monitoring: objectives and priority sites**

Continue monitoring to establish population dynamics.

**Research questions**

What is the ecology of *M. albosericea*?

**Management needs**

Management to exclude sheep and hares from sites, weed control may be needed at sites if sheep and hare exclusion is achieved; possible to translocate to sites within its range to extend the population and make it less susceptible to catastrophic events; secure legal land protection.

**Selected references**

Johnson, P.N.; Robertson, A. 1986. Rare species of *Myosotis* on the Dunstan Range: a botanical report. Unpublished report, Botany Division, DSIR.

***Myosotis colensoi* (Kirk) MacBride**

- Family:** Boraginaceae  
**Endemic to:** Northeastern South Island.  
**Common name:** Castle Hill forget-me-not, limestone forget-me-not.  
**Ranking:** B, Vulnerable. **In cultivation:** Yes.  
**Descriptor:** Grey/green, turf forming, white flowered forget-me-not.  
**Conservancy:** NM, CA.  
**Habitat:** Limestone pavement and bluffs.  
**Threats:** Weed encroachment (especially *Hieracium* spp.); lack of legal land protection; stock grazing and trampling.

**Work undertaken to date**

Unsuccessful survey in the Chalk Range; one site at Castle Hill Basin is fenced to exclude stock, the lessee is sympathetic; intensive monitoring; reproductive ecology is known; population structures and long term dynamics being studied.

**Priority sites for survey**

Chalk Range and Ben More, South Marlborough.

**Monitoring: objectives and priority sites**

Ongoing monitoring at Castle Hill, particularly for impacts of weeds, and to establish population dynamics.

**Research questions**

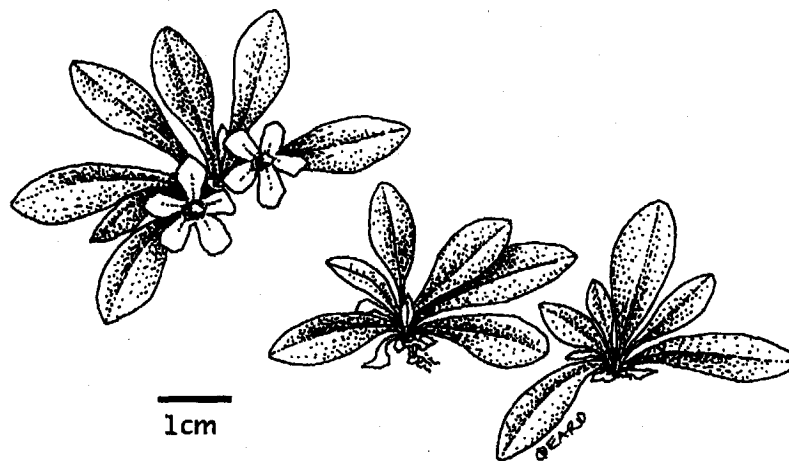
How can *Hieracium* be controlled?

**Management needs**

Control weeds; secure legal land protection at Flock Hill/Castle Hill; advocacy to mitigate stock damage.

**Selected references**

Wilson, C.M.; Given, D.R. 1989. *Threatened Plants of New Zealand*. DSIR Publishing, Wellington.



***Myosotis petiolata* var. *pottsiana* L.B.Moore**

- Family:** Boraginaceae  
**Endemic to:** Te Urewera.  
**Common name:** Pott's forget-me-not.  
**Ranking:** B, Vulnerable. **In cultivation:** Yes.  
**Descriptor:** A semi-erect, white flowered, diffusely branching rosette, covered with sparsely appressed hairs.  
**Conservancy:** EC/HB.  
**Habitat:** Occurs in riparian habitats and rocky outcrops.  
**Threats:** Deer browse; collectors; weed encroachment.

**Work undertaken to date**

Limited survey and habitat description; *Myosotis* genus being revised by A. Robertson, Massey University.

**Priority sites for survey**

Western edges of Ikawhenua Range, Waioweka Gorge and other historical sites.

**Monitoring: objectives and priority sites**

Dependant on survey results.

**Research questions**

What is the status of the taxa currently recognised in the *M. petiolata* complex (*M. petiolata* var. *petiolata*, *M. p.* var. *pansa*, *M. p.* var. *pottsiana*)?

**Management needs**

Animal control; advocacy with the public to mitigate collection; weed control at sites; cultivate and re-establish (i.e., translocate) to safe, historical sites.

**Selected references**

Bowen, D. 1985. A rare experience: rediscovering *Myosotis petiolata* var. *pottsiana*. *Wellington Botanical Society Bulletin* 42: 61-63.



***Myosotis pygmaea* var. *glauca* G.Simpson et G.M.Thomson**

- Family:** Boraginaceae  
**Endemic to:** Eastern South Island.  
**Common name:** Kaimanawa forget-me-not.  
**Ranking:** B, Rare. **In cultivation:** No.  
**Descriptor:** A grey, rosette-forming, small, forget-me-not.  
**Conservancy:** WG, OT, (CA, SL).  
**Habitat:** Found in fine, riparian gravels overlying "fines" (sand), stream banks and rock faces; open sites with few other plants, dumped mine workings.  
**Threats:** Trampling and disturbance of gravels (especially by wild horses in Moawhango); gold mining (Nevis); weed encroachment (grasses); lack of legal land protection.

**Work undertaken to date**

Intensive survey (1996) in Moawhango, with permanent vegetation plots established (104 plants recorded); opportunistic observations in Nevis (1992-1996); survey in the East Coast; wild horses have been removed from Moawhango; Survey of Otago sites in 1998; *Myosotis* genus being revised by A. Robertson, Massey University.

**Priority sites for survey**

Survey all historical sites including Nevis Valley, Harris Mountains and Kurrow (Otago), Mid Dome and Windon Burn (Southland), and Castle Hill Basin.

**Monitoring: objectives and priority sites**

Establish monitoring at each key site with the species as they are mostly very small, isolated populations.

**Research questions**

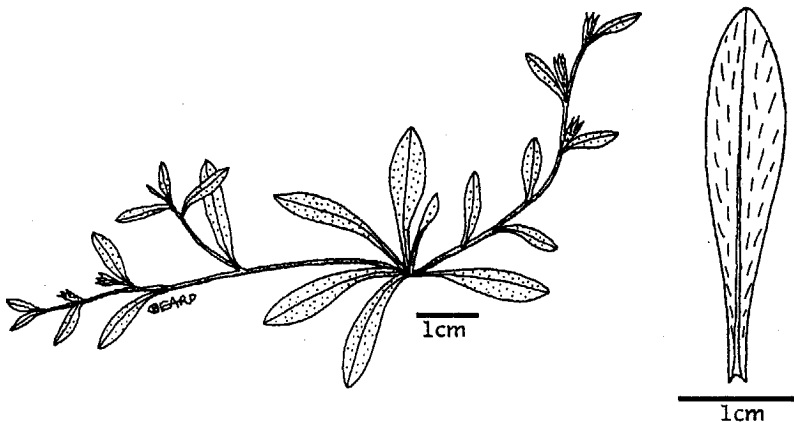
What is the taxonomic relationship of the named varieties in *M. pygmaea* to the parent variety, e.g. *M. p. var. pygmaea*, *M. p. var. minutiflora*, *M. p. var. glauca*, *M. p. var. drucei*? What is the ecology of *M. pygmaea* var. *glauca*?

**Management needs**

Continue to manage the Moawhango sites to ensure wild horses do not return; possible re-establishment in wild (sow seeds in wild and monitor); trial weed control experiments; secure legal land protection of known sites.

**Selected references**

Department of Conservation 1997. *Moawhango Ecology - Native plants at risk*. Department of Conservation, Wanganui Conservancy.



## ***Myriophyllum robustum* Hook.f.**

- Family:** Haloragaceae  
**Endemic to:** North and South Islands.  
**Common name:** Stout water-milfoil.  
**Ranking:** B, Rare. **In cultivation:** Yes.  
**Descriptor:** Aquatic emergent, fern-leaved water plant.  
**Conservancy:** NL, AU, WK, BP, WG, NM, WC, SL, (EC/HB, WL).  
**Habitat:** Occurs in lowland lakes, ponds, slow moving streams, kahikatea forest (water channels on mud), and in limestone sink holes (terrestrial form).  
**Threats:** Habitat loss; change in hydrology; competition from water weeds; peat mining; eutrophication; animal browse (goats, possums).

### **Work undertaken to date**

Well surveyed throughout the country except Fiordland; sites protected on the West Coast and Wanganui; re-discovered in Nelson.

### **Priority sites for survey**

Opportunistic; Fiordland (especially Big Bay, Transit Swamp).

### **Monitoring: objectives and priority sites**

Lowland sites for weed invasion; photopoints, used during November when fully emergent.

