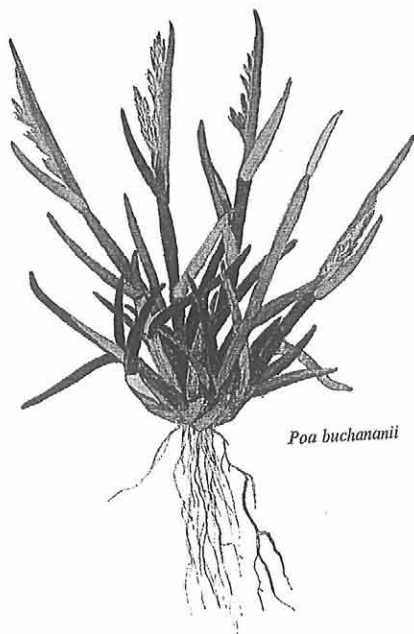


Botanical Society of Otago Newsletter

Number 44
April 2005



Poa buchananii

BSO Meetings and Field Trips

9 April, Saturday 8:00 am Old Man Range Field trip with Prof. Alan Mark.

The Botanical Society is invited to join an open field day that Prof. Mark has advertised in the ODT (see letters column 22 Feb.) in response to a runholder challenge for Prof. Mark to produce a photo of his enclosure there at 1220 m, confirming the tussocks within are healthier than those recently burnt (and grazed) in the surrounding area. The trip will provide an opportunity to have a closer look at some of the recent ecological work there and also to discuss tenure review in general. We will leave the Botany Dept at 8 AM Sat April 9, to arrive at the foot of the range about 10.30. We plan to leave about 3.00 PM and arrive back at the Department of Botany about 5.30-6.00 PM. 4WD vehicles recommended but cars should be OK. If you wish to attend this field trip, please contact Ian Radford in advance, so that numbers can be determined for transport etc. Contact Ian Radford, phone: (03) 479 9065.

21 April, Thurs 5:20 PM. AGM and *The World's most beleaguered biome: Temperate grasslands and their conservation status.*

A brief AGM will be followed by a talk by **Emeritus Professor Alan Mark**. Prof. Mark writes: "I will discuss/describe/show pictures of most of the World's temperate grasslands and discuss the conservation status of each, including New Zealand". At the Zoology Benham Building, 346 Great King Street, behind the Zoology car park by the Captain Cook Hotel. Use the main entrance of the Benham Building to get in and go to the Benham Seminar Room, Rm. 215, 2nd floor. Please be prompt as we have to hold the door open. Finish time: 7:00 PM. Contact: Ian Radford, phone: (03) 479 9065.

7 May, Sat 8:00 AM. Fungal Foray to Knight's Bush

Trip to Knight's Bush (Tuapeka West) to collect fungi with David Orlovich. The bush on the banks of the Clutha River contains beech, kanuka and mixed broadleaf/podocarp forest, so it should be a great locality for many exciting fungi. Bring hand lens, a basket or bag for collecting fungi, greaseproof paper (for wrapping specimens in the field) and a camera if you have one. Boots and parka recommended. Leave 8 AM from the Botany Dept carpark. Back around 6:00 PM. More details will be posted on the BSO website closer to the date. Contact David Orlovich, phone: (03) 479 9060.

11 May, Wed 5.20 pm Dr Steve Stephenson, University of Arkansas
Mushrooms and other fungi of eastern North America

The forests of eastern North America support a large and diverse assemblage of macrofungi. What are some of the more colorful, unusual and interesting fungi to be found in these forests? What are their ecological roles?

8 June, Wed 5.20 pm Philip Dunn, Ribbonwood Nursery
Eco-sourcing local plant material for use in restoration projects.

As well as selling native plants to the public, Philip is involved in a number of bush restoration projects. These projects are located both locally and across the Otago region. Phil will talk about his involvement in these projects.

