Botanical Society of Otago Newsletter.

Number 30 Feb - March 2002



BSO Meetings and Field Trips

- 23 Feb, Saturday, 9.30 am, BSO field trip to two of the last remaining kamahi/rata forest remnants on the East Coast of the South Island at Akatore and Bull Creek. Meet at the car park of the Botany Department, 464 Great King Street. Bring lunch, boots, wet weather gear and money for car-pool (7c/km/passenger). Ralf Ohlemueller will show you round his study sites.
- 10 April, Wednesday, 7.30 pm: NOTE DATE CHANGE. Annual General Meeting of the Botanical Society of Otago, followed by a talk by Emeritus Professor Alan Mark and wine & cheese. Zoology Annexe Seminar Room, Great King St, right at the back of the car park between Dental School and Zoology. Be prompt or knock loudly, the side door can't be left open long at night.
- 14 April, Sunday: Informal, laboratory-based Native Grass and bidi-bid Workshop run by Dr. Kelvin Lloyd: Identification of New Zealand <u>Chionochloa</u>, <u>Festuca</u> and <u>Acaena</u> species. Meet at 10 am promptly (that's when the door will be unlocked) at the Botany Department, 464 Great King Street. Bring lunch, handlens, and any specimens you want to identify. Kelvin will describe characters that are useful for identification and provide live plants that people can attempt to key out. Microscopes and tea-making facilities will be available.

Notes from Head Office

2002, the International Year of the Mountains, was ushered in the midst of magnificent mountains, on the BSO/Wellington Botanical Society summer trip, and several sublime days were spent up among the alpine plants. We also delved in the high country 'lowlands' of the Mackenzie Basin, home to some rare and obscure plants that we were privileged to be shown. Some of the highlights are described in the trip reports in this issue and there will be more in the next.

In March, Prof Alan Mark invites you all to continue to celebrate the mountains by joining in the full weekend program, with national and international speakers, that he has brought together. See inside for more details.

Last year we had several New Zealanders giving us their views of botany in other countries; this year we start off with an overseas impression of New Zealand's strange, to him, botany, by Dr Mike Dodd.

Following on from Dr Anni Watkins' popular workshop on grass collection and identification, Dr Kelvin Lloyd will lead a workshop on identifying the New Zealand native *Chionochloa* and *Festuca* grasses, together with *Acaena*; several of these are found on our mountains.

The message for the year has to be aim high, enjoy the botany and do show your support by coming to the AGM!

Bastow and Allison

Cover picture

Festuca novae-zelandiae ovary, styles and stigmas, x 25. From *Flora of New Zealand*, *Vol. 5, Gramineae* by E Edgar and HE.Connor. The New Zealand Plant Names Database recognises 22 taxa in *Festuca*. See how many you can recognise at the BSO Workshop.

Back cover

Photocopy of OTA Herbarium specimen of *Chionochloa crassiuscula* subsp *crassiuscula* from Stewart Island. Find out more about identifying native grasses and *Acaena* species at the Workshop on Sun 14 April.

Subscriptions Due Now

Subscriptions are now due for 2002. Please pay promptly. It's a good deal for \$5 or \$10, thanks to the support of the Otago University Botany Dept. Use the form at the back of the newsletter or get one at the AGM.

David Orlovich

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Plant Species Lists Available and Sought!

I have about 100 lists of vascular plant species from the Otago-Southland-Fiordland-Stewart Is. area and over 900 in the whole database, with coverage of most areas of the country. Some lists are of general areas but many are of specific tracks or routes.

If any of your members would like know what I have for a specific area they can contact me by e-mail at: GTJane@clear.net.nz (but beware I am away for weeks at a time).

I am also keen to add to the database so I am an avid collector of lists, and would appreciate feedback from Bot. Soc. members around the country.

Graeme Jane, Tauranga

LIST

List of species lists for Otago and Southland - Graeme Jane, 20.1.02

CENTRAL OTAGO	CATLINS		
Coronet Peak ski area	Lake Wilkie, Tautuku Bay		
Crystal Walk Shotover River	McLean Falls		
Garvie Mountains	Tahakopa Coach and Circle Walks		
Harris Mountains	Tautuku Bay, Long Point end		
Hector Mountains	FIORDLAND		
Kawarau & Cromwell Gr	Borland Caves		
Kawarau Gorge	Borland Lodge Nature Walk		
Mt Alta, Wakatipu	Borland Mire		
Nevis Valley	Borland River, N Branch		
Nevis Valley Saddle/Hector Mts	Borland River, S Branch		
Old Man Range	Eglinton - Hut Creek		
Old Woman Range	Eldrig tops		
Pisa Range	Gertrude Saddle, Homer Tunnel		
Rastus Burn, Remarkables	Green Lake, Manapouri		
Remarkables	Hollyford Valley - Falls Hut		
Richardson Mountains	Kepler Mire - Manapouri		
Wye Valley, Remarkables	Key Summit		
OTAGO	Lake Marian, Hollyford		
Clutha etc lowlands	Lake Monowai		
Crown Range	Lake Wakatipu		
Dunstan Mountains	Manapouri, Hope Arm and Back Valley		
Eyre Mountains	Mangapouri Forest (Howden acquisition)		
Flagstaff Hill, Dunedin	Mistletoe Lake, Te Anau		
Forbes Mountains	Mt Burns		
Trotters Gorge	Mt Luxmore, from gates to above hut		
Umbrella mountains	Titiroa		
'Witherow' Is, Clutha River	West Arm Manapouri - Percy Saddle Rd		

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SOUTHLAND	SOUTHLAND ctd		
Blackmount Station	Pt Caroline Scenic Reserve		
Bluff Hill Scenic Reserve	Stony Creek, Croydon		
Broadlands Bush	Taylors Bush/McLees		
Bushy Point QEII, Blake Rd, Otatara	Turnbull QEII, Hedgehope		
Chaslands	Waiau River, WHOLE AREA		
Clifden Bridge/Waiau river	West End Station		
Clifden Scenic Reserve	STEWART ISLAND		
Cooks Scenic Reserve	Adams Hill		
Croydon Bush	Anglem Scenic Reserve		
Dean Burn/Motu Bush	Bird Is, Foveaux Str -NZJB 4:133		
Dean Forest	Fernery Walk, Halfmoon Bay		
Diggers Ridge, J O' Brian's	Golden Bay Walk, Halfmoon Bay		
Dunrobin Station, Aparima	Hellfire Hill		
Dunsdale, Hokonui/Hedgehope	Masons Bay Shore St Is		
Foveaux Walkway, Bluff	Masons Bay to Freshwater Hut		
Homebush, D. O'Brian	Mt Aglem Track		
Lonekers Bush Scenic Rerserve	Mt Rakeahua Track		
Mararoa, Von, Oreti wetlands	Rocky Top		
Marshall Bush SR, Hedgehope	Ryan's Walk - Halfmoon Bay		
Otahu Bush	Swamp Walk, Port William		
Otatara Scenic Reserve, Invercargill	Ulva Is		

Sites on the West Coast for which Graeme has species lists will be published in the next issue. If you have species lists from any Otago-Southland areas not listed here Graeme would be very grateful if you forwarded them to him – ed.

