



NZPCN Conference 2015 Field Trip Sutton Salt Lake Scenic Reserve



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Sutton Salt Lake Scenic Reserve

Sutton Salt Lake is New Zealand's only inland salt lake, with water about half as salty as seawater. With no outlet, the lake has concentrated salts from surrounding soils as it has repeatedly filled, evaporated and refilled. Nestled amongst the spectacular parallel rock tor ridges of Sutton, with a backdrop of the Rock and Pillar Range, the lake (approximately 8 ha) occupies an enclosed shallow basin in the schist rock landscape.

The lake reaches a depth of only about 30 cm when full although in a dry summer it dries up completely to become a cracked bed of silt. A range of salt-tolerant herbs occupy the lake margins, These include *Lilaeopsis novae-zelandiae*, *Oxybasis glauca* subsp. *ambigua*, native celery (*Apium prostratum*) and *Selliera microphylla*. In spring a small population of the nationally endangered New Zealand mousetail (*Myosurus minimus* subsp. *novaezelandiae*) may be present. A range of water birds and waders use the lake, feeding on the tiny salt-adapted aquatic animals, including copepods, rotifers and water beetles.

Elsewhere in the 143 ha scenic reserve, rock tors provide ledge habitat for an undescribed forget-me-not (*Myosotis* sp.), while numerous small shrublands contain species such as desert broom (*Carmichaelia petriei*), poataniwha (*Melicope simplex*), korokia (*Corokia cotoneaster*) and matagouri (*Discaria toumatou*).

Grasslands abound, comprising both native and exotic species. Of significance is a large population of nationally vulnerable slender bristle grass (*Rytidosperma merum*) with its long drooping and trailing culms. Two species of speargrass are present amongst the grassland; the common golden speargrass (*Aciphylla aurea*) and uncommon *Aciphylla subflabellata*.

Aciphylla aurea

Common Name(s):

Golden spaniard, golden speargrass

Current Threat Status (2012):

Not Threatened

Habitat:

Montane to low alpine well-drained or arid sites including rocky areas, dry grassland and tussock grassland. 300-1500 m.

Features*:

Very robust tufted yellowish-green herb to 1.5 m tall when in flower. Rosettes single or multiple, to 1 m diameter. Leaves many, stout, 1-pinnate to irregularly 2-pinnate (sometimes only 1 secondary pinna developed), to 70 cm long; sheath thick with thin margins, yellow or yellowish-green, 25 mm wide at apex; stipules stout, to 27 cm long x 5-8 mm wide, tapering, pungent; petioles c. 10-20 cm long x 10-16 mm wide; margins finely serrulate on cartilaginous margin; internodes (inter-pinna spacing) 5-6 cm long; primary pinnae 2-4 pairs, spaced, flat, striate, midrib obscure, c. 20 cm long x 7 mm wide, abruptly narrowing to pungent point; secondary pinnae little shorter, pungent. Flowering stem of male and female similar (female narrower and darker), stout, ribbed, 80 cm or more long, bracted along most of length; bracts +/- erect in male, spreading in female; lower bracts without flowers, yellow; lower bract sheaths to 8 x 1.5 cm tapering to c. 9 mm wide, thin, smooth; lower bract stipules to 8 cm long x 2-3 mm wide, acicular; lower bract lamina usually simple, sometimes bifid, to 22 cm long x 4 mm wide, acicular. Umbels of male plants distributed along peduncle; involucre bracts linear, longer than rays. Umbels of female plants on peduncles up to 15 cm long; umbellules crowded on short rays; involucre bracts linear. Fruit of two mericarps; mericarps oblong-elliptic to elliptic, (3.5-)4.0-6.0(-6.5) mm, with 3-4 narrowly winged ribs and 1-2 reduced to low ridges, vittae obscured

Flowering:

November-December

Fruiting:

January-February

Threats:

Not Threatened

*Attribution:

Description adapted by Mike Thorsen from Allan (1961), Mark and Adams (1995), Webb and Simpson (2001) and Wilson (1996).