18 June, Sat 10 am. Field trip. Sutton Salt Lake, NZ's only inland saline lake, with water half as salty as sea water. Salt-tolerant herbs line the margins of the lake, which occupies a shallow depression in the schist landscape near Middlemarch.
.....*Continued page 27.*

Meeting details: Talks are usually on Wednesday evening, starting at 5.20 pm with drinks and nibbles (gold coin donation), unless otherwise advertised. Venue is the NEW Zoology Benham Building, 346 Great King Street, behind the Zoology car park by the Captain Cook Hotel. Use the main entrance of the Benham Building to get in and go to the Benham Seminar Room, Rm. 215, 2nd floor. Please be prompt as we have to hold the door open. *Items of botanical interest for our buy, sell and share table are always appreciated. When enough people are feeling sociable we go out to dinner afterwards - everyone is welcome to join in.*

Field trip details: Field trips leave from Botany car park 464 Great King Street, unless otherwise advertised. Meet there to car pool (10c/km/passenger, to be paid to the driver, please). **Please contact the trip leader before Friday for trips with special transport, and by Wednesday for weekend trips.** A hand lens and field guides always add to the interest. It is the responsibility of each person to stay in contact with the group and to bring sufficient food, drink, outdoor gear and personal medication to cope with changeable weather conditions. See trip guidelines on the BSO web site: <http://www.botany.otago.ac.nz/bs/>

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President's notes

David Orlovich

Hello BSO members. Our short summer seems to be over and I'm writing this with the fire blazing and rain pouring outside. Our BSO summer has been a little devoid of activities so far, but we did manage to have a great BBQ at the start of semester at the University. We decided this year to give away sausages for free, and they were certainly taken up by an appreciative crowd of students. Many people took the opportunity to renew their subscriptions and hopefully we'll see a few new faces at BSO meetings in the future as a result. Perfect weather and great help from the BSO committee and Dept of Botany Head Paul Guy made for an excellent afternoon. Do try to come along next year!

Coming up in April are a field trip and talk, both by Emeritus Prof. Alan Mark. Alan is always an interesting and engaging speaker, who doesn't shy away from a bit of controversy when the well-being of the natural environment is at stake, so both the trip to the Old Man Range and the talk at our AGM will be of great interest to many members. We hope to have a short AGM before Alan's talk on Thursday 21st April (note the different day), and we would like any members with an interest in being on the BSO committee to contact us as soon as possible (i.e., well before the meeting). If we have nominations prior to the meeting date, it will make the elections a quick and painless process. In particular this year, we are looking for a Newsletter Editor, and a Secretary. The other executive members of the committee have indicated they can stay on for another year. The BSO committee is still looking for an honorary auditor for our financial accounts. If you, or someone you know, can do the job for us, then let one of the committee members know.

Following the AGM, there are trips planned to Sutton Salt Lake and Knight's Bush, and a talk by the always entertaining Prof. Steve Stephenson. I look forward to seeing you at some of these events.

2005 Subscriptions now due!

We've colour-coded the address labels so that you can easily see if you're financial or not. If your address label has a green mark, then you're financial for this year (the date until you are paid is printed on the label too), and if there is a red mark on your label, then you need to pay for this year.

Editor's notes

Allison Knight

This issue's been a long time coming, and is still not as complete as it should be, as I haven't been well. You can see why we really do need a new editor/subeditor. It's a lot of fun and very interesting if you're not incapacitated. We've still managed to gather together a few gems: a letter from Audrey Eagle, botanical notes from up and down the country by Lloyd Esler, underwater insight on seaweed communities from Cameron Hay, a sparkling report on the Nugget Point Trip by Robyn Bridges and even a lichen list for the reserve there. Members' original artwork and botanical images featured include the tantalising Geranium "Von" drawn by Janet Atkinson, a fine

photograph from Moira Parker, and a stunning scanning electron micrograph from Mary Anne Miller. Finally, big welcome back from Botswana to our roving reviewer, John Steel – look forward to a review from him in the next issue.

Editor's guidelines Contributions are always welcome, but newsletter space is a little limiting. Please note these few gentle guidelines. Please try and aim for a 0.5 – 1 page of 14 pt Times New Roman for trip and meeting reports and book reviews, and 1 – 2 pages, including illustrations, for botanical notes. Original articles, if they are exceptionally relevant, could stretch to 4 or 5 pages of 14 pt, including illustrations.