### **Research questions**

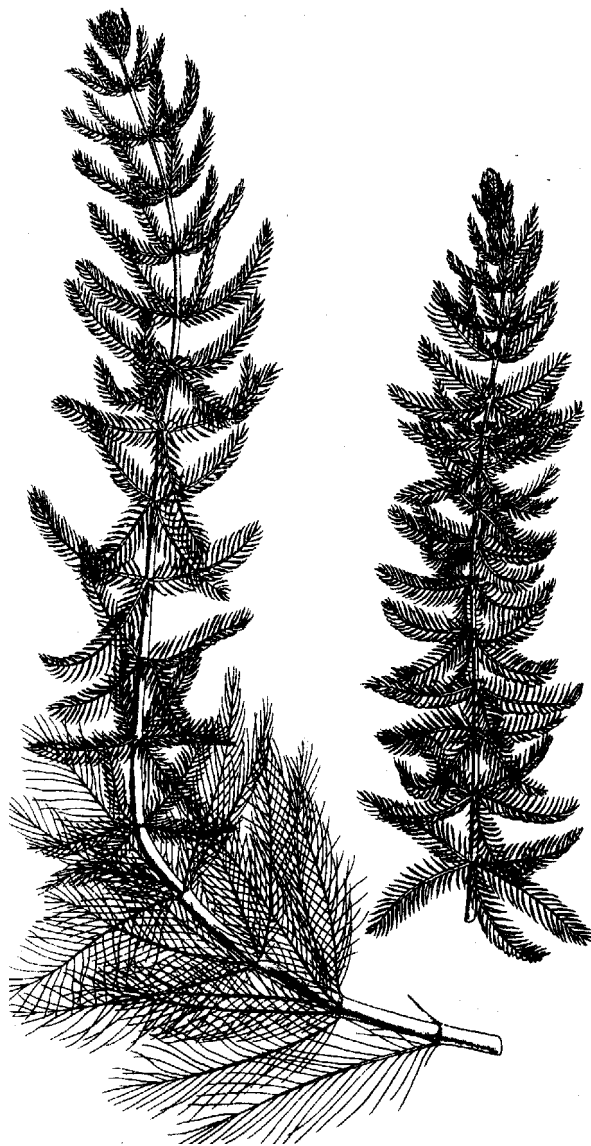
How are aquatic weeds best kept out of *M. robustum* habitat to prevent competition?

### **Management needs**

Advocacy is required to mitigate habitat loss, and maintain the weed free status of the lowland Waikato sites; translocation to new sites; keep weeds out of key habitats, e.g. Lake Matheson, Haast dune lakes; animal control.

### **Selected references**

- de Iange, P.J. 1985. *Myriophyllum robustum* Hook f. in the North Island. *Rotorua Botanical Society Newsletter* 8: 10-22.
- de Iange, P.J. 1987. Two new *Myriophyllum robustum* Hook f. localities in the Whangamarino Wetlands, Te Kauwhata. *New Zealand Botanical Society Newsletter* 7: 6-7.
- Tanner, C.C.; Clayton, J.S.; Wells, RDS 1988 The distribution, biology, habitat and conservation status of the endangered aquatic plants *Hydatella inconspicua* and *Myriophyllum robustum* in Northland, with recommendations for future management. Unpublished Report, Aquatic Plant Section, Ministry of Agriculture and Fisheries, Ruakura.



## ***Olearia fimbriata* (Petrie) Heads**

<b>Family:</b>	Asteraceae	
<b>Endemic to:</b>	Southeast South Island.	
<b>Common name:</b>	-	
<b>Ranking:</b>	B, Rare.	<b>In cultivation:</b> Yes.
<b>Descriptor:</b>	Low, divaricating, semi-deciduous tree.	
<b>Conservancy:</b>	CA, OT, SL.	
<b>Habitat:</b>	Hill slopes in grey scrub on Umbrella Mountains, Taieri Gorge, and extinct on the Otago peninsula.	
<b>Threats:</b>	Habitat loss/degradation (fire, native vegetation clearance); stock grazing/disturbance; lack of natural regeneration due to weed encroachment; lack of legal land protection.	

### **Work undertaken to date**

Survey throughout range; taxonomic revision published; translocation to Piano Flat (Southland); plants in cultivation.

### **Priority sites for survey**

Pomahaka River; Otago Peninsula; Taieri Gorge; Mt Cook through to Banks Peninsula; historical sites.

### **Monitoring: objectives and priority sites**

### **Research questions**

What is the ecology and habitat requirements of *O. fimbriata*? What affect does disturbance have on *O. fimbriata*? Is seedling establishment of *O. fimbriata* occurring in the wild?

### **Management needs**

Advocacy to mitigate effects of stock grazing and disturbance; weed control at sites to assist natural regeneration; secure legal land protection of key sites.

### **Selected references**

Heads, M. 1998. Biodiversity in the New Zealand divaricating tree daisies: *Olearia* sect. nov. (Compositae). *Botanical Journal of the Linnean Society* 127: 239-285.

## *Olearia fragrantissima* Petrie

- Family:** Asteraceae  
**Endemic to:** Eastern South Island.  
**Common name:** Fragrant tree daisy.  
**Ranking:** B, Vulnerable. **In cultivation:** Yes.  
**Descriptor:** Small, deciduous, erect tree to 15 m, with soft, pale-green leaves.  
**Conservancy:** CA, OT, SL.  
**Habitat:** Alluvial/riparian and mixed, low-broadleaved forest, and scrub.  
**Threats:** Habitat loss and degradation via seral forest and scrub clearance; stock, possum and goat grazing and disturbance; weed encroachment (grasses).

### Work undertaken to date

Protected (reserves and covenants) at Canterbury, Otago, and Southland; opportunistic survey and inventory; plants in propagation for restoration work; population enhancement at Kingdon property, Croydon (Southland); translocation to Croydon and Glenham Scenic Reserves (Southland).

### Priority sites for survey

Eastern Southland rivers.

### Monitoring: objectives and priority sites

Population structure; possum and goat browse.

### Research questions

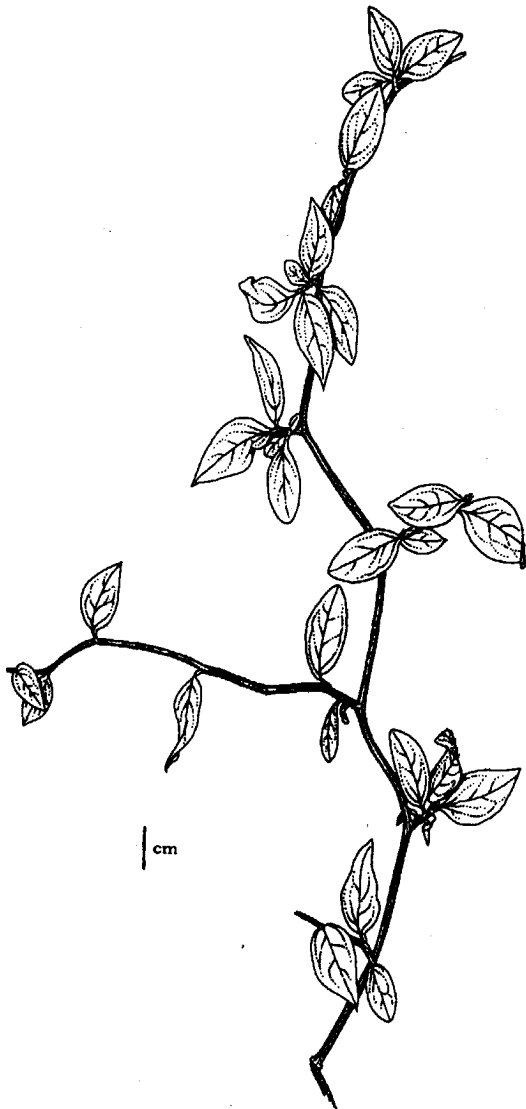
What are the germination requirements of *O. fragrantissima*? What was the extent of the historical distribution of *O. fragrantissima*?

### Management needs

Secure legal land protection of key sites; continue population enhancement and translocation work at the existing sites and initiate additional work at other key sites in Southland; advocacy to mitigate stock grazing; possum and goat control; weed control at sites.

### Selected references

- Heads, M. 1998. Biodiversity in the New Zealand divaricating tree daisies: *Olearia* sect. nov. (Compositae). *Botanical Journal of the Linnean Society* 127: 239-285.
- Rogers, G.; Barkla, J.; Rance, B.; Simpson, N. 1998. Recent discoveries of rare small-leaved shrubs and trees from Otago and Southland. *New Zealand Botanical Society Newsletter* 54: 8-13.



## *Olearia polita* Garn.-Jones et H.D.Wilson

- Family:** Asteraceae  
**Endemic to:** Moutere Ecological District.  
**Common name:** Glenhope tree daisy, Glenhope twig daisy.  
**Ranking:** B, Endangered. **In cultivation:** Yes.  
**Descriptor:** Shiny-, small-leaved, divaricating shrub-daisy.  
**Conservancy:** NM.  
**Habitat:** Open swampy, silver beech forest on valley floors and toe-slopes.  
**Threats:** Lack of legal land protection; stock disturbance; habitat destruction (clearance and drainage for farmland, forestry).

### Work undertaken to date

Survey of Glenhope catchment (450 plants known); input into Sustainable Management Plan for indigenous forestry to secure protected areas (unsuccessful); formal taxonomic recognition; research on ecology.

### Priority sites for survey

Further survey on similar landforms in Station Creek, Maruia Valley (West Coast), branches of Hope River headwaters, Glenhope.

### Monitoring: objectives and priority sites

Monitor success of management changes; monitor recruitment and weed dynamics.