References and further reading:

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

Mark, A.F; Adams, N.M. 1995. New Zealand alpine plants, 2nd Edition. Godwit Publishing, Auckland;

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

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

Wilson, H.D. 1996. Wild plants of Mount Cook National Park. Manuka Press, Christchurch

For more information, visit:

http://nzpcn.org.nz/flora_details.asp?ID=1451



Caption: Macrae's Flat, Otago
Photographer: Jane Gosden



Caption: Macrae's Flat, Otago
Photographer: Jane Gosden

Aciphylla subflabellata

Common Name(s):

Spaniard

Current Threat Status (2012):

At Risk - Declining

Distribution:

Endemic. South Island in the east from south-eastern Marlborough to Southland

Habitat:

Montane to subalpine (300-1400 m a.s.l.). Usually in dry sites on alluvial terraces, gentle rolling slopes and colluvium, intermontane basins amongst short or tall tussocks and on the margins of grey scrub. Sometimes on or near rock outcrops or amongst boulders.

Features*:

Stout perennial forming stout rosettes. Stems up to 0.8 m long. Leaves yellow-green to grey-green, narrowly subflabellate-bipinnate. Sheaths membranous, up to 20 mm long, ligules 2, up to 10 mm long; stipules 20 mm long, irregularly bipinnate. Petioles 25 x 5 mm, concavo-convex with internodes up to 25 mm long. Primary pinnae 3-4 pairs, these strongly serrulate-crenulate on midrib and margins, sometimes pinnate again with leaflets up to 200 x 3 mm, narrowly acicular. Stems stout, deeply grooved up to 1 m x 25 mm, including inflorescence 0.5-0.6 m long. Bracts numerous, close-set; sheaths up to 70 x 10 mm; stipules erect, simple to bifid, up to 150 x 1 mm; central leaflet up to 300 mm long, at length strongly reflexed, margins serrulate. Umbels exceeding the bract-sheaths especially in the male inflorescence. Mericarps 5-12 mm long with 5 ribs, 3-4 of these winged.

Flowering:

December - February

Fruiting:

February - May

Threats:

Widespread but generally never common. Possibly it is more threatened than believed because many of its lowland habitats are extremely modified, weed infested and plants are browsed where accessible by cattle, rabbits and hares. Current herbarium evidence suggests that this species is still poorly known but that from available evidence it is naturally uncommon over large parts of its stated range.

*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange (1 September 2004). Description based on Allan 91961).

References and further reading:

Allan, H.H. 1961: Flora of New Zealand. Vol. I. Government Printer, 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=215



Caption: Mossburn, Southland
Photographer: Gillian Crowcroft



Caption: Upper Clarence, Near Hamner
Photographer: Gillian Crowcroft

Bulbinella angustifolia

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* 2009 Vol. 11 No. 4 pp. 285-309

For more information, visit:

http://nzpcn.org.nz/flora_details.asp?ID=1576



Caption: Old Woman Range
Photographer: John Barkla



Caption: Old Woman Range
Photographer: John Barkla

Carex tenuiculmis

Common Name(s):

Slender Niggerhead

Current Threat Status (2012):

At Risk - Declining

Distribution:

Endemic. South, Stewart and Chatham Islands (both Chatham (Rekohu) and Pitt Islands)

Habitat:

A sedge of lowland to montane slow flowing stream sides, lake margins, tarns, ponds and associated wetland vegetation. This species usually grows in association with other carices including *Carex coriacea* Hamlin, *C. diandra* Schrank, *C. gaudichaudiana* Kunth, *C. secta* Boott and *C. virgata* Sol. ex Boott. It does not like tall vegetation.

Features*:

Tussock forming sedge of wetland margins. Rhizomes short and spreading, not forming a trunk. Leaves 250-800 x 2.4-3.2 mm, ascending and spreading, channelled, soft, red, wine-red, or red-green, keel and margins scabrid. Culms 200-500 x 1.8-2.1 mm, glabrous to near triquetrous in lower part, scabrid and trigonous in upper part; similar in length to, or shorter than, the leaves; basal sheath up to 90 mm long, red or red-green, becoming straw-coloured when dry. Inflorescence 80-140 mm long, usually with a single proximal branch, without subtending bract; spikes 1.5-15 mm long; upper spikes crowded and more or less sessile. male florets distal. Glumes 2.1-3 x 1.9-2.2 mm, shorter than utricles, ovate, membranous, persistent, acuminate, light-brown, with a straw-coloured midrib, margins hyaline. utricles 2.3-3.5 x 1.6-2.3 mm, broad or narrow, plano-convex, ovoid, turgid, light brown to brown, smooth, shining, nerves distinct at base; beak 0.5-0.8 mm long, entire or with minute crura; stipe 0.2-0.4 mm long, beak and upper part of utricles winged, with scabrid margins, cream to light brown. Stigmas 2. Nut 1.7-2 mm long, biconvex, ovoid to obovoid, light-brown.