Please submit copy for next newsletter by 10 May 2005

Editorial Policy The Botanical Society of Otago Newsletter aims to publish a broad range of items that will be of interest to the wider botanical community and accessible to both amateur and professional botanists. Contributions of letters, comments, trip and meeting reports, articles, plant lists, book and website reviews, news items, photographs, artwork and other images and items of botanical interest are always welcome and will be published at the editor's discretion. Articles of a scientific nature may be referred, at the editor's discretion, to a scientific editor appointed by the committee. The scientific editor may refer the material to anonymous referees. Refereed papers will be identified as such in the newsletter. *BSO will not accept papers proposing nomenclatural novelties or new combinations.*

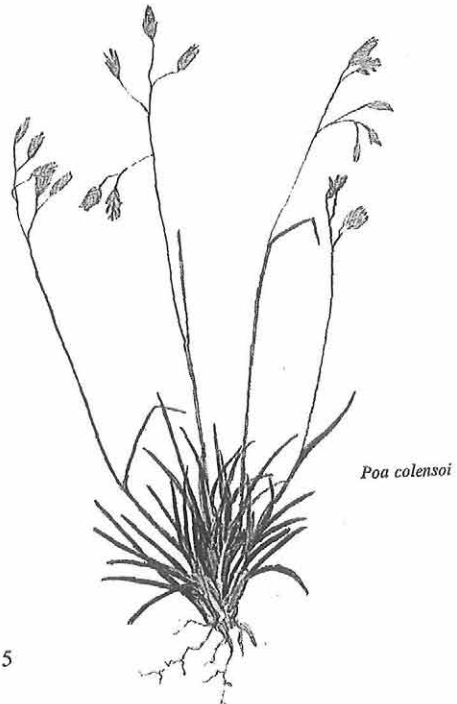
Disclaimer *The views published in this newsletter reflect the views of the individual authors, and are not necessarily the views of the Botanical Society of Otago. Nor do they necessarily reflect the views of the Department of Botany, University of Otago, which is supportive of, but separate from, our society.*

Cover Pictures

Front cover. *Poa buchananii*, "one of the most common grasses throughout the alpine zone"
Mark & Adams, *New Zealand Alpine Plants*, 1973

Back cover. *Beilschmiedia tarairi* (*Tarairi*) pollen with protruding pointed spines and rounded gemmae. The evolution of angiosperms is reflected in their pollen. SEM - Mary Anne Miller.

Page 5. *Poa, colensoi* "South Island: widespread on the greywacke mountains". Mark & Adams, *New Zealand Alpine Plants*, 1973



Letter

Runner Beans running late!

9 February 2005

I have made a number of enquiries about the lack of flowers on the runner beans in Dunedin this season. Only one person had flowers but they were a month or more later than usual. About eight other gardeners said no flowers but plenty of healthy leaves.

My neighbour's and my plants had their first flowers opening yesterday. So maybe they will be in time for us to eat beans this summer!!!

I think it is still worth a mention in the newsletter that normal flowering would be December and that the unusual cold weather appears to have affected the flowering time. This has resulted in the plants not flowering until nearly halfway through February.

The cold weather has not affected the usual "jack and the beanstalk" like growth on the height of the vines, nor the abundance of their leaves. This was a similar story to that experienced by other bean growers contacted.

17 March

Beans at last, and extra tasty after so long a wait! Several people have let me know that they had their first picking last week.

Audrey Eagle
Broad Bay

Notes and Articles

North & South

Lloyd Esler

A Northland visit

A recent trip through Northland makes me glad I live in Southland. Our weed problems - which I rank in order as *Pinus contorta*, gorse, Chilean flame creeper, broom, sycamore and blackberry - are nothing compared to Northland. There is certainly gorse there but it is spindly and unhappy and easily penetrated by rapidly-growing natives. Wattles, Manchurian wild rice, the giant reed *Arundo donax*, pampas, woolly nightshade and coral tree *Erythrina x sykesii* all grow in abundance. The latter is interesting. Groves of coral trees are appearing along the roadsides and although it is sterile it spreads vegetatively from any scrap of twig. Kikuyu grass forms a swathe a metre deep, rolling over fences and submerging the natives.