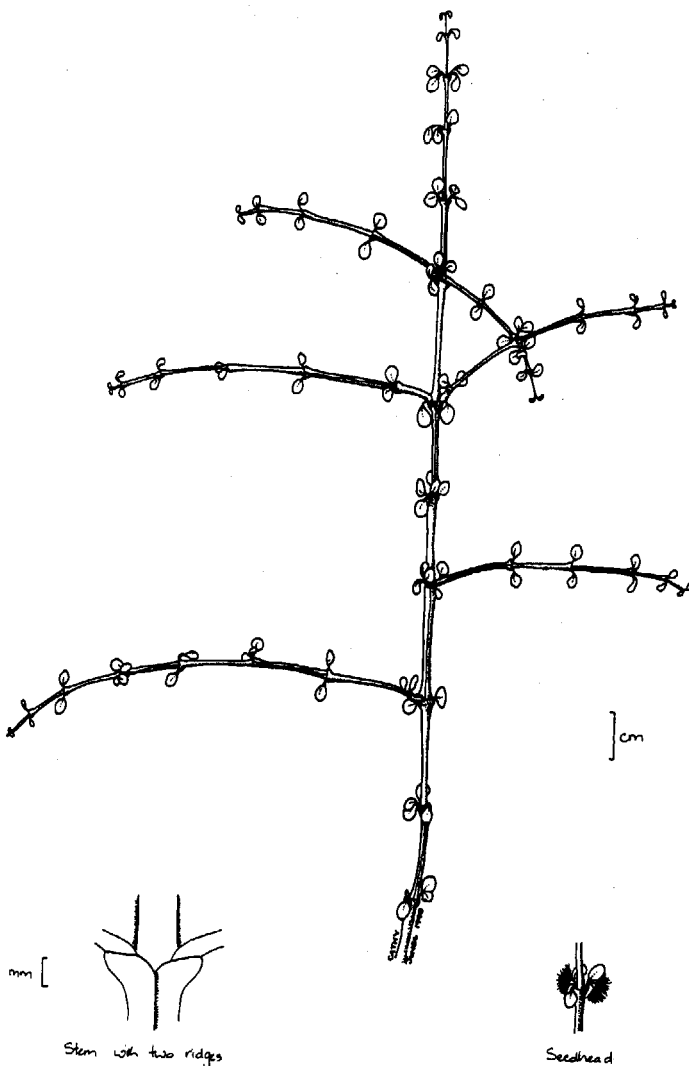
### Research questions

### Management needs

Secure legal land protection in core areas of Lamb Valley, Teal Creek and Cow Stream and fence from stock.

### Selected references

- Garnock-Jones, P.J.; Wilson, H.D. 1992. Two new species names in *Olearia* (Asteraceae) from New Zealand. *New Zealand Journal of Botany* 30: 365-368.
- Heads, M. 1998. Biodiversity in the New Zealand divaricating tree daisies: *Olearia* sect. nov. (Compositae). *Botanical Journal of the Linnean Society* 127:239-285.
- Williams, P.A.; Courtney, S.P. 1995. Site characteristics and population structures of the endangered shrub *Olearia polita* (Wilson et Garnock Jones), Nelson, New Zealand. *New Zealand Journal of Botany* 33: 237-241.





***Olearia* sp. nov. AK 178700**

**Family:** Asteraceae

**Endemic to:** Tutamoe Ecological District.

**Common name:** -

**Ranking:** B, Vulnerable.

**In cultivation:** Yes.

**Descriptor:** Stout shrub or small tree with tan-backed, large, leathery leaves.

**Conservancy:** NL.

**Habitat:** Montane cloud forest, often on basalt cliff face refuges.

**Threats:** Goat, stock, and pig browse.

**Work undertaken to date**

Animal control.

**Priority sites for survey**

Survey known and potential sites.

**Monitoring: objectives and priority sites**

Monitor sample populations for success of animal control.

**Research questions**

What is the taxonomic status of *Olearia* sp. nov. AK 178700?

**Management needs**

Propagate plants for translocation and population enhancement work; fence at least part of the populations in the Waimamaku Catchment (include with *Coprosma waima*) to exclude animals.

**Selected references**

## ***Pachystegia rufa* Molloy**

- Family:** Asteraceae  
**Endemic to:** Flaxbourne Ecological District.  
**Common name:** Red rock daisy.  
**Ranking:** B, Vulnerable. **In cultivation:** Yes.  
**Descriptor:** Shrubby, stout, thick-leaved woody daisy covered in reddish hairs.  
**Conservancy:** NM.  
**Habitat:** Greywacke bluffs.  
**Threats:** Browsing by possums, sheep, and goats; lack of legal land protection (all known sites are on privately owned land); large scale rock quarrying at new ferry terminal site; hybridism with other *Pachystegia* species.

### **Work undertaken to date**

Population survey and census complete; QEII covenant being set up for the largest population.

### **Priority sites for survey**

### **Monitoring: objectives and priority sites**

Monitor success of fencing on population dynamics and threat mitigation; monitoring to be done on the largest population once the QEII covenant is in place.

### **Research questions**

How is *P. rufa* propagated and cultivated? Is hybridism a threat to *P. rufa*?

### **Management needs**

Possum and goat control; secure legal land protection and fencing of Waterfall Stream population; mitigation of hybridism if found to be a threat.

### **Selected references**

Molloy, B.P.J. ; Simpson, M.J.A. 1980. Taxonomy, distribution and ecology of *Pachystegia* (Compositae): a progress report. *New Zealand Journal of Ecology* 3: 1-3.



***Peraxilla colensoi* (Hook.f.) Tiegh.**

- Family:** Loranthaceae (there are only two species in the *Peraxilla* genus).
- Endemic to:** New Zealand.
- Common name:** Korukoru, pirita, piriraki, crimson mistletoe, scarlet mistletoe.
- Ranking:** B, Vulnerable. **In cultivation:** No.
- Descriptor:** Shrubby hemi-parasite up to 3 m across.
- Conservancy:** EC/HB, TT, WG, NM, WC, CA, OT, SL, (BP, WL).
- Habitat:** Mostly beech forests on silver beech (*Nothofagus menziesii*) trunks and branches, especially at lower altitudes (0 - 500 m a.s.l.).
- Threats:** Browse (vertebrate and invertebrate); low recruitment; loss of native bird species involved with reproduction and dispersal; host death; habitat destruction (deforestation); collectors (especially for selling); vandalism; fungal disease.

**Work undertaken to date**

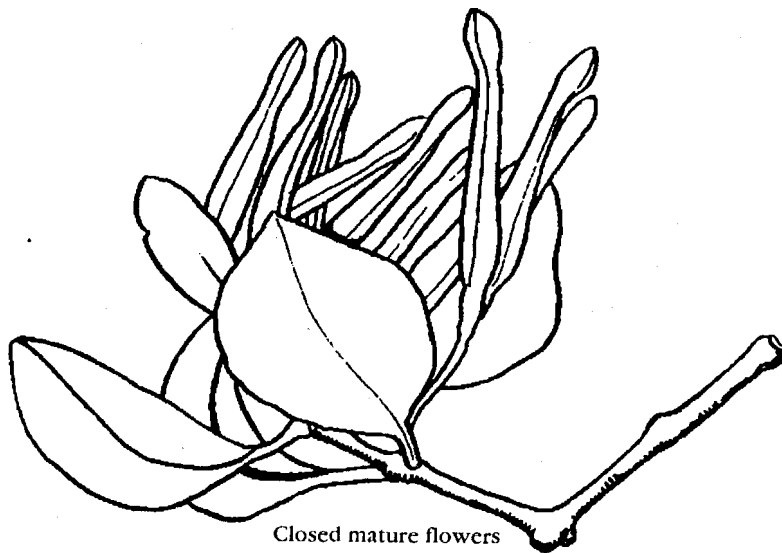
Survey and monitoring - Tongariro/Taupo, East Coast, Southland, West Coast and North Taranaki; banding of accessible hosts (North Taranaki); research on reproductive ecology; possum control at Eglinton Valley and extensive areas in South Westland; survey and monitoring at three sites in Southland; limited survey in Wellington Conservancy - no plants found; database/monitoring system set up in Tongariro/Taupo Conservancy; host tree collaring, West Coast Conservancy.

**Priority sites for survey**

Opportunistic; Northwest Nelson; Paparoa; Mt Te Aroha (Northern limit); continue surveys of historic sites in Wellington Conservancy.

**Monitoring: objectives and priority sites**

Monitoring success of management practices; possum control monitoring; monitoring will occur as part of a study on possum impacts in Canterbury.



Closed mature flowers

**Research questions**

What is the level to which possum populations should be held to ensure healthy populations of *P. colensoi*? What is the cause of die-back in the Catlins population? How is *P. colensoi* cultivated and translocated to new, hosts?

**Management needs**

Maintaining possum bait stations as appropriate to mitigate animal browse; continued possum control, collaring of hosts; and caging of mistletoes; seed collection for translocation to historical sites; population

enhancement at Rotoiti, Nelson Lakes; habitat restoration; advocacy to mitigate collection and vandalism.