Flowering:

November - December

Fruiting:

January - May

Threats:

Once regarded to be seriously threatened, critical survey throughout its range has located many more populations, the majority of which occur in secure habitats and locations. The biological pattern of distribution now suggests that this species is normally uncommon, and while it can at times be locally common, it is more usually a minor (sparse) component of wetland systems. That said, it is evident that some populations, especially those in northern Canterbury are more at risk from development than others.

*Attribution:

Fact sheet by P.J. de Lange (30 August 2005). Description based on Heenan & de Lange (1997).

References and further reading:

Heenan, P. B.; de Lange, P. J.; Murray, B. G. 1997: *Carex tenuiculmis* comb. et stat. nov. (Cyperaceae), a threatened red-leaved sedge from New Zealand. *New Zealand Journal of Botany* 35: 159-165.

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=238



Caption: *Carex tenuiculmis*

Photographer: John Barkla



Caption: *Carex tenuiculmis* close up of spikelets

Photographer: Colin Ogle, Ex Cult. 20th Dec 1986, Springs Junction,

Carmichaelia petriei

Common Name(s):

desert broom

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* 2009 Vol. 11 No. 4 pp. 285-309

For more information, visit:

http://nzpcn.org.nz/flora_details.asp?ID=1602



Caption: Seeds. From cultivated plant

Photographer: John Barkla



Caption: Cardrona Valley

Photographer: John Barkla

Chionochloa rubra subsp. cuprea

Common Name(s):

copper tussock

Current Threat Status (2012):

Not Threatened

Distribution:

Endemic. New Zealand: South Island (North Canterbury and south and west to Fiordland) and Stewart Island.

Habitat:

Coastal to alpine. Inhabiting bogs and tussock grassland where it may be the dominant tussock

Features*:

Tall, slender, red tussock with crowded, erect, stiff, rush-like leaves. Leaf-sheath to 300 mm, dark brown, keeled, incurving, remaining entire, inter-ribs with minute hairs sometimes glabrous, margin separating and coiling, apical tuft of hairs to 3 mm. Ligule to 1 mm. Leaf-blade to 1 m long and 1.2 mm diameter, persisting on sheath, acicular rush-like, splitting longitudinally, keel hollow, underside glabrous but infrequently with long hairs near base, prickle-teeth towards apex, upper surface with dense wefts of long hairs at base, extending up leaf-blade often with short hairs as well, papillae or prickle-teeth; margin with long hairs below, prickle-teeth above. Culm to 1.5 m, internodes glabrous, sheath glabrous. Inflorescence to 45 cm, open on pulvinate branches, glabrous except for long hairs at branch axils and short stiff hairs below spikelets, rarely becoming scabrid above. Spikelets of up to 9 florets. Glumes glabrous, acute, infrequently awned, adjacent lemma lobes, lower to 12 mm, 1-3-5-nerved, upper to 14 mm, 3-5-7-nerved. Lemma to 6 mm; hairs dense on margin less so in internerves, usually absent or sparse elsewhere, < sinus; lateral lobes to 7 mm including awn to 3.5 mm, infrequently long triangular-acute; central awn to 13 mm from twisting column to 3 mm. Palea to 8 mm. Callus to 1.5 mm, hairs to 4 mm. Rachilla to 0.75 mm. Lodicules to 1 mm. Anthers to 5 mm. Ovary to 1 mm; stigma-styles to 4 mm. Seeds to 3.5 mm

Flowering:

October - December

Fruiting:

November - April

Threats:

Not Threatened

***Attribution:**

Description modified from Edgar and Connor (2000)

References and further reading:

Edgar, E.; Connor, H.E. 2000: Flora of New Zealand. Vol. V. Grasses. Christchurch, Manaaki Whenua Press. 650 pp.

For more information, visit:

http://nzpcn.org.nz/flora_details.asp?ID=1674



Caption: Kaiwera, Southland

Photographer: Jesse Bythell



Caption: Kaiwera, Southland

Photographer: Jesse Bythell

Crassula mataikona

Common Name(s):

None known

Current Threat Status (2012):

At Risk - Naturally Uncommon

Distribution:

Endemic. New Zealand: North Island (Awakino and South Taranaki Coastline, coastal eastern Wairarapa, Aorangi Range, Cape Palliser, and Wellington coastlines), South (Marlborough Sounds, and parts of the eastern South Island coastline as far south as Dunedin, and also known from several sites in inland central Otago). Also reported as a weed in Christchurch and Dunedin bowling greens.