ARTICLE Some thoughts of a British botanist visiting New Zealand

Dr Mike E. Dodd, Biology Dept, Open University, Milton Keynes, UK.

I arrived in Dunedin in September, directly after a month's fieldwork in Japanese Abies forests. It was in the 30's °C when I left Tokyo and 1 °C, dark, and with a howling gale when I eventually stepped off the ancient shuttle bus in the Octagon. I assumed they did not bother with heating during the 6 hour bus journey as it's normally so mild in this part of the world. Why on earth had I travelled all this way when there was a nice British summer to enjoy back at home?

After this inauspicious start, things could only get better and they did. There was an excellent field trip to the west coast, visits to several sites in Otago, Arthur's Pass and a range of sites on the North island. The first thing you notice as a northern hemisphere botanist going into any area of NZ bush is that all the plants are so different to anything you've ever seen before. In Japan, all the plants were familiar either because similar genera grow naturally in the UK or USA where I have also worked, or because the Japanese plants are commonly grown in gardens or as house plants. There are almost no native species common to UK (or Europe or USA) and NZ. So where should I start trying to identify things? A few genera such as *Phormium* and *Cordyline* with their striking linear leaves were easy to spot. These are grown in gardens in the warmer parts of the UK. What else? Well, after this things start to get more difficult. There are the aliens of course – that beautiful splash of yellow *Ulex* all over the hills on the way into Dunedin not to mention good old Cornish heath (*Erica vagans*) on Swampy. Any disturbed areas such as farmland or track sides, even in native bush, are likely to be completely dominated by familiar European species, alien to NZ. The effect is so strong that over large parts of eastern South Island it is difficult to find any groups of native species. Indeed the species assemblages there can be identified using the British national vegetation classification.

Native forest

Going to an area of native forest is a real eye opener. What on earth are all these different trees and shrubs? They look nothing like the genera we have in Europe. They all appear to be evergreen, but have no flowers or fruit (in September) to help with identification. On closer examination, one or two did look familiar. Griselinia *littoralis*, with its rounded fleshy yellow-green leaves, although instead of just being a bush as it is in UK gardens it can also be an epiphyte in wet areas. Then there was tree Fuchsia (Fuchsia excorticata) with its orange brown bark peeling off into strips, and the familiar house plant, Schefflera digitata. But for the real structure of the forest I needed to get into Podocarps. They are conifers but quite unlike the familiar conifers of the temperate northern hemisphere such as pines or firs. Instead of needles the Podocarps tend to have short leathery leaves similar to Yew (Taxus spp), or very reduced scale leaves like Cupressus. Many of them also have naked seeds, or seeds attached to a small fleshy 'fruit' similar in appearance to the red yew berry. One interesting feature of the Podocarps, and several other forest species, is that the shape of their leaves changes between juvenile and adult with the juveniles often having longer or larger leaves, although in some species it is guite the reverse with juveniles having smaller leaves.

The most widespread native conifer is Rimu (*Dacrydium cupressinum*). It is common in many woodland types as a small weeping tree but where the adults have not been logged out it makes a magnificent high (up to 60m), irregular, emergent canopy well above other species. It is perhaps best seen along parts of the west coast of the South Island, in a multi-layered rainforest with large numbers of epiphytes, a mixedspecies lower tree canopy, a shrubby layer, then a dense growth of bryophytes with terrestrial orchids, grasses and sedges. From this description it sounds as though it would be an impenetrable jungle, but it is surprisingly light and relatively easy to move around, at least compared to some UK woodlands with their dense tangle of spiny brambles (*Rubus fruticosus*). Whilst mentioning the west coast forests I should add a word, or rather two, to any UK-based botanists reading this: sand flies. Elsewhere in the world they are known as blackflies, there are large numbers of them, they bite, but in the winter they are much less of a problem.

One of the other main forest types is southern beech (*Nothofagus* sp.). These are similar to the northern hemisphere beeches (*Fagus*) but tend to have smaller leaves, indeed the mountain beech *Nothofagus solandri* var *cliffortioides* has tiny leaves only 5mm long. Mountain beech can form almost pure stands from the treeline down about

500m, before other species such as mountain toatoa (*Phyllocladus alpinus*) start to be mixed in. *Phyllocladus* is actually a conifer but has 'leaves' resembling celery leaves, the leaves are in fact flattened branchlets. (*Mike has since observed, in 'Lord of the Rings', that Phyllocladus also occurs at the upper treeline – ed*)

Other habitats

One ecosystem that I particularly wanted to see was the alpine zone. Getting up into this area proved to be difficult since there are few roads suitable for non-4-wheel drive vehicles that go high enough. However there are 'tramping' tracks such as the Routeburn going between mountain huts that take you through very interesting alpine vegetation with huge daisies (flowering in February). Some of the species at this altitude are familiar, such as a NZ form of Eidelweiss and sundews (*Drosera* sp), while others such as the vegetable sheep are more unusual. An alternative name for vegetable sheep is 'scab plants' which is particularly appropriate when they are growing near the sea in sand dunes such as at Chrystalls beach, or in the semi-arid grasslands near Alexandra where they form 1-2 cm high crusty scabs of tightly packed shoots. These *Raoulia* are rare in the dunes. It is not clear, to me at least, whether they have always been rare since I can't really understand how such short slow-growing plants can survive in the succession from the vigorous dune-fixing grasses and sedges leading through to scrub and forest.

Other habitats I particularly like are the spectacular dune systems stabilised by the native Cyperad, *Desmoschoenus spiralis*, at Ship Creek on the west coast, and the black dunes near Patea, Taranaki. I must confess that one of the main reasons for liking them are their photographic possibilities with the reddish brown wispy seedheads mixed in with large amounts of driftwood. Incidentally many of the beaches, especially the more remote ones, are covered in driftwood because the forest goes right down to the edge of rivers and the sea, and there is considerable bank erosion. This is quite different to Britain, where there is very little wood on the beach, apart from old palettes, partly because only 10% of the land is forested and little of this is near the coast.