A feature of the north is the neglected land. Some valleys must have the most fertile land in New Zealand and were once pasture but are now disappearing under a sea of woolly nightshade and gorse which is relentlessly encroaching on the obligatory clusters of shacks with peeling paint, large dogs and rusting car bodies. Northland can grow things that we can't. Tamarillos, oranges, grapefruit, kumara, taro, bananas and even sugar cane grow where people can be bothered planting them.

I have decided that there are six Northland species that it is a pity aren't part of the southern landscape. These are pohutukawa, nikau, kauri, mamaku, pink-flowered manuka and mangrove. Highlights of the trip were the Trounson Kauri forest walk, a visit to the Matakohe Kauri Museum and Tane Mahuta.

Eek, shouldn't have planted that one!

One of the best ways to identify an unknown plant is to dig it up, plant it in your garden and watch what happens. Often a stranger makes a welcome addition to the garden flora but sometimes things can go wrong. Sorrel *Rumex acetosa* is an edible plant which is rare in Southland. It grows around Halfmoon Bay and odd plants turn up elsewhere. I had a decent-sized ex-Stewart Island one growing which produced copious pollen each year but never seeds as the species is dioecious. I collected another in a ditch at Mabel Bush, a female, and planted that. It didn't take long to see that this was a mistake. Now thousands of seedlings are coming up in the garden and through the lawn. I seem to have unleashed a super-weed. Despite much spraying and weeding there is still plenty around and I am keen to stop it invading an unsuspecting world. Another Stewart Island weed, Shamrock pea *Parochetus communis*, took only days to make a bolt for freedom when I planted a small piece. It outgrew its pot at an extraordinary rate and was soon established in the moderate shade of a native border. A major weeding effort eradicated it from the garden. I still have it but confined to a pot. A third disaster was umbrella sedge *Cyperus eragrostis*, an attractive, naturalised species occasional in ditches. I thought it would be a nice addition to the modest collection of sedges and it grew very encouragingly. It seeded profusely and started taking over a wet patch of lawn. It also is the subject of an extermination campaign. Others that you want to grow doggedly resist cultivation. Penny cress, *Thlaspi arvense*, is an example. It shows up occasionally but transplanted specimens die quickly and the seeds come to nothing.

Whitlow grass

Whitlow grass *Erophila verna* is a small cress up to about 12 cm. Until five years ago I had found it twice in Southland, both as single plants in roadside gravel. Now hundreds of kilometres of Southland roads are fringed with it. With thale cress, *Arabidopsis thaliana*, it is the dominant roadside gravel species, often forming a long swathe of grey or mauve. It's easy to see how it spreads with the tiny seeds being tumbled along in the wake of cars. The seeds are a popular food item for sparrows and finches, especially greenfinches, but the habitat makes feeding hazardous as the number of squashed birds will confirm.