### **Selected references**

- de Lange, P.J.; Norton, D.A. (eds.). 1997. *New Zealand's loranthaceous mistletoes*. Proceedings of a workshop hosted by Threatened Species Unit, Department of Conservation, CASS 17-20 July 1995. Department of Conservation, Wellington.
- Dopson, S.R. 1999. Management recommendations for the Loranthaceae mistletoe in the Tongariro/Taupo Conservancy, Department of Conservation. Science and Research Investigation No. 1991, Department of Conservation, Wellington.
- Norton, D.A.; Ladley, J.J.; Owen, H.J. 1997. Distribution and population structure of the loranthaceous mistletoes *Alepis flavida*, *Peraxilla colensoi* and *Peraxilla tetrapetala* within two New Zealand *Nothofagus* forests. *New Zealand Journal of Botany* 35: 323-336.
- Norton, D.A.; Ladley, J.J.; Sparrow, A.D. 1997. Development of non-destructive age indices for three New Zealand loranthaceous mistletoes. *New Zealand Journal of Botany* 35: 335-343.
- Norton, D.A.; Reid, N. 1997. Lessons in ecosystem management of threatened and pest loranthaceous mistletoes in New Zealand and Australia. *Conservation Biology* 11: 759-769.
- Ogle, C. C.; Wilson, P. 1985. Where have all the mistletoes gone? *Forest and Bird* 16(3) : 10-13

## ***Peraxilla tetrapetala* Tiegh.**

- Family:** Loranthaceae (there are only two species in the *Peraxilla* genus).
- Endemic to:** New Zealand.
- Common name:** Pirirangi, pikirangi, pikiraki, pirita, red mistletoe.
- Ranking:** B, Vulnerable. **In cultivation:** No.
- Descriptor:** Shrubby hemi-parasite up to 1.5 m across.
- Conservancy:** AU, WK, BP, EC/HB, TT, WG, WL, NM, WC, CA, OT, SL, (NL).
- Habitat:** Mostly beech forest on black/mountain beech (*Nothofagus solandri* complex) trunks and branches; also known to infect *Quintinia serrata* north of latitude 38°S, and in the far north *P. tetrapetala* has been recorded from *Metrosideros excelsa*, *Vitex lucens*, and *Weinmannia silvicola*.
- Threats:** Browse (vertebrate and invertebrate); low recruitment; loss of native bird species involved with reproduction and dispersal; mining on the West Coast; host death; habitat destruction (deforestation); collectors (especially for selling); vandalism; fungal disease.

### **Work undertaken to date**

Survey and monitoring - Tongariro/Taupo, East Coast/Hawke's Bay, Wanganui, Wellington, Nelson/Marlborough, West Coast and Southland Conservancies; banding of accessible hosts; caging and bait-stationing for possum/rat control and propagation trials in Hawke's Bay and Nelson/Marlborough; research on reproductive ecology and impacts of possum browse; possum control in Eglinton Valley; database/monitoring system set up in Tongariro/Taupo Conservancy; management plan prepared for populations of plants in Wellington Conservancy; monitoring being done at Craigieburn Forest Park and Mt Thomas Forest Park; fencing from stock and monitoring has been undertaken at the Boyle River site.

### **Priority sites for survey**

Opportunistic; Northwest Nelson: Paparoa; Great Barrier Island; Whirinaki Forest Park - only one plant known; further survey of Tararua Range required, Wellington Conservancy and Waitaanga Plateau (Wanganui Conservancy).

### **Monitoring: objectives and priority sites**

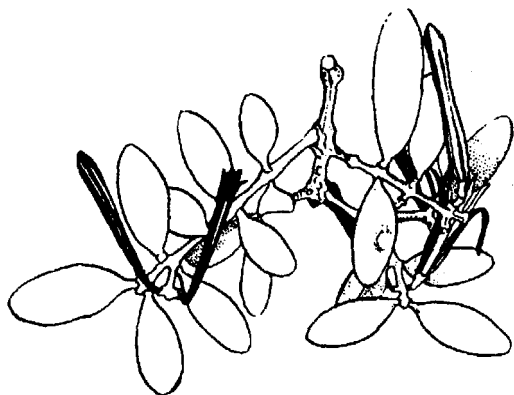
Monitoring of effectiveness of management practices; possum control monitoring; monitoring will occur as part of a study on possum impacts in Canterbury.

### **Research questions**

What is the level to which possum populations should be held to ensure healthy populations of *P. tetrapetala*? How is *P. tetrapetala* cultivated and translocated to new hosts? What are the seed dispersers of *P. tetrapetala*?

### **Management needs**

Collaring of hosts, caging of mistletoes, or maintaining possum bait stations as appropriate to mitigate animal



browse; continued possum control; seed collection for translocation to historical sites; implement Wellington Conservancy plan for extant mistletoes; enhancement of the Rotoiti, Nelson Lakes population; advocacy to mitigate collection and vandalism; habitat restoration.

### **Selected references**

- de Lange, P.J.; Norton, D.A. (eds.). 1997. *New Zealand's loranthaceous mistletoes*. Proceedings of a workshop hosted by Threatened Species Unit, Department of Conservation, CASS 17-20 July 1995. Department of Conservation, Wellington.
- Dopson, S.R. 1999. Management recommendations for the Loranthaceae mistletoe in the Tongariro/Taupo Conservancy, Department of Conservation. Science and Research Investigation No. 1991, Department of Conservation, Wellington.
- Norton, D.A.; Ladley, J.J.; Owen, H.J. 1997. Distribution and population structure of the loranthaceous mistletoes *Alepis flavida*, *Peraxilla colensoi* and *Peraxilla tetrapetala* within two New Zealand *Nothofagus* forests. *New Zealand Journal of Botany* 35: 323-336.
- Norton, D.A.; Ladley, J.J.; Sparrow, A.D. 1997. Development of non-destructive age indices for three New Zealand Loranthaceous mistletoes. *New Zealand Journal of Botany* 35: 335-343.
- Norton, D.A.; Reid, N. 1997. Lessons in ecosystem management of threatened and pest loranthaceous mistletoes in New Zealand and Australia. *Conservation Biology* 11: 759-769.
- Ogle, C.C.; Wilson, P. 1985. Where have all the mistletoes gone? *Forest and Bird* 16(3): 10-13.

## ***Pittosporum dallii* Cheeseman**

- Family:** Pittosporaceae  
**Endemic to:** Wangapeka Ecological District.  
**Common name:** Kahurangi kohuhu, Dall's pittosporum.  
**Ranking:** B, Vulnerable. **In cultivation:** Yes.  
**Descriptor:** Toothed, leathery-leaved shrub to subcanopy tree.  
**Conservancy:** NM.  
**Habitat:** Montane beech forest and bluffs, and ultramafic outcrop shrublands.  
**Threats:** Browsing and ring barking (goats, deer).

### **Work undertaken to date**

Recent survey resulted in the discovery of major populations in the Anatoki River catchment; surveying all suitable habitats within the newly established Kahurangi National Park; monitoring programmes at Devil and Snow Rivers for population dynamics and response to browse control established; animal (goat) control.

### **Priority sites for survey**

Further survey in Anatoki River.

### **Monitoring: objectives and priority sites**

Continue monitoring at Devil and Snow Rivers to determine the effects of goat control.

### **Research questions**

What affects seedling establishment of *P. dallii*?

### **Management needs**

Increase wild animal control.

### **Selected references**

Hayward, J.D. 1982. *Pittosporum dallii*. New Zealand Forest Service, Nelson.



## ***Pittosporum obcordatum* Raoul**

(including *Pittosporum obcordatum* var. *kaitaiaensis* Laing et Gourlay)

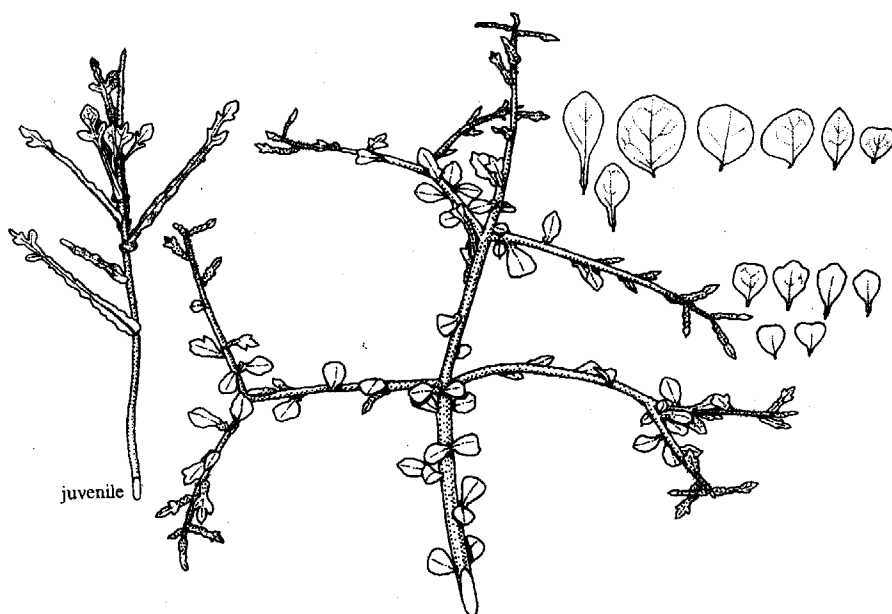
- Family:** Pittosporaceae  
**Endemic to:** North and South Islands.  
**Common name:** Heart-leaved kohuhu.  
**Ranking:** B, Rare. **In cultivation:** Yes.  
**Descriptor:** Columnar, divaricating small tree.  
**Conservancy:** NL, EC/HB, WG, WL, OT, SL, (CA).  
**Habitat:** Alluvial kahikatea-dominated forest and scrub subject to periodic flooding.  
**Threats:** Habitat destruction/fragmentation; lack of recruitment due to browsing and weed encroachment; sex-ratio imbalance in small populations; lack of legal land protection (East Coast/Hawke's Bay Conservancy).

### **Work undertaken to date**

Survey in East Coast/Hawke's Bay, Wanganui, Wellington, Southland, and Otago Conservancies; ecology reviewed; taxonomy assessed; seedling recruitment monitoring, and plants grown and gifted to landowners in Wellington Conservancy; Protected Natural Areas site protected via fencing and covenanting in Hawke's Bay Conservancy; weed removal in East Coast Conservancy; monitoring for the past three years of a plot at Paengaroa Scenic Reserve, Wanganui Conservancy for seedling recruitment and growth rates; population management plans prepared in Wellington Conservancy; weed control at one site in Wellington Conservancy; monitoring at Wairua, Northland.