Botanic gardens

During my trip, I was stuck in Christchurch for several days. The city itself has a botanic garden with a significant area of native plants, as do several other NZ towns and cities. This is very welcome and compares favourably with most European cities. Unfortunately the standard of labelling is very poor in the native plant garden and I would therefore recommend a visit to the Dunedin botanic garden instead. On the North Island, one of the best botanic gardens/parks must be Pukekura park in New Plymouth. It covers an area of 49 ha in a series of gullies and dells and contains a very wide range of mature trees and shrubs along with over 100 species of native ferns. One surprise for me was the number of large Cycads growing outside in this climate, where only a few miles away is one of the main ski fields.

Forestry

The warm wet climate is also responsible for the very fast growth of many alien trees such as *Pinus radiata*, which is ready for harvest after only 25 years, compared to twice this time in most other parts of the world. This is the main forestry species being planted over vast tracts of central north island after the removal of agricultural subsidies

and the abandonment of sheep farming on this marginal land. Such vast areas of one species look like prime candidates for a natural disaster such as a pest or disease outbreak, or fire. Why does this alien species grow so much faster than any of the natives? Why have none of the native trees evolved this very fast growth rate, especially on the good volcanic soils? Is there an ancient history of faster growing species being held in check by herbivores or disease? Is there an equivalent of CSR* for the New Zealand species? Is there any sustainable forestry going on? Have the NZ public woken up to the possible 'hay fever' consequences of the clouds of pine pollen. A NZ forester went very quiet when I mentioned this. Especially since I had just come from Japan, where this is a very hot topic with the public demanding the removal of the main forest tree (*Cryptomeria*) because it is a cause of very serious hay fever in a high proportion of the population.

Aliens

It seems that more NZ botanists are studying aliens than natives, which is rather a shame although perhaps understandable since there are clearly major problems in controlling the spread of introduced species. My thoughts on how to go about control mainly involved completely isolating areas such as peninsulas or other clearly defined large areas and eliminating all non-native species. It needs considerable public support as access may have to be restricted, although some of the work could be done by volunteers. It would seem that this kind of approach stands most chance of success but controls on imports of plant material and the species that can be sold in garden centres are also important.

Highlights of the trip

Some of the highlights of the trip were the massive kauri trees in the forests of northland, subalpine *Cordyline indivisa* and Podocarp forests on Mt Taranaki, west coast Rimu forests, sub-alpine *Nothofagus* forests at Arthur's Pass, sedges in the dunes at Haast and the tree ferns on South Island. I started out on the South Island wondering how to identify species, I left Auckland a few weeks later still thinking I knew very little of the native species, but there is just so much of the natural world to see and enjoy in New Zealand that getting out the identification guides takes second place.

(*Grimes' CSR theory, an attempt to generalize plant strategies according to whether they adapt better to Competitive (C), Stress (S) or Ruderal/weedy/disturbed (R) sites. -ed.)

West Coast dunes - *Mike Dodd*

This photo and more can be viewed in colour on Mike Dodd's website, which gives further insight on the way New Zealand is seen from the outside.



See: http://www.open.ac.uk/Nature Trail/Other ar/OA NZ.htm

REPORTS

Trip Reports

Visit to Prof Baylis's garden, 20 Oct 2001 - Robyn Bridges

This is not a garden for the pusillanimous! Viewing this magnificant garden from the upstairs verandah is breathtaking and gives a true perspective to the garden's grand size and scale.

'Threave' was built as a retirement home in 1903 for the first owner, Walter Shennan, who set up the first merino stud in New Zealand. His plantings of Copper Beech, Atlantic Cedars and a huge *Sequoiadendron* form much of the present canopy layer (which is almost at eye level from the verandah) and the backbone of the garden. He also planted, what is now a very large pohutukawa near the entrance. Apparently by 1903 frosts were becoming less severe, enabling more of these northern imports to become established. It is probable that many of the large specimens round Dunedin date from this period.

One of the attractions of this splendid garden is its mixture of natives and exotics. Of particular interest were the plants Prof Baylis has introduced from the Three Kings Islands. These include the Three Kings fig, *Streblus smithii*, and *Pennantia baylisiana*, both of which bear flowers on their trunks (cauliflory), and *Tecomanthes speciosa*, a vigorous creeper. *Pennantia baylisiana*, now propagated by commercial nurseries and available at a price, was a cutting taken from the only remaining specimen found on the Three Kings. Like the form of the large pohutukawa, the *Pennantia* has a solid base of multiple stems. As Prof Baylis succintly put it, 'Why have strong apical dominance if you get your top blown off!'

A large *Magnolia campbellii* is the biggest tree planted by Prof Baylis. A runner up is a very handsome Dawn Redwood, a deciduous conifer found in China in the 1930s. A rare sight was the unusual Handkerchief tree, *Davidia involucrata*. The name is taken from its large drooping white leaf bracts, which look as if someone had spilt a box of tissues over the tree.

Kahakitea, kauri, rewa rewa, tree ferns (*Cyathea medullaris* and *C. dealbata*), maples, luxuriant *Fushia procumbens*, rhododendrons, large Spanish bluebells (which have double the chromosomes of their smaller counterpart), colourful pockets of *Pleione* growing on old tree stumps, a large avocado tree (sadly it doesn't set fruit, well not yet), naturalised *Cardiocrinum* lilies, frost tender *Meryta sinclairii*, together with many naturalised plantings of herbaceous border species, make for a stunning mix.

Prof Baylis has a simple planting guide. 'You plant it where it should grow, where you would like it to grow and where you're sure it won't grow'. The results speak for themselves.

Summer Trip - Mt Cook to Omarama and more.

Keen botanists of diverse backgrounds and ages came from around the country to join this summer's combined Otago and Wellington Bot. Soc. 10 day trip. Sites visited ranged from wetland to alpine, from dry riverbed to dripping beech forest. The plants were fascinating, the people were wonderful and the campsites, beside Lake Pukaki and then Lake Ohau, had splendid views of the mountains (when the clouds parted).