Habitat:

A coastal species of open ground, often amongst *Zoysia*-dominated turf. It will not tolerate tall vegetation, and requires frequent disturbance to keep the habitats it frequents sparsely-vegetated.

Features*:

Short-lived succulent, moss-like, herb forming diffuse clumps. The fleshy trailing stems are white or white tinged pink, and root freely at the nodes. Leaves pale green to pink (in exposed, stressed plants) fused at base, 1.3-3 × 1-1.5 mm, 0.8 mm thick, ovate-elliptic, flattened above, convex beneath; apex rounded or subacute. Flowers solitary in leaf axils, minute, 1.2-1.8 mm diameter, with 4 petals. Petals greenish with pink tips, often obscured by subtending calyx lobes. Mature fruits minute. Seeds black 0.4 mm long.

Flowering:

Flowering has been observed throughout the year.

Fruiting:

Fruiting plants may be found throughout the year.

Threats:

The habitats it occupies are frequented by introduced weeds. Because it is so small, *C. mataikona* is easily overlooked, and so has been rarely collected. It is easily confused with seedling *C. sieberiana* or *C. colligata* (two species with which it often grows), or even the much smaller *C. manaia*. As a result of the potential for these misidentifications some *C. mataikona* populations have gone unrecognised until recently. It is such incidental discoveries as these which suggest *C. mataikona* might be more common than previously believed.

*Attribution:

Fact sheet prepared for NZPCN by P.J. de Lange 1 November 2005. Description adapted from Allan (1961) and Webb et al. (1988), supplemented with observations made from fresh and dried material.

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* 11: 285-309

Webb, C.J.; Sykes, W.R.; Garnock-Jones, P.J. 1988: Flora of New Zealand. Vol. IV. Naturalised Pteridophytes, Gymnosperms, Dicotyledons. Christchurch, New Zealand, Botany Division, D.S.I.R..

For more information, visit:

http://nzpcn.org.nz/flora_details.asp?ID=742



Caption: In cultivation

Photographer: John Barkla



Caption: Rock and Pillar range

Photographer: John Barkla

Lilaeopsis novae-zelandiae

Current Threat Status (2012):

Not Threatened

Threats:

Not Threatened

For more information, visit:

http://nzpcn.org.nz/flora_details.asp?ID=934



Photographer: Rebecca Stanley



Photographer: Rebecca Stanley

Myosurus minimus subsp. novae-zelandiae

Common Name(s):

New Zealand mousetail, bearded mousetail

Current Threat Status (2012):

Threatened - Nationally Endangered

Distribution:

Endemic to New Zealand, North and South Islands. Formerly reported from the Hawkes Bay to Cape Palliser and Island Bay near Wellington (places where it is now believed extinct). In the South Island it is known only from the eastern side, from Marlborough south to Lake Manapouri.

Habitat:

Lowland to upland. Damp and slightly salty depressions in pastures and short tussock grassland, on the margins of tarn and kettle holes, and in damp dune hollows, gravel flats and alluvium.

Features*:

Spring to summer-green annual, forming tufts 10–80mm tall. Leaves 5–20, 10–35 × 1–2.5mm, basal, fleshy to succulent, exstipulate, linear to linear-spathulate, obtuse, margins entire, bright to dark green, yellow-green, red-green or red. Inflorescences scapigerous, scapes 1–8, 1-flowered, 10–80mm tall (including receptacle), erect to spreading, glabrous, fleshy, filiform, bright to dark green, yellow-green, red-green or red. Flowers greenish–yellow, apetalous. Sepals 5, minute, 0.5–0.8mm long, 3-nerved, ovate to oblanceolate, green to greenish-yellow or green-red, Stamens 5, filaments 0.3–0.5mm long, greenish-white. Receptacle 3–15mm long, elongating in fruit, oblong to oblong-linear, bearing numerous carpels. Styles 0.4–0.5mm long. Achenes 20–50 (or more), 0.9–1.6mm long, boat-shaped, body oblong to narrow-oblong, broader at apex, surface glabrous, dull, pale brown, yellow-brown to dark brown, beak 0.4mm long. Seed 0.55–0.90mm, narrowly elliptic to elliptic, surface finely rugulose, semi-glossy, brown to dark brown.