### **Priority sites for survey**

Akaroa Bay (Banks Peninsula), Catlins (Otago), Back Valley and Western Southland (Southland), Banks Peninsula (type locality); further survey of bush remnants in the Wairarapa Plains Ecological District and Hautapu Valley (Taihape); opportunistic survey.



### **Monitoring: objectives and priority sites**

Ongoing at Paengaroa Scenic Reserve, and Gladstone for seedling recruitment and growth rates; monitor population enhancement at Manapouri; population dynamics and recruitment at Back Valley (Southland).

### **Research questions**

How are divaricating plant communities restored?



### **Management needs**

Reinstate natural flooding regime in Wairoa River floodplains in Northland (a major stronghold for *P. obcordatum*); implement Wellington Conservancy population management plans; enhance extant populations with ex-situ stock of the same provenance; animal control: continue weed control at sites; secure legal land protection of both sites in Wellington Conservancy; secure legal land protection in Hawke's Bay (privately owned - almost all sites are being covenanted under Protected Natural Areas Programme) and of railways land near Mataroa (*Olearia gardneri* is present here too).

### **Selected references**

- Clarkson, B.D. 1991. Studies on threatened plants Part 1: ecology and conservation of heart-leaved kohuhu (*Pittosporum obcordatum* s.s.) in the East Coast Regional Conservancy. DSIR Land Resources Contract Report No. 91/51 (Part 1). DSIR Land Resources, Rotorua.
- Clarkson, B.D.: Clarkson, B.R. 1994. Ecology of the elusive endemic shrub, *Pittosporum obcordatum* Raoul. *New Zealand Journal of Botany* 32: 155-168.
- Morrison, J.V. 1982. Fiordland National Park - a new locality for the divaricating shrub *Pittosporum obcordatum* Raoul. *New Zealand Journal of Botany* 20: 195-196.
- Rogers, G.; Barkla, J.; Rance, B.; Simpson, N. 1998. Recent discoveries of rare small-leaved shrubs and trees from Otago and Southland. *New Zealand Botanical Society Newsletter* 54: 8-13.
- Sainsbury, GOK 1923 Notes on *Pittosporum obcordatum*. *Transactions of the New Zealand Institute* 54: 5,2-573.
- Simpson, N. 1995. *Pittosporum obcordatum* in Catlins Forest Park. *New Zealand Botanical Society Newsletter* 41: 8-9.
- Wardle, P. 1994. A locality for *Pittosporum obcordatum* in Catlins Forest Park. *Conservation Advisory Science Notes* No. 85. Department of Conservation, Wellington.

## ***Pittosporum patulum* Hook.f.**

- Family:** Pittosporaceae  
**Endemic to:** Eastern South Island, and Northwest Nelson.  
**Common name:** Pitpat.  
**Ranking:** B, Endangered. **In cultivation:** Yes.  
**Descriptor:** Small, slender tree with very dark, narrow, toothed leaves..  
**Conservancy:** NM, CA, OT.  
**Habitat:** Montane beech forest.  
**Threats:** Browsing from goats, deer, possums; lack of pollination due to sex-ratio imbalance and small, fragmented populations; lack of adults; difficult to maintain in cultivation.

### **Work undertaken to date**

Survey in Wairau Valley (Marlborough), Cobb (Northwest Nelson); monitoring programme set up on Mt Patriarch and Lees Stream (Wairau Valley), and Cobb Valley; banding of some saplings; revisited several NZFS permanent 20 x 20 m plots on a single species survey line where species historically occurred (Temple Valley, MacKenzie Basin) and species is now absent from plots; *P. patulum* Recovery Plan in preparation by the Department; *P. patulum* Recovery Group set up.

### **Priority sites for survey**

Cass River, Canterbury; Vicinity of Lake Ohau, Canterbury; Western Otago; branches of Wairau Catchment, Marlborough.

### **Monitoring: objectives and priority sites**

Continue monitoring in the Cobb, and Marlborough to determine population dynamics and success of browse control.

### **Research questions**

What is the reproductive ecology of *P. patulum*? How can *P. patulum* be protected from possum and deer browse? What are the optimal conditions required to keep *P. patulum* in cultivation?



### **Management needs**

Exclosure plots for recruitment and to isolate relative effects of different browsers; collaring; possum, deer, and stock control; population enhancement at Rotoiti, Nelson Lakes; population enhancement by cuttings to boost density; develop successful propagation and cultivation techniques.

### **Selected references**

Joyce, L. 1993. Animal browse of *Pittosporum patulum* seedlings: Chalice-Patriarch Ridge, north-west Nelson. Unpublished Diploma in Wildlife Management Thesis, University of Otago, Dunedin.

## *Pittosporum turners* Petrie

- Family:** Pittosporaceae  
**Endemic to:** Central Volcanic Plateau.  
**Common name:** Turner's kohuhu.  
**Ranking:** B, Rare. **In cultivation:** Yes.  
**Descriptor:** Columnar, divaricating tree in juvenile stage, spreading form as an adult.  
**Conservancy:** BP, WK, TT, WG.  
**Habitat:** Alluvial flood plains where it gets cold - generally, frost hollows with a high water table.  
**Threats:** Possum browse prevents flowering and fruiting; hybridism at one site; land clearance; lack of legal land protection.

### Work undertaken to date

Survey in the Northwest Ruahine Ranges, Wanganui Conservancy, South Whirinaki (Bay of Plenty), East Coast/Hawke's Bay; ongoing possum control programmes in Erua, Tongariro/Taupo Conservancy, and the Northwest Ruahine Ranges; ecology known.

### Priority sites for survey

Pureora Forest Park, and Rangataua; valleys of Kaimanawa Ranges (Ripia Valley plants on private land).

### Monitoring: objectives and priority sites

Ongoing: monitoring at Erua, Ruahine Corner, Kuratau, and Otamangakau; monitoring the success of management practices i.e., possum control.

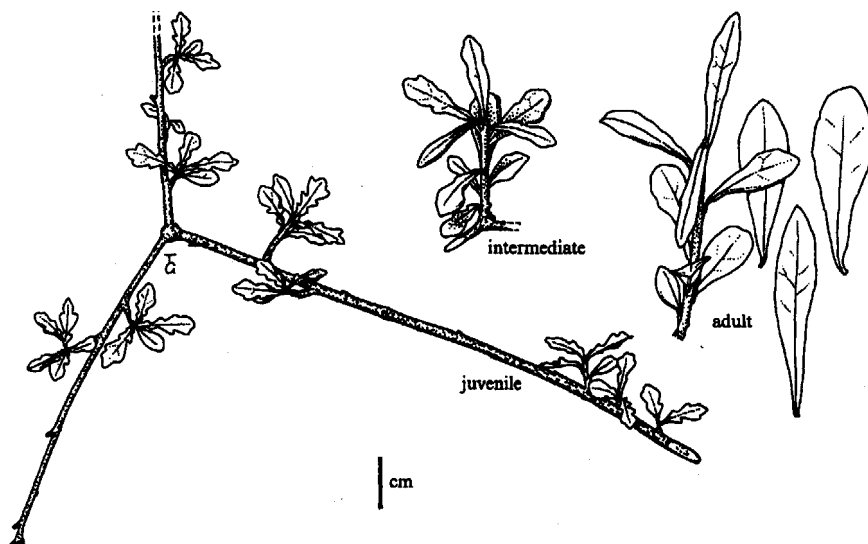
### Research questions

### Management needs

Possum control, including collaring; mitigate the effects of hybridism; secure legally protected land.

### Selected references

- Ecroyd, C.E. 1988. *Pittosporum turners* at Whenuakura clearing. Rotorua Botanical Society Newsletter 15: 44-48.  
Ecroyd, C.E. 1990. *Pittosporum turners* conspicuous by absence from park. Tongariro 37: 4-7.



- Ecroyd, C.E. 1994. Regeneration of *Pittosporum turners* communities. Conservation Advisory Science Notes No. 99. Department of Conservation, Wellington.  
Nicholls, J.L. 1988. *Pittosporum turners* at head of the Ripia. Rotorua Botanical Society Newsletter 15: 50.  
Rogers, G. 1988. Parentless *Pittosporum turners*. Wellington Botanical Society Bulletin 44: 26-36.  
Shaw, W.B. 1989. A visit to *Pittosporum turners* in the Ripia Valley. Rotorua Botanical Society Newsletter 16:15-17.

***Polystichum* sp. nov. (of Brownsey and Smith-Dodsworth 1989)**

**Family:** Dryopteridaceae

**Endemic to:** Chatham Islands.

**Common name:** Chatham Islands shield fern.

**Ranking:** B, Endangered.

**In cultivation:** Yes.

**Descriptor:** Robust, tufted fern with very large, bright-green to light-olive-green fronds covered in scales with ciliated edges.

**Conservancy:** WL.

**Habitat:** Forests, stream banks, and swamps.

**Threats:** Continued clearance of forest habitat; cattle in protected areas cause mechanical damage and compact the ground.

**Work undertaken to date**

Opportunistic survey on Chatham and Pitt Islands; protected in several areas and to be protected in proposed covenants; taxonomic revision in progress.

**Priority sites for survey**

Southern half of Chatham Island, and Pitt and South East Islands in their entirety.

**Monitoring: objectives and priority sites**

Awaiting comprehensive survey, recruitment in protected areas.

**Research questions**

What is the taxonomic status of *Polystichum* sp. nov.?

**Management needs**

Secure legal land protection; control cattle in protected areas.