View up Lake Ohau from above our cosy Glen Mary Ski Club base - Joyce Wilson

Participants included: Ted Abraham-Mangaweka, Beth Andrews-Ekatahuna, Barbara and Peter Beveridge-Wellington, Robyn Bridges-Dunedin, Barbara Clark-Wellington, Rosemary Collier-Wellington, Gael Donaghy-Tauranga, Audrey Eagle-Dunedin, Chris Ecroyd,-Rotorua David and Karen Havell-Palmerson North, Chris Horne-Wellington, Ros Iles-Wellington, Rick Jackson-Christchurch, Graeme Jane-Tauranga, Allison Knight-Dunedin, Rodney Lewington-Wellington, Barbara Mitcalfe-Wellington, Donella Moss-Wellington, Ruth Peszynski-Cromwell, Frank Rogers-Wellington, Emil Schmieg-Ekatahuna, Darea Sherratt-Wellington, Barbara and Neill Simpson-Queenstown, Val Smith-New Plymouth, Nola Walker-Dunedin, Bastow Wilson-Dunedin, Joyce Wilson-Wellington.

Le Pukaki Scientific Reserve, 28 Dec – Gael Donaghy

Chosen for its easy access from camp on our first morning, this reserve proved to be a worthy starting point for botanising.

The reserve is fenced to exclude rabbits, and looked like it had been grazed tussock grassland in the past. Nearest the road a thick cover of *Hieracium* was evident. Keen eyes soon spotted little orchid seedheads emerging from this, and a grovel uncovered the rosettes of one of the small multiheaded *Pterostylis* orchid species. Dissection of a shrivelled flower allowed it to be identified as *Pterostylis mutica*. The rosettes of leaves were still green despite the fact that the seeds had been dispersed from many of the capsules.

Near the road there are small, seasonally wet areas which provide habitats for wetland species like *Pratia perpusilla* with its rumpled leaves and split flower, and *Epilobium angustum*, which also has distinctive rumpled, brownish leaves. As we moved back from the road, the tussock grassland contained many more orchid plants, mostly *Praesophyllum colensoi* and the little *Microtis oligantha*, with its few-flowered spike. By late morning it was warm enough for the white flowered sun orchid, *Thelymitra longifolia*, to be in flower.

Moraine with large rocks provided shelter and protection for shrubs and other plants. Here the shrubs are dominated by *Discaria toumatou*, *Aristotelia fruticosa*, and *Coprosma propinqua* with some *C. intertexta*. In the shelter of the rocks were interesting plants like the small renga renga lily (*Arthropodium candidum*), two *Asplenium* – tiny *A. flabellifolium* and the beautiful carrot fern (*Asplenium richardii*), the white-leaved herbaceous yellow daisy *Brachyglottis haastii*, and the spider orchid *Corybas trilobus*. Perched in its usual habitat, the "hot rock fern" *Cheilanthes humilis* should not have been a surprise!

Those who took the long way back to the vehicles were rewarded with flowering plants of *Hebe cupressoides* while those who took the more direct route had time to spend exploring the red tussock fringed wetlands.

* Wet Grassland on Pukaki Downs Station, 28 Dec - Robyn Bridges

Plan A had been to botanise the Big Rock stream catchment in the afternoon. But as is the way with well laid plans, we ended up driving and walking across Pukaki Downs Station to botanise an area of low lying grassland, with a bit of bog surrounding a small alder lined lake (the source of the Station's water supply).

As we descended the last slope we had a close encounter with a magnificant solitary *Aciphylla aurea*, whose stems were heavily covered in seed. On the same contour and similarly isolated, grew a specimen of *Olearia virgata* with a fragrance reminiscent of almonds. With the benefit of hindsight, and Geoff Roger's stunning talk, this may have been one of the few remaining shrub species purported to have originally covered this area.

The lower boggy flat, which had been grazed, was dominated by *Juncus* species and introduced grasses. Interspersed were *Oreobolus pectinatus*, *Drosera arturi*, *Celmisia gracilenta*, *Epilobium* 'one of the 40', *Anistome imbricata*, *Gonocarpus* sp, *Gnaphalium traversii* and *Muehlenbeckia axillaris*.

A foray to the lake edge found *Carex secta, Phormium tenax* and *Chionochloa rubra*. On slightly less boggy ground we saw *Ranunuculus glabrifolius* and *Wahlenbergia*. On drier and much softer areas, especially in patches of full sun, a few wilting *Botsocia*

sitzii and *Botsocia prostrata* were in evidence. Well, it was the afternoon of the first day!

Our thanks to the Managers of Pukaki Downs Station for permission to botanise their land.

Fig. Manypeeplia upsidownia From Edward Lear's Nonsense Botany.



X Mt Sebastopol and Governor's Bush, 29 Dec - Beth Andrews

After a look in the information centre at Mt Cook Village, where we saw that the weather report was not very hopeful, we decided to botanise the 'one hour' track through Governor's Bush. It took us longer than the hour, as there was something for everyone.

We saw mosses, liverworts, ferns, *Lagenifera*, orchids, varieties of *Dracophyllum* and *Gaultheria*, cascading parahebe (*Parahebe catarractae*), and the ever-present *Pratia*. An ascending track led us to an open area with views and then a winding track down again. Distorted and over-large plants were seen at the edge of the track, where we surmised that DOC's weed spraying had produced these aberrations, such as a triple headed *Thelymitra*.

The weather cleared enough for a walk up Mt Sebastopol. A swing bridge over the river led to a steep track, with many deep steps that I found difficult, my hips complaining so much that I didn't go far. Others went to a saddle or a rewarding climb to see the top tarns. A Japanese student from Palmerston North, keen to learn a little of our botany, accompanied us.

I had always admired the huge mountain *Celmisias*, so here was my chance to get a good photo. *Brachyglottis haastii* (formerly *Senecio*), caught my eye, with its rosettes of white leaves, fur covered - but sometimes the fur had worn off the upper surface, showing a shining green surface.

An unusual lichen, *Omphalina alpina*, collected by Allison, was interesting because it is a basidiomycete, with a toad-stool-like fruiting body, unlike most other lichens that are ascomycetes.

Kea Point and Tasman Glacier Moraine, 31 Dec - Audrey Eagle

Three kea calling overhead greeted the group of eight on the Kea Point Walk. On this undemanding walk there was plenty of time to study the vegetation and the following were a few observations;

At the altitude of The Hermitage *Podocarpus nivalis*, snow totara, was massed with red fruit, whereas a few days earlier, high up on the Mt Sebastopol Track, it was still in full flower. Spotted hiding in the undergrowth were the attractive bluish green, serrated leaves of *Gingidia montana*. Some of the plants seen in flower were *Parahebe decora*, (with leaves as small as 1.5-3 mm), *Geranium sessiliflorum*, *Wahlenbergia* sp. *Gaultheria crassa*, *Stellaria gracilenta* and *Leucopogon fraseri*.