Flowering:

August - November (- January)

Fruiting:

September - February

Threats:

Mousetail is probably a biologically sparse entity. However, virtually all of its known habitats are now being invaded by faster growing, taller or turf forming, perennial weeds such as *Plantago coronopus*. These weed invasions appear to be accelerated by changes in the surrounding hydrology, caused in turn, by changes in land use. In particular, the conversion of upland mixed sheep/cattle and sheep farms to dairy farms, especially within Canterbury and Otago, has increased the need for ground water. Canalisation and the widespread use of bore water is now visibly reducing the number of ephemeral wetlands, kettle holes and tarns once frequented by mousetail and other marginal turf plants.

*Attribution:

Fact Sheet prepared for the NZPCN by P.J. de Lange 14 April 2006. Description by P.J. de Lange and subsequently published in de Lange et al. (2010).

References and further reading:

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

Ogle, C.C. 1985. Mouse-tail *Myosurus novae-zelandiae* a declining species? *Wellington Botanical Society Bulletin* 42: 57-61

For more information, visit:

http://nzpcn.org.nz/flora_details.asp?ID=77



Caption: Ida Valley, *Myosurus minimus subsp. novae-zelandiae*
Photographer: John Barkla



Caption: Poolburn Gorge, *Myosurus minimus subsp. novae-zelandiae*
Photographer: John Barkla

Olearia bullata

Current Threat Status (2012):

Not Threatened

Threats:

Not Threatened

For more information, visit:

http://nzpcn.org.nz/flora_details.asp?ID=1045



Caption: Silverpeaks

Photographer: John Barkla



Caption: Silverpeaks

Photographer: John Barkla

Oxybasis glauca subsp. *ambigua*

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=2089



Caption: Long Point, Catlins
Photographer: John Barkla



Caption: Long Point, Catlins
Photographer: John Barkla

Rytidosperma merum

Common Name(s):

Slender bristle grass

Current Threat Status (2012):

Nationally Vulnerable

Distribution:

Endemic. North Island, Kaingaroa Plains and Kaimanawa Mountains, eastern Wairarapa and Aorangi Range. South Island, Marlborough, Canterbury, near Alexandra and Sutton Salt Lakes, Middlemarch (Otago).

Habitat:

Lowland to montane (100-800 m a.s.l.) in dry sites, usually in open short-tussock grassland but also on rock outcrops.

Features*:

Rather fine-leaved, densely tufted, light green, shortly rhizomatous grass. Older growth distinctly straw-coloured, with long, drooping or trailing culms; leaves very much less than culms; branching extra or intervaginal. Leaf-sheath pale stramineous, glabrous with a sparse apical tuft of hairs up to 1.5 mm long. Ligule 0.1-0.2 mm. Leaf-blade 250-400 mm, more or less flat, glabrous, occasionally with a few sparse, scattered hairs, margins scabrid. Culm very slender, tawny with smooth internodes otherwise minutely scabrid below inflorescence, elongating to 0.14 m (or more) at maturity, Raceme or racemose panicle with 1-2 short branches at base, slender to 80 mm, comprising few narrow, sessile to subsessile spikelets; rachise and pedicels finely scabrid with longer fine hairs on margins especially below spikeletes. Spikelets 4-6-flowered, awns exerted from glumes. Glumes light green, occasionally purplish, lanceolate, subobtusate 7-15 mm, more or less equal, 5-7-nerved. Lemma 2.5-4 mm, 7-9-nerved, upper row of hairs in small marginal tufts only, about equal to lemma or occasionally with upper tufts absent, lower row in small marginal tufts only, or a few small tufts or single hairs on margin; lobes 3-8.5 mm, soon tapering to a fine awn; central awn 6.5-14 mm, column 2.5-3.5 mm. Palea 2.5-5 mm, > upper lemma hairs, interkeel and margins glabrous. Callus 0.6-1 mm, marginal hair tufts rarely reaching base of lower lateral tufts. Rachilla 0.5-0.6 mm. Anthers 0.3-1.5 mm. Seed 1.7-2.5 x 0.9-1.2 mm.

Flowering:

October - December

Fruiting:

November - April

Threats:

Not known to be threatened but apparently very uncommon throughout its range. Can be very common at the few sites it is known from

***Attribution:**

Description modified from Edgar and Connor (2000).

References and further reading:

Edgar, E.; Connor, H.E. 2000: Flora of New Zealand. Vol. V. Grasses. Christchurch, Manaaki Whenua Press. 650 pp.

For more information, visit:

http://nzpcn.org.nz/flora_details.asp?ID=313



Caption: Sutton Salt Lake, April

Photographer: John Barkla