**Selected references**

Brownsey, P.J.; Smith-Dodsworth, J.C. 1989. *New Zealand Ferns and Allied Plants*. David Bateman Ltd, Auckland.

***Prasophyllum* aff. *patens***

- Family:** Orchidaceae  
**Endemic to:** North Island and Chatham Islands.  
**Common name:** Swamp leek orchid.  
**Ranking:** B, Vulnerable. **In cultivation:** Yes.  
**Descriptor:** Tall plants with tubular-leaves. Flowers are large, conspicuous, and of variable colour, and are "up-side down" (compared with the majority of the Orchidaceae).  
**Conservancy:** NL, WK, TT, WG, WL, BP, (AU).  
**Habitat:** Occurs in pools of water in peat bogs, especially with *Baumea anthrophylla*.  
**Threats:** Loss of wetland habitats; collectors; lack of legal land protection (of biggest known population at Kutaroa, near Waiouru); weed encroachment.

**Work undertaken to date**

Survey near Te Paki, Motutangi, Ohia (Northland), Kaitoke Swamp (Great Barrier Island), Kutaroa and Otahupitara Swamps near Waiouru (Wanganui Conservancy), Rangataua, Tongariro National Park, Pihanga (Tongariro/Taupo Conservancy); taxonomic resolution in progress.

**Priority sites for survey**

Ngamatea West Swamp, Waiouru; other opportunistic survey via orchid enthusiasts.

**Monitoring: objectives and priority sites**

Two key sites: Ocean Bay on Northern Chatham Island, and Waipaua Block Scientific Reserve on Pitt Island; continue to monitor near Waiouru (Tangiwai) to determine population trends.

**Research questions**

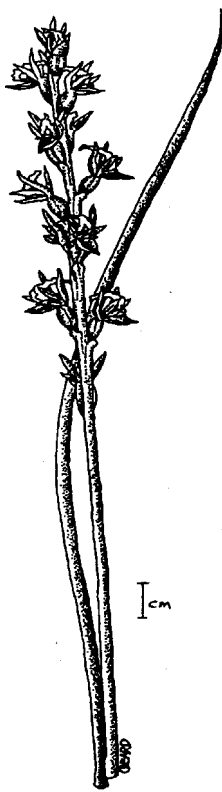
Taxonomic research ongoing.

**Management needs**

Secure legal land protection at swamps near Waiouru; advocacy with iwi and with orchid collectors to stop collecting and report sites found; weed control at sites.

**Selected references**

St George, I.; Irwin, B.; Hatch, D. 1996. *Field Guide to the New Zealand Orchids*. New Zealand Native Orchid Group, Wellington.



## **Puccinellia raroflorens** Edgar

- Family:** Poaceae  
**Endemic to:** Southern South Island.  
**Common name:** Saltgrass.  
**Ranking:** B, Rare. **In cultivation:** No.  
**Descriptor:** Dwarf, tufted salt-grass that rarely flowers.  
**Conservancy:** OT, SL.  
**Habitat:** Saltpan margins and stony coastal turf.  
**Threats:** Weed encroachment; trampling by stock; nutrient supplements degrading habitat.

### **Work undertaken to date**

Taxonomy resolved; survey; three populations protected in DOC reserves, another two are covenanted in Central Otago.

### **Priority sites for survey**

Stewart Island, Foveaux Strait.

### **Monitoring: objectives and priority sites**

Monitor for success of weed control at sites.

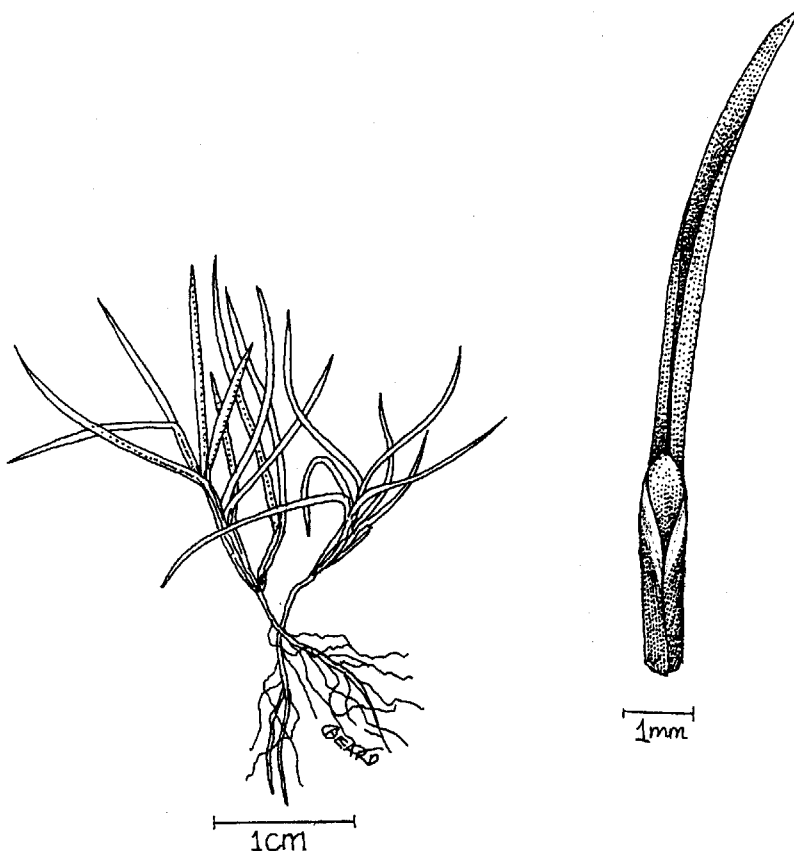
### **Research questions**

### **Management needs**

Weed control at sites; advocacy with landowners to prevent habitat loss and degradation.

### **Selected references**

- Allen, R.B.; McIntosh, P.D. 1997. Guidelines for conservation of salt pans in Central Otago. *Science for Conservation*. 49. Department of Conservation, Wellington.
- Edgar, E. 1996. *Puccinellia* Parl. (Gramineae: Poaceae) in New Zealand. *New Zealand Journal of Botany* 34: 17-32.
- Hewitt, A.E.; Balks, M.R. 1988. Review of some halophyte habitats, Central Otago. Unpublished report, New Zealand Soil Bureau, DSIR, Dunedin.



***Rachelia glaria* J.M.Ward et Breitw.**

- Family:** Asteraceae (the only species in the *Rachelia* genus).  
**Endemic to:** Southeast Marlborough.  
**Common name:** Marlborough scree daisy.  
**Ranking:** B, Vulnerable. **In cultivation:** Yes.  
**Descriptor:** Rhizomatous, woolly-leaved, prostrate herbaceous daisy.  
**Conservancy:** NM, (CA).  
**Habitat:** High-altitude scree in the driest parts of inland Marlborough.  
**Threats:** Wild animal disturbance causing mechanical damage to rhizomes; trampling by goats and chamois; lack of legal land protection; recreational use of land (skiing).

**Work undertaken to date**

Survey of the five known sites; taxonomic status resolved.

**Priority sites for survey**

Middle Clarence, mountains on Hossack and Cloudy Range, Molesworth.

**Monitoring: objectives and priority sites**

Monitor in Nelson/Marlborough.

**Research questions**

Research by management.

**Management needs**

Ongoing wild animal control; secure legal land protection; advocacy with recreational land users to increase awareness.

**Selected references**

Ward, J.M.; Breitwieser, I.; Lovis, J.D 199'. *Rachelia glaria* (Compositae), a new genus and species from the South Island of New Zealand. *New Zealand Journal of Botany* 35: 145-154.

## ***Rhopalostylis* aff. *sapida***

<b>Family:</b>	Arecaceae	
<b>Endemic to:</b>	Chatham Islands.	
<b>Common name:</b>	Chatham Islands nikau.	
<b>Ranking:</b>	B, Vulnerable.	<b>In cultivation:</b> Yes.
<b>Descriptor:</b>	A tall palm.	
<b>Conservancy:</b>	WL.	
<b>Habitat:</b>	Forest, especially lowland, mixed broadleaf forest.	
<b>Threats:</b>	Habitat destruction; many sites on the Chathams have critically low numbers of surviving adults; loss of bird dispersers <i>parea</i> , <i>Hemiphaga novaeseelandiae</i> var. <i>chathamensis</i> ); on Pitt Island, the stronghold of the species, the overwhelming problems are grazing, trampling, and rooting preventing seedling establishment. Regeneration is virtually absent in the Chathams in all but Nikau Bush Scenic Reserve on Chatham Island; storm damage is a problem for remaining outlier plants and aged adults in existing protected areas.	

### **Work undertaken to date**

Some reserves have been established featuring *R. aff. sapida*, but, to date, only one effectively protects the species; plants have been translocated to one southern site; several paired enclosure/non-enclosure plots have been established in Waipaua Block of Pitt Island Scenic Reserve - the core area for the species; monitoring lines established in Nikau Bush forest; taxonomic status currently being resolved by University of Auckland.

### **Priority sites for survey**

### **Monitoring: objectives and priority sites**

Recruitment at Waipaua Block on Pitt Island Scenic Reserve is being compared in enclosure and non-enclosure plots set up in 1995 to determine the impacts of resident sheep and pigs in the reserve. A further pair is to be established in the densest nikau forest; continue monitoring transect in Nikau Bush Scenic Reserve.

### **Research questions**

What is the taxonomic status of *R. aff. sapida*?

### **Management needs**

Control pigs and sheep on Pitt Island; enhance remnant populations on Chatham Island; translocate to further sites in the north of Chatham island; effective exclusion of stock from Chatham reserves; enhance the population of bird dispersers.