In the afternoon the Tasman Glacier was visited. On the lateral moraine the *Aciphylla aurea*, spaniard or speargrass, were spectacular, they were in full flower and in every direction one looked were seen the raised, golden-stemmed spikes. Plants of note on the terminal moraine were the green compressed mats of *Raoulia australis* sprinkled with their tiny yellow daisy flowers. Even more curious were the numerous dead-looking twiggy branchlets of *Helichrysum depressum*; in this specialised stony habitat it was

abundant. It is a small rather flattened shrub but one bonsai-looking plant had a gnarled and twisted 'trunk' 20 cm high.

🍕 Western Shore – Lake Tekapo, 1 Jan - Gael Donaghy

This unpromising-looking area of soft sediment lakeshore, that is sometimes covered with water, proved to have some interesting plants. There are mats of the little *Leptinella maniototo*, a tiny Crassula, *C. sinclairii* that was in flower, the "tape measure plant" *Lilaeopsis ruthiana* and carpets of *Neopaxia lineariifolia*, with its pretty white flowers, with a pink stamen lying along each petal. A search was mounted for *Glossostigma elatinoides* flowers to show people how to trigger the irritable stigma, but there were very few out. A small plant with a disproportionately large blue flower turned out to be *Parahebe canescens*.

Rain interrupted our botanising, but after a compulsory lunch break in the vehicles, a quick sortie to a wind-scoured area about 100 m from the lake was proposed. Here there were several treasures including the unusual, dark green *Raoulia monroii*, with its fan-shaped arrangement of leaves. Another treasure was the *Convolvulus verecundus* subsp *verecundus* which has rosettes of grey/brown rabbit-dropping-shaped leaves that arise from a deeply buried runner! The plants had flowered earlier, and there were many capsules blowing around in the wind. Two other rewards for the plodding about in the rain were the tight cushions of the very hairy *Pimelea pulvinaris*, and the small broom, *Carmichaelia nana*.

Of interest here too were the bright yellow vagrant lichens, *Chondropsis* semiviridis – when the weather is dry they curl up and blow around. When it rains, they flatten out against the ground and photosynthesize,until it again becomes

too dry.

Fine example of Botsocia camerae overcrowding B prostrata. Chris E, Rodney L and others paying homage to tiny plants on the shore of Lake Tekapo – Rosemary Collier



Ja Freehold Creek, 3 Jan - Allison Knight

On this moist but mild day the trip began behind the Glen Mary Ski Club, where we picked up the track to Freehold Creek. *Hieracium* dominated amongst the short grazed tussocks, while the monospecific endemic, dandelion-like *Kirkianella novae-zelandiae* was spotted on the track. A little further on, in the turf beside a pond, we marvelled over the tiny fern, *Ophioglossum coriaceum*.

At the forest edge, identification of mountain beech, *Nothofagus solandri* var *cliffortioides*, was debated, as some of the leaf-tips were rounded like black beech, *Nothofagus solandri* var *solandri*. Bright patches of forest floor were carpeted by petals of the red mistletoe, *Peraxilla tetrapetala*. A few buds were left to tweak open as the birds do for pollination. Also in flower were the orchids, *Chiloglottis cornuta* and *Microtis oligantha*.

Above bushline *Hieracium* was still evident, but there was much else of interest: -*Myrsine nummularia* with purple berries that lizards like to eat; two whipcord *Hebes*, *H. hectorii* and *H. lycopodioides*; yellow swathes of *Bulbinella*; many woolly-headed *Craspedia*; two *Aciphylla* - the golden *A. aurea* and the creamy-flowered *A. 'Lomond*', spiky false spaniard, *Celmisia lyallii*, with its tips nibbled by hares; and the yellow daisy *Dolichoglottis lyallii* crossing with the white *D. scorzoneroides* to give a creamflowered hybrid.

Any lack of diversity in the vascular plants was more than made up for by the richness of the lichen flora on soil, rock and bark, inside the forest and out. The white paint-like splashes of *Lecanora farinacea* stood out on the wet rocks above bushline.

S Mackenzie Basin and Tekapo River Valley, 6 Jan - Val Smith

Following his interesting talk the previous evening as part of the DoC Summer Programme, Geoff Rogers not only made suggestions for our last day, but also offered to show us something different – four very dry, degraded areas with shrubland restoration possibilities.

First, a terminal moraine site in the Pukaki Conservation Area, with a mixture of indigenous and exotic grasses still being grazed, and six species of shrubs: *Carmichaelia petriei, Coprosma propinqua, Discaria toumatou, Melicytus alpinus, Muehlenbeckia complexa* and, growing in its shelter and tightly interlaced with it, *Sophora prostrata.* Seeing the prostrate kowhai *in situ*, with flower and seed, was a real highlight. The shrubs all show resilience to the desiccating winds and low rainfall, and Geoff said the reserve is expected to recover.

We drove on to the featureless flats of the Mackenzie basin, to an example of the ecological variability of the Tekapo dendritic (like the branches of a tree) drainage system. With a fall of only 1-1.5 °, the land is a series of dry interfluves and shallow, slightly damper channels. Within the rabbit-infested *Hieracium* and hard tussock "pasture" have been found several rare and endangered plants.

Dedicated searching of the channels eventually located a few tiny spreading plants of *Leptinella* "Clutha", previously known only from Pisa Flat in Central Otago. An earlier find of the slightly larger, denser, silkier and generally more attractive *L. serrulata* probably helped get an eye in for the smaller plant. Other plants of interest in the arid conditions were *Acaena buchananii*, with variable green or glaucous foliage and red sessile fruiting heads, small bronze mounds of *Scleranthus uniflorus*, *Pimelea pulvinaris* and three species of *Raoulia – R. parkii, R. australis* and *R. tenuicaulis*. The finding of a *Helichrysum* species not seen there before created a minor flurry of excitement and resulted in a GPS reading being taken of its location.

A little further along the road on the same property, we were shown an exclusion plot, one of ten set up ten years ago by DoC in different parts of the Mackenzie basin. Regular monitoring has seen little noticeable difference in plant recovery within the plot so far. However, Graeme did note within it, three shrub species not seen on the still grazed area outside.

The last study site was along the Bullock Wagon Trail and the hydro canal to the terraces and bed of the Tekapo River. The braided riverbed yielded mainly exotics, but amongst them were brilliant reddish-purple berries of *Coprosma atropurpurea*. The dry, stony slope above was probably disturbed by hydro works in the past, and was sparsely vegetated, but keen eyes found tough and resilient *Carmichaelia nana* and *C. vexillata, Muehlenbeckia ephedroides*, grey rosettes of *Convolvulus verecundus* subsp *verecundus*, woolly-looking *Pimelea sericovillosa*, muddy brownish-grey *Lepidium sisymbrioides* subsp *sisymbrioides* and more *L. "Clutha"*.

An interesting and thought-provoking day to end this year's New Year Field Trip.

More reports – look forward to reading these further summer trip reports in the next newsletter: Sealy Tarns/Mueller Hut - Rick Jackson, Temple View Walk – Neill Simpson, Ohau Skifield – Barbara Clark and Ohau Kettle Holes/Bendhu Bog Pine Reserve – Bastow Wilson.

REVIEWS

Book review – by John Steel

Williston, P. (2001) The Botrychiaceae of Alberta.

57 pp. Softcover. Alberta Natural Heritage Information Centre, Edmonton. \$CDN20 + \$CDN6 p&p.

This interesting little book summarises much of what is known about a fascinating plant group. *Botrychia* are eusporangiate ferns (having sporangia developed from several cells) and therefore regarded as primitive and possibly more closely related to the cycads and early gymnosperms than the leptosporangiate ferns (having sporangia developed from a single cell).

Alberta is something of a centre of *Botrychium* diversity having seventeen species, fifteen of which are regarded as rare. New Zealand has three species, only one of

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which, *B. lunaria*, is shared with Canada. This is a rare species in New Zealand with only three records (Brownsey, P.J.; Smith-Dodsworth, J.C. 2000) and should not be collected if found. It also occurs in Tasmania, South America and across the Northern Hemisphere.

It is a small plant, about ten cm. tall, with a single frond dividing into two parts, the green, sterile trophophore (the 'leaf' bit) and the fertile sporophore bearing the reddish-brown sporangia.

This little book gives a good summary of the history, classification, life history and Canadian conservation efforts for this intriguing plant group. A key for the Canadian plants is included followed by silhouettes of the seventeen species described and an excellent bibliography. The book concludes with colour photographs of each species in the wild. For the curious, it will provide an interesting addition to the library regardless of its limited value to the New Zealand flora. From a practical standpoint, *B. Lunaria* has the useful facility of making one invisible – bin Laden hunters take note!

It is obtainable direct from the author, Patrick Williston, P.O. Box 4979, Smithers, BC, V0J 2N0, Canada. He will accept New Zealand cheques for \$NZ39 inc. For further information he can be contacted by e-mail at: pwilliston@bulkley.net

Reference: Brownsey, P.J.; Smith-Dodsworth, J.C. (2000). New Zealand ferns and allied plants, rev. ed. David Bateman, Auckland.

BSO Members Discount: Many botanical books, including those published by CSIRO, Australia, are available from Manaaki Whenua Press, at 20% off, to BSO Members. This includes post and packing. If you are a member of BSO, say so when you order.

Email: MWPress@landcare.cri.nz.

Online ordering website: http://www.mwpress.co.nz,

Post: Manaaki Whenua Press, PO Box 40, Lincoln 8152, NZ. Telephone: +64 3 325 6700, Fax +64 3 325 2127

Website Reviews – by Allison Knight

Database of N Z plant names: http://nzflora.landcare.cri.nz/plantnames/

I'm kicking myself for taking so long to discover this exceedingly useful online database of current names for wild plants in New Zealand, and very grateful to Bastow for showing me how to use it. The names are those currently in use at CHR, the newly-re-named Allan Herbarium at Lincoln, and include not only vascular plants, but mosses, liverworts and lichens as well. Last update was on 30 august 2001.

Type in a genus name and all the taxa in that genus will come up. Type in part of a name, and all the names containing that phrase will come up. Click on a specific name and the full family classification and authorship will come up. Very handy for checking species lists, articles, trip reports and newsletters, especially when you can cut and paste from article to database and back. *Newsletter contributors please take note!*

The planned addition of synonyms, common names, plant descriptions, distributions and illustrations will make this database even more useful. Well worth using -try it!

New Zealand Fungi: http://www.nzfungi.landcare.cri.nz/

Whether your interest is pathology, systematics, ecology or conservation these mycology web pages provide a wealth of information on fungi in New Zealand. It is possible to search for fungi by name, to see which specimens are held in the NZ fungal herbarium, PDD and also to search the literature for articles on specified mycology topics. The graphics are not well supported by Netscape 4, but don't let this put you off.

NEWS

BSO Prize winners, Botany Colloquium, 6 Nov, 2001

The Botanical Society of Otago was pleased to donate three prizes to the annual Otago University Botany Dept Colloquium, which was ably organised by students Katja Schweikert and Kath Dixon. Congratulations not only to the prize-winners, but to all the participants who presented talks and posters on a wide range of botanical topics, and to the guest speakers, Profs Helen Leach and Blair Fitzharris, who gave a fresh botanical spin to their respective expertise in Anthropology and climate change. Prizes Awarded by BSO were:

Best Student Talk - Deane Harder

Wave goodbye to the bullkelp! - doing biomechanics in a wave-swept environment.

Abstract: For an analysis of the biomechanics of the bull kelp (Durvillaea), it is necessary to study its structure on several levels. Taking further into account the overall morphology, the seaweed's reactions to external forces can be correlated to the magnitude of these forces. The ultimate aim is to develop a computer model that simulates the behaviour of the kelp stipe in order to see how well the analysis mirrors the actual seaweed. Part of the analysis is looking at the waves and concurrent tensional forces with a method called 'wavelets'. In the long run, it might be possible with this method to predict the magnitude of waves that exceed the maximum allowable load and dislodge the kelp from the rocky substratum.

Runner-up Talk - Anne-Maree Oliver and David Orlovich

Silent witness: The case of the fruit (body) found in New Zealand, now in a morgue in Sweden and tagged as *Gymnopilus rubrocasteneus*, is re-opened!

Best Poster -Lynda McCann

Ever seen one of these? The endangered wood rose, Dactylanthus taylorii.

Allan Mere Award to Neill Simpson

Congratulations to Neill Simpson of Queenstown, who was presented with the Allan Mere Award for 2001 at the naming of the Allan Herbarium at Lincoln in November last year. This award is administered by the New Zealand Botanical society and is made annually to a person or persons who have made outstanding contributions to botany in New Zealand, either in a professional or an amateur capacity.

BSO was proud to be one of the botanical societies nominating Neill, who is a most deserving recipient of this award. The text of our nomination follows:

Neill Simpson's outstanding contribution, to botany in general, and to botanical societies in particular, in both an amateur and a professional capacity, has stretched across the years and across the country, and continues to grow even in his 'retirement'.