### **Selected references**

- Enwright, N.J. 1985. Age, reproduction and biomass allocation in *Rhopalostylis sapida* (Nikau Palm). *Australian Journal of Ecology* 10: 461-467.
- Greenwood, R.M. 1992. Some differences between plants of the Chatham Islands and the New Zealand mainland. *New Zealand Journal of Ecology* 16: 51-52.



## ***Rorippa divaricata* (Hook.f.) Garn.-Jones et Jonsell**

- Family:** Brassicaceae  
**Endemic to:** Kermadec, North and South Islands.  
**Common name:** New Zealand mustard cress, matangoa, New Zealand water cress, New Zealand land cress.  
**Ranking:** B, Endangered. **In cultivation:** Yes.  
**Descriptor:** A short lived, often annual, herb with erect stems and pods at right angles.  
**Conservancy:** NL, AU, BP, NM, (WK, EC/HB, WG).  
**Habitat:** Seabird islands, open coastal forests and shrublands, lake margins and damp forest banks.  
**Threats:** Browse; disease (*Albugo sp.*); habitat destruction; weed encroachment; lack of legal land protection.

### **Work undertaken to date**

Some survey of historic sites; some material in cultivation but possibly not botanical gardens; taxonomy resolved; material collected from Blue Lake and used for population enhancement; recently discovered at Lake Okataina (Bay of Plenty Conservancy), and Abel Tasman National Park (Nelson/Marlborough Conservancy); Coastal Cress/Nau Recovery Plan has been published; Coastal Cress Recovery Group set up.

### **Priority sites for survey**

Re-survey past sites (Whitecliffs in North Taranaki), Kermadec Islands (McCauley Island), Hauraki Gulf islands, Mokoia Island).

### **Monitoring: objectives and priority sites**

Monitor known populations (Mokohinau Islands (especially Fanal Island), Lady Alice Island, Blue Lake) for population trends; monitor populations for success of management actions (e.g. browse and weed control).

### **Research questions**

What are the population dynamics of *R. divaricata*? What is the ecology of *R. divaricata*? What is the disturbance regime required to allow regeneration? How is disease (e.g. *Albugo sp.*) best managed in the field?

### **Management needs**

Browse and weed control, and to monitor efficacy of such actions; disease control in the field; seed collection for ex situ cultivation and translocation to historic sites; secure legal land protection.

### **Selected references**

- Beadel, S.; Pardy, G. 1998. *Rorippa divaricata* near Rotorua. *New Zealand Botanical Society Newsletter* 52: 10-11.  
Garnock Jones, P.J. 1978. *Rorippa* (Cruciferae, Arabidae) in New Zealand. *New Zealand Journal of Botany* 16: 119-122.  
Garnock Jones, P.J. 1988. *Rorippa divaricata* (Brassicaceae): a new combination. *New Zealand Journal of Botany* 26: 479-480.  
Norton, D.A.; de Lange, P.J. 1999. *National Coastal Cress/Nau Recovery Plan*. Department of Conservation, Wellington.



***Scutellaria novae-zelandiae* Hook.f.**

- Family:** Lamiaceae  
**Endemic to:** Nelson, and northwestern Marlborough.  
**Common name:** New Zealand skullcap, shovel mint.  
**Ranking:** B, Endangered. **In cultivation:** Yes.  
**Descriptor:** Creeping mint-like herb with angular stems, white helmet-like flowers and shovel-shaped seed pods.  
**Conservancy:** NM.  
**Habitat:** Occurs on free-draining, alluvial matai, black beech, and totara forest.  
**Threats:** Habitat destruction; browsing and trampling by stock of remnant forest understorey; pig rooting; weed encroachment; lack of legal land protection.

**Work undertaken to date**

Survey has resulted in new populations being discovered; opportunistic monitoring; site covenanting; research on reproductive ecology.

**Priority sites for survey**

Survey further alluvial forest and riparian locations.

**Monitoring: objectives and priority sites**

General opportunistic presence/absence monitoring.

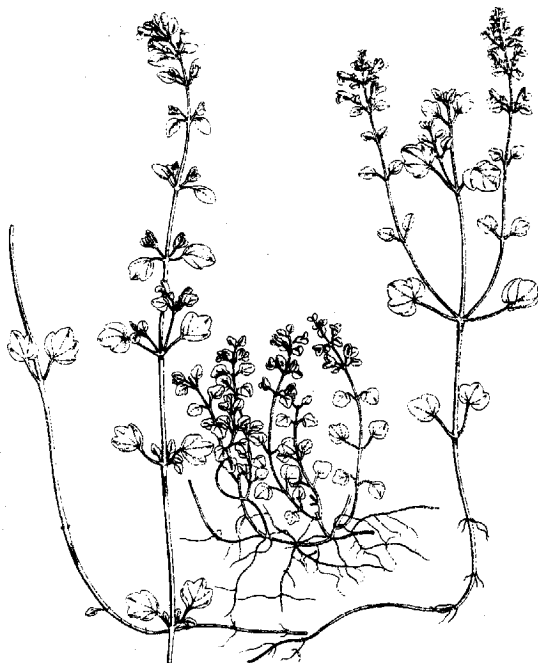
**Research questions**

**Management needs**

Ongoing legal and physical protection of forest remnants; advocacy for weed and stock control; weed control at sites (especially *Tradescantia*); investigate the potential for translocating *S. novae-zelandiae* to other sites within its range.

**Selected references**

Williams, P.A. 1992. Ecology of the endangered herb *Scutellaria novae-zelandiae*. *New Zealand Journal of Ecology* 16: 127-136.



***Senecio scaberulus* (Hook.f.) D.Drury**

- Family:** Asteraceae  
**Endemic to:** North, South and Chatham Islands.  
**Common name:** -  
**Ranking:** B, Vulnerable. **In cultivation:** Yes.  
**Descriptor:** A coastal daisy, with silvery-green, velvety textured leaves.  
**Conservancy:** NL, AU, WK, WL, (CA, NM, OT).  
**Habitat:** Occurs in lowland and coastal habitats.  
**Threats:** Hybridism with *S. hispidulus*; habitat destruction; weed encroachment; lack of legal land protection; inappropriate weed control.

**Work undertaken to date**

Survey of all past known locations; ecology known.

**Priority sites for survey**

Little and Great Barrier, Ponui, Waiheke, and Rangitoto Islands, Great Exhibition Bay, Eastern Northland, and Chatham Islands.

**Monitoring: objectives and priority sites**

Monitor population dynamics at Mt. Camel, Papanui Point.

**Research questions**

How is *S. scaberulus* habitat best managed? What is the effect of hybridism? What are the best weed control methods when *S. scaberulus* is present?

**Management needs**

Advocacy, because it can be confused with adventive fireweeds/senecios and therefore sprayed to be controlled; translocation and population enhancement of existing sites; appropriate weed control at sites; secure legal land protection.

**Selected references**

Drury, D.G. 1974. Illustrated and annotated key to the erechitoid senecios in New Zealand (Senecioneae-Compositae) with a description of *Senecio diaschides*. *New Zealand Journal of Botany* 12: 513-540.



## ***Simplicia laxa* Kirk**

- Family:** Poaceae (there are only two species in the *Simplicia* genus).  
**Endemic to:** Wairarapa and Otago.  
**Common name:** -  
**Ranking:** B, Endangered. **In cultivation:** Yes.  
**Descriptor:** Low, creeping grass with fine, open seedhead.  
**Conservancy:** OT, (WL).  
**Habitat:** Fertile, dry substrates in shady rock over-hangs.  
**Threats:** Weed encroachment (other grasses); collectors.

### **Work undertaken to date**

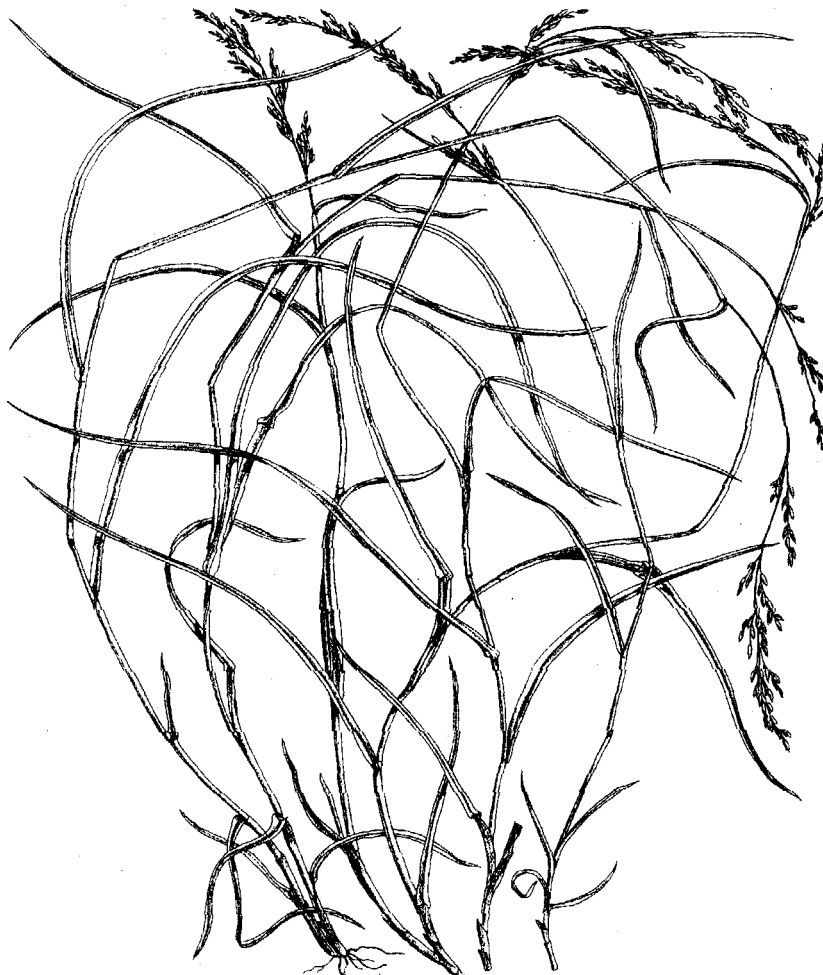
Rediscovered after survey in Otago; limited survey in Wellington; research on ecology and reproduction; Waitaki Valley population under a legal management agreement; monitoring at Old Man Range; suitable areas for survey identified in Wellington Conservancy and distribution maps prepared at various spatial scales.