Neill's contribution to botanical societies began in 1966 when he joined the Wellington Botanical Society. Not only did he learn from Tony Druce, but he assisted him as well, particularly later on in recognising disjunct plant distributions. Then, as now, Neill was always willing to share his knowledge and growing experience with all others, be they professional or amateur, local or international.

Audrey Eagle writes "An ideal teacher and companion on field trips is Neill, both for his quiet enthusiasm and for his sharing of his wide knowledge of the native vegetation. Over a period of many years Neill has supplied me with plant specimens for my illustrations in 'Eagle's Trees and Shrubs of New Zealand'. Neill made a great contribution towards Tony Druce's research through his local knowledge of the plants, their habitats and the geology and geography of these areas. Added to this, Tony told me, was his excellent companionship through thick and thin vegetation, up and down mountains and in and out of streams".

Moving to Wanganui, Neill founded and led the Wanganui Museum Botanical Group and it is a measure of his contribution that he has been made a life member of this group. Moving on, Neill established and enhanced plantings of diverse native species everywhere he went, bringing to each place a showcase of our botanical heritage. This winter alone he is planting out, into public and private places, over three thousand native plants, which he has raised from seed.

Brian Rance writes from Southland. "Since his 'retirement' Neill has formed a botanical consultancy and in this capacity worked for DOC on tenure review and on threatened plant surveys. His sharp eye and ecological knowledge have resulted in many important botanical 'finds', including the first records of *Coprosma wallii*, and *C. pedicillta* in Southland, and the rediscovery of *C. obconica*".

Neill's productive association with botanical societies continues unabated. He has been the expert and untiring local organiser for many memorable WBS summer trips, and is the founder and driving force behind the Wakatipu Botanical Society. Last summer it was Neill's outstanding knowledge, freely given, of the rare and threatened plants of Southland that helped make the combined WBS/BSO trip so successful. His report, with Brian Rance, on these plants is a valuable addition to the Botany Department Library at Otago University.

Next summer's botanical society trip will also benefit from Neill's extensive knowledge of rare plants in the Twizel area. The Wakatipu, Otago and Wellington Botanical Societies and other groups continue to benefit from his beautifully illustrated and willingly given talks, and from his wide botanical interests, ranging from alpine plants in South America to the lichens on the rocks in his garden of native plants.

In summary, Neill is a superb field botanist. Not only has he brought the people to the field in trips too numerous to mention, he has also brought the field to the people; passing on his extensive knowledge and his enthusiasm for botany through his plantings, photographs, publications, slides and talks. It is hard to think of a more worthy recipient of an award administered by the New Zealand Botanical Society.

As Prof. Alan Mark says "Neill Simpson's contribution to botany in New Zealand deserves greater recognition".

We are pleased that Neill did receive that recognition and hope his association with BSO will continue to be a long and happy one.

International visitors to the Botany Dept, Otago University, 6 Feb – 12 March:

Professor Wu Ning, Chengdu Inst. of Biology, Chengdu, Peoples Republic of China and Hellaby Trust Visiting Fellow. Interest – Rangeland Ecology

Professor Vladimir Onipchenko, Moscow State University, Russia and William Evans Visiting Fellow, Otago University. Interest – **Experimental Plant ecology of the Russian Caucasus Mountains.**

Luigi Bertin, Ecology Department, University of Parvia, Italy and William Evans Visiting Fellow. Interest – Alpine Ecology

EVENTS

National

Fungal Foray, 5-12 May. Based at Okuru, 20 min south of **Haast** on the road to Jackson Bay, West Coast, South Island. Deadline for registration is 28 March. Registration forms and more information on the Botany Dept website: **www.botany.otago.ac.nz/foray/**

18th John Child Bryophyte Workshop, 28 Nov – 3 Dec. Based at Albert Town, near Wanaka, Central Otago. For registration forms and more information contact:

Geoff Spearpoint PO Box 188 Lincoln University Canterbury, NZ



Local events

The Hellaby Indigenous Grasslands Trust, the University of Otago and the Federated Mountain Clubs of New Zealand invite you to celebrate the INTERNATIONAL YEAR OF MOUNTAINS: 2002 DUNEDIN MARCH 8 – 10, 2002 UNIVERSITY OF OTAGO, St David St Lecture Theatre

FRIDAY EVENING, 8th March

5.15 - 5.30 Welcome. Opening by the Minister of Conservation

- 5.30 6.30 Professor Wu Ning, Chengdu Inst. of Biology, Chengdu, P. R. China and Hellaby Trust Visiting Fellow
- "Eastern Tibetan Steppe Rangeland: Ecology and sustainable management issues"

8.00 – 10.00 N.Z. Alpine Club. Sir Edmund Hillary will introduce a slide evening featuring two prominent New Zealand climbers, a professional Guy Cotter and an amateur John Nankervis.

SATURDAY, 9th March: New Zealand's Mountain Lands: "Values and issues"

- 9.00 9.25 Representative of Te Runanga o Ngai Tahu
 - "Tangata Whenua: values and issues"
- 9.25 9.50 Dave Craw, University of Otago "Geology: values and issues"
- 9.50 10.15 Bill Lee, Landcare Research, Dunedin "Special features of the indigenous terrestrial biodiversity"
- 10.15 10.45 MORNING TEA
- **10.45 11.10** Katharine Dickinson, University of Otago "Biodiversity Conservation: meeting the challenges"
- 11.10 11.35 Blair Fitzharris, University of Otago "Climate: features and issues"
- 11.35 12.00 Stephan Halloy, Crop and Food Research, Invermay "Global warming: possible effects on New Zealand Mountain biota"
- 12.00 1.00 LUNCH
- 1.00 1.25 Hamish McCrostie, NZSki.com, Remarkables Ski Field "Commercial recreation"
- 1.25 1.50 Kelvin Lloyd, FMC Executive, Dunedin "Non-commercial recreation"
- **1.50 2.15** Eugenie Sage & Sue Maturin, Forest and Bird Protection Society *"Nature conservation and tourism: values and issues"*
- **2.15 2.40** John Beattie, High Country Section Federated Farmers, Patearoa *"High country run holders: values and issues"*
- 2.40-3.10 AFTERNOON TEA
- **3.10 3.35** Jeff Connell, Department of Conservation, Dunedin "Conservation management: outcome choices and methods"
- **3.35 4.00** Richard Johnson, Chairman, Environment Canterbury "Sustainable management: resource use issues"
- 4.00 4.50 Panel Discussion

4.50 – 5.40 Alan Mark, University of Otago

"New Zealand mountain vegetation in a world context"

5.40 – 7.30 DINNER

7.30 – 8.30 Professor Vladimir Onipchenko, Moscow State University and William Evans Visiting Fellow, Otago University

"Northwest Caucasas Mountains: biodiversity hotspot and conservation issues"

NOTE: A **Photographic Display and Competition**, with a mountain theme, organised by Federated Mountain Clubs, and a **Mountain Art Exhibition**, organised by the Cleveland Living Arts Centre, will be special features of the celebration. They will be judged, with prizes donated by Dept of Conservation, Mountain Safety Council, Kathmandu, Fiordland Travel Ltd, and Catlins Wildlife Trackers. Special celebration T-Shirts, designed by FMC, will be on sale. ALSO: There will be a Gold Coin collection at each of the three sessions.

SUNDAY, 10th March

FIELD TRIP to the LAMMERLAW RANGE, eastern Otago to look at various management issues of snow tussock grasslands, including the joint Landcare Research -Department of Conservation - Forest Research study of the effects of burning. Trip leaders: Ian Payton, Landcare Research (project leader), Barbara Barratt, AgResearch, Invermay and Alan Mark.

Departs Botany Department, corner Great King and Union Sts. **9.00 am**. Returns via Airport for NZ 5314 (5.20pm departure). Note: Road is suitable for normal cars. **Transport** will be provided for those who notify intentions by mid-day Saturday (cost \$20 each). Bring lunch.

Further details from Alan Mark, Hellaby Trust & Botany Department, University of Otago, Box 56, Dunedin; Ph. 03 479 7573; Fax 03 479 7583; email <u>amark@otago.ac.nz</u>

BOTANICAL DIARY 2002. February - April. BSO events in boxes

23 Feb, Sat 9.30 am. BSO field trip to two of the last remaining kamahi/rata forest remnants on the East Coast of the South Island at Akatore and Bull Creek. Meet at 9.30 am at the car park of the Botany Department, 464 Great King Street. Bring lunch, boots and wet weather gear. Led by Ralf Ohlemueller.

27 Feb, Wed 12 noon, Botany Dept Seminar. Marian Thorsted, Danish Institute of Agricultural Research, Foulum, Denmark. Intercropping winter wheat and white clover.

4 March, Mon 6pm. Botany Dept, Otago University, Tennant Lecture 2002: Professor Vladimir Onipchenko, Professor of Geobotany, Moscow State University, Moscow, and William Evans visiting Fellow, Otago University. Plant interactions in alpine communities of the NW Caucasus Mountains of Russia.

- 6 March, Wed 12 noon, Botany Dept Seminar. Luigi Bertin, Ecology Dept, University of Parvia, Italy. *The vegetation and plant ecology of the Italian Alps*.
- 8 10 March, Fri Sun. International Year of Mountains celebration. For more details see Events, or Alan Mark, Botany Department, University of Otago, Box 56, Dunedin; Ph. 03 479 7573; Fax 03 479 7583; email <u>amark@otago.ac.nz</u>
- **13 March**, Wed 12 noon. Botany Dept Seminar. Justin Blaikie, MSc student. Changes in the morphology and physiology of Chionochloa rigida over an altitudinal gradient.

10 April, Wed 7.30 pm. NOTE DATE CHANGE. AGM, wine & cheese. Guest speaker Emeritus Prof. Alan Mark, Botany Dept. At seminar room, Zoology Annexe, Gt King St, car park by Dental School. Enter via side door behind the Glassblowing Unit. Be prompt or knock loudly – the door can't be left open long.

14 April, Sunday: Laboratory based Native Grass and bidi-bid Workshop run by Dr. Kelvin Lloyd: Identification of New Zealand Chionochloa, Festuca and <u>Acaena</u> species. Meet at 10 am sharp at the Botany Dept, 464 Great King Street. Bring lunch, lens & specimens. Be prompt- the door can't be left open long.



Local contacts and meeting places of groups with overlapping interests.

<u>University of Otago Botany Dept</u> Seminars are on Wednesdays during teaching semesters at 12 noon, upstairs in the Union St Lecture Theatre (formerly Botany School Annexe), in the red-brown bldg, Cnr Union St West & Great King St. Contact: Trish Fleming, Secretary, phone 479 7577

<u>Dunedin Naturalists' Field Club</u> (DNFC) Meetings are at 7.30 pm, first Monday of the month, in the Zoology Dept Seminar Room, (NOTE CHANGED VENUE) Great King St. Their field trips leave from the Citibus Depot, Princes St. Visitors are welcome. Contact: Beth Bain, President, 455 0189, email: bethbain@ihug.co.nz

Dunedin Forest and Bird (F&B) meetings are on Tuesday, at 7.45 pm in the Hutton Theatre, Otago Museum. Field trips leave from Otago Museum Gt King St entrance, 9am, Saturday. Secretary: Paul Star 478 0315

<u>Friends of the Botanic Garden</u> meet on the third Wednesday of the month at 7.30 pm in the Education Centre, Lovelock Ave. Secretary: Mrs Betty Wolf, 488 1550

<u>Otago Institute</u> (OI) contact: Michelle McConnell, secretary, phone 479 5729 Email: michelle.mcconnell@stonelaw.otago.ac.nz <u>New</u> web page: <u>http://otagoinstitute.otago.ac.nz/</u>

Times and other details may change. Check with the group involved first to be certain.

Botanical Society of Otago: whom to contact

 Submissions for the diary and new members, subscriptions or donations to: Trish Fleming ⁶/_o Botany Dept., University of Otago, P. O. Box. 56, Dunedin Phone (03) 479 7577 email trish@planta.otago.ac.nz

Submissions for the newsletter to Allison Knight, post to BSO °/_o Botany Dept., University of Otago, P. O. Box. 56, Dunedin or email <u>botsocotago@botany.otago.ac.nz</u>

Ideas for activities to:

1

Bastow Wilson,

^c/_o Botany Dept., University of Otago, P. O. Box. 56, Dunedin e-mail <u>bastow@otago.ac.nz</u> Phone (03) 479 7572 work, 473 9300 home.

For information on activities: the trip leader

or Trish (contact above), or Bastow, or see our webpage: <u>http://www.botany.otago.ac.nz/bso</u>

This Newsletter was published on the 14th February 2002. ISSN 0113-0854

●VJa Membership form: Botanical Society of Otago, 2002 家偽掌

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