### **Priority sites for survey**

Opportunistic; Dry and Makara River Valleys, Wairarapa; limestone areas north of Aorangi Forest Park, Wellington Conservancy.

### **Monitoring: objectives and priority sites**

Set up at Otago for population dynamics.



### **Research questions**

What are the habitat requirements of *S. laxa*?

### **Management needs**

Weed control at sites; advocacy to prevent collection.

### **Selected references**

- Johnson, P.N. 1992. The rare grass, *Simplicia laxa*: how to recognise it. Unpublished report prepared for DOC, Landcare Research, Dunedin.
- Johnson, P.N. 1995. The rare grass, *Simplicia laxa*: field status, ecology and conservation. *Science for Conservation 15*. Department of Conservation, Wellington.

***Tupeia antarctica* Cham et Schltr**

- Family:** Loranthaceae (the only species in the *Tupeia* genus).  
**Endemic to:** North and South Islands.  
**Common name:** Taapia, pirita, green mistletoe, or white mistletoe.  
**Ranking:** B, Rare. **In cultivation:** No.  
**Descriptor:** A shrubby, pubescent, hemi-parasite.  
**Conservancy:** NL, WK, BP, EC/HB, TT, WG, WL, NM, CA, OT, SL, (AU, WC).  
**Habitat:** Tends to favour seral vegetation where it usually parasitises a large number of often short-lived hosts (native and exotic), with a predominantly eastern distribution.  
**Threats:** Browse (vertebrate and invertebrate); reduction in native bird species involved in reproduction and dispersal; difficult to cultivate; collectors; vandalism; fungal disease; habitat destruction.

**Work undertaken to date**

Survey at Tongariro/Taupo, East Coast/Hawke's Bay, Bay of Plenty, Southland, Wellington, and Wanganui Conservancies; monitoring at Tongariro/Taupo, Hawke's Bay, Bay of Plenty, Nelson/Marlborough, Southland, and Wanganui Conservancies; banding of accessible hosts; research on ecology and reproduction; possum control; caging and bait stationing, and one site protected

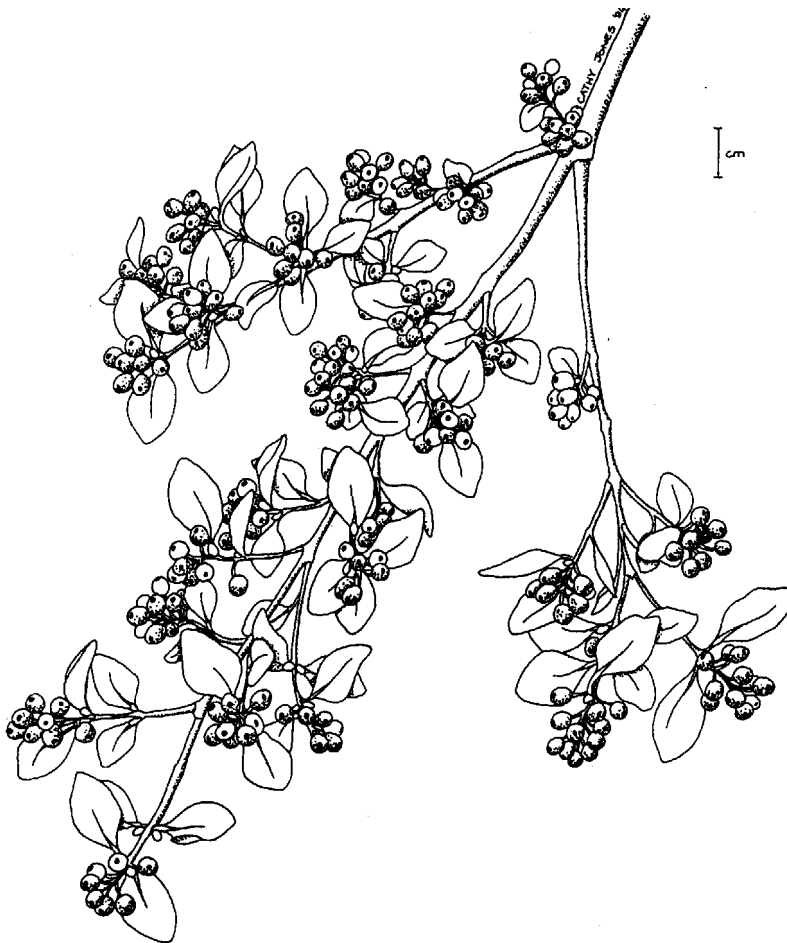
under Protected Natural Areas Programme at Hawke's Bay/East Coast Conservancy; Wellington Conservancy have surveyed at two main sites, banded all mainland hosts, and developed population plans; database/monitoring system set up in Tongariro/Taupo Conservancy.

**Priority sites for survey**

Opportunistic survey; historic sites, and anywhere possum control has been done.

**Monitoring: objectives and priority sites**

Monitoring the success of management practices at Kapiti and Eastern Wairarapa; monitor the success of intensive possum control at Mangaweka and Paengaroa Scenic Reserves in the Wanganui Conservancy, and Hapuku River and Isolated Hill Scenic reserve in Nelson/Marlborough.



## **Research questions**

How can *T. antarctica* be effectively propagated?

## **Management needs**

Collaring, caging, or bait stationing as appropriate; seed collection for translocation to historical sites (North Island); continued possum control (North Island); implement population specific plans in the Wellington Conservancy for Kapiti and Eastern Wairarapa; secure legal land protection of the Eastern Wairarapa site (Wellington Conservancy); advocacy to mitigate collection and vandalism.

## **Selected references**

- de Lange, P.J.; Norton, D.A. (eds.). 1997. *New Zealand's loranthaceous mistletoes*. Proceedings of a workshop hosted by Threatened Species Unit, Department of Conservation. CASS 17-20 July 1995. Department of Conservation, Wellington.
- Dopson, S.R. 1999. Management recommendations for the Loranthaceae mistletoe in the Tongariro/Taupo Conservancy, Department of Conservation. Science and Research Investigation No. 1991, Department of Conservation, Wellington.
- Norton, D.A.; Reid, N. 1997. Lessons in ecosystem management of threatened and pest loranthaceous mistletoes in New Zealand and Australia. *Conservation Biology* 11: 759-769.
- Ogle, C.C.; Wilson, P. 1985. Where have all the mistletoes gone? *Forest and Bird* 16 (3): 10-13.

## ***Urtica linearifolia* (Hook.f.) Cockayne**

- Family:** Urticaceae  
**Endemic to:** North and South Islands.  
**Common name:** Swamp nettle.  
**Ranking:** B, Vulnerable. **In cultivation:** No.  
**Descriptor:** Narrow-leaved, weakly scrambling nettle.  
**Conservancy:** BP, EC/HB, WG, WL, NM, CA, OT, (SL).  
**Habitat:** Fertile lowland *Carex secta* swamps, willow carrs, swampy shrubland and forest.  
**Threats:** Habitat (wetland) loss; weed encroachment (after willow removal); lack of legal land protection; goats; duck shooters destroy swamp nettle when constructing maimais; grazing and trampling of wetlands; inappropriate weed spraying.

### **Work undertaken to date**

Limited survey in Bay of Plenty, Wanganui, Wellington, and full survey at Kaikoura Lakes; some site protection at Nelson/Marlborough and Canterbury Conservancies; legal land protection in Makerua Swamp Wildlife Management Reserve near Palmerston North; survey at J. K. Donald Reserve, Lake Wairarapa; limited survey at Lake Ellesmere; survey of some marginal strips in Reporoa, Bay of Plenty Conservancy; successful survey of Lake Papaitonga and Koputaroa Scientific Reserve in Wellington Conservancy.

### **Priority sites for survey**

Planned survey of Carter Scenic Reserve, and Taupo Swamp, Plimmerton; swamp forest remnants and dune lake fringes; opportunistic.

### **Monitoring: objectives and priority sites**

Regularly inspect all populations.

### **Research questions**

Relationship to Tasmanian nettles under review; what are the habitat requirements and autecology of *U. linearifolia*?

### **Management needs**

Advocacy to mitigate inappropriate weed control as *U. linearifolia* could be perceived as a pest in a range of sites; appropriate weed control; secure legal land protection; goat control; establish plants in cultivation for insurance, advocacy, and research purposes; control of stock.

### **Selected references**

Beadel, S.M. 1995. *Urtica linearifolia* (Hook.f.) Cockayne - a new northern limit. *New Zealand Botanical Society Newsletter* 41: 7-8.



Continue to next file: TSOP13d.pdf