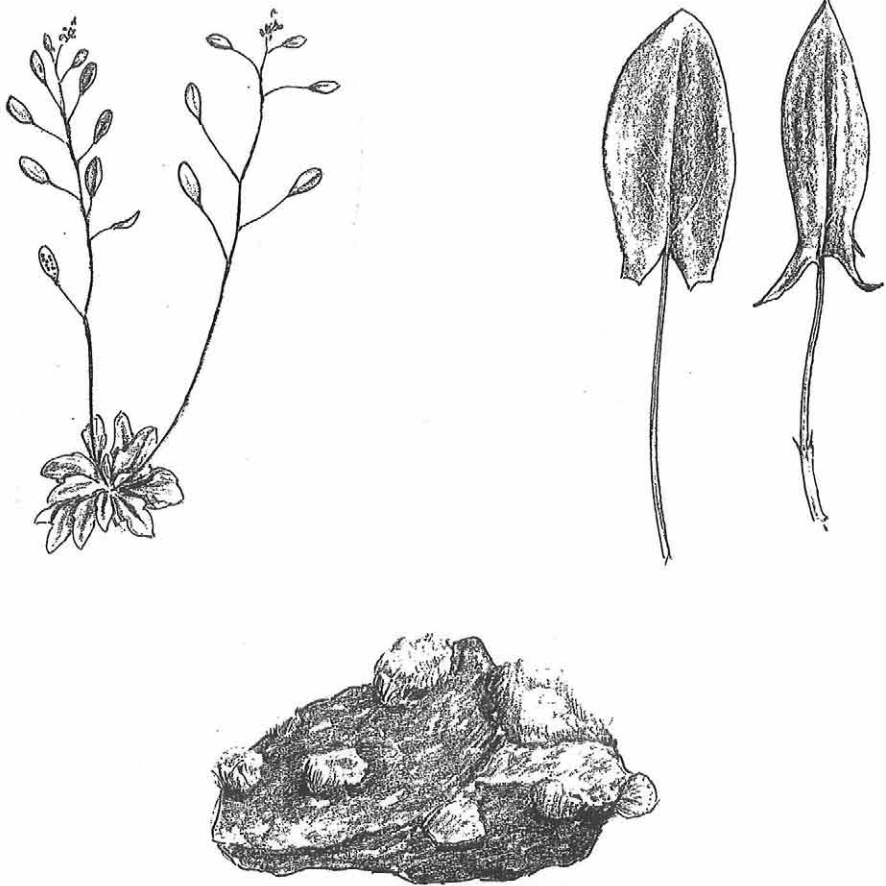
Invading alga

The ecology of Southland rivers is set to change dramatically in the next few years with the arrival of the freshwater alga *Didymosphenia geminata*. At present it seems to be confined to the Mararoa River and the Waiau but it will inevitably spread further.

Didymosphenia is a diatom that rapidly forms dense colonies on rocks and logs in clean waterways. These are green-brown and have the texture of wet cotton wool. Overseas, the species is known for its ability to spread rapidly, choking waterways and reducing the habitat of invertebrate and fish life. As it can't be eradicated, Environment Southland has a containment programme instead, with fishermen, swimmers and boaters urged to take care when moving from one river system to another.

Figs. Top right to left; *Erophila verna*, *Rumex acetosa*, *R. acetosella*.

Below; clumps of *Didymosphenia geminata* on a rock from Mavora River. – Lloyd Estler, 2005



Durvillaea willana: an algal icon of southern shores

Cameron Hay

Plants typify different parts of the globe: eucalypts are Australian, we associate redwoods with California, sonora cacti with semi-desert states of the USA, proteas and ericas with South Africa, and kauris with New Zealand and New Caledonia.

Here, in the Southern Ocean and South Pacific, many plants have very localised distributions: they are endemic. This is partly because of the way the ancient southern continent of Gondwana spread apart carrying life forms to evolve in relative isolation. On a smaller scale, and in more recent geologic times, endemic species have evolved on even smaller shelf islands such as Three Kings Islands in the far north or Auckland and Campbell Islands in the south.

Many marine plants also have localised distributions, although this not as readily appreciated by humans who generally view things from a terrestrial perspective. But in the USA, the conspicuous giant kelp *Macrocystis pyrifera*, is often regarded as typically Californian because of the huge kelp forests that lie off southern California shores. Exposed shorelines of Oregon, Washington and British Columbia are characterised by a strange brown kelp called the "sea palm" (*Postelsia palmaeformis*) while in the fiords of this region there are huge beds of a strange brown kelp called *Nereocystis*. Symptomatic of southern shores of Cape Province, South Africa, are kelp beds formed by a massive brown kelp, *Ecklonia maxima*, while the inlets and fiords of northern Europe and Scandinavia are dominated by a brown seaweed called *Ascophyllum*.

When Morton and Miller wrote their popular book *The New Zealand Sea Shore* in 1968, they described the southern hard shorelines of New Zealand as "*Durvillaea* coasts". Much as we describe forests as rata-kamahi forest, rimu forest or silver beech by their dominant species, our southern shores are easily identified by the thick beds of *Durvillaea* kelp, especially *D. willana*. These massive plants, thrashing about in the breaking waves on exposed coasts, and forming a continuous kelp zone in many places, are a both a photographers delight and the bane of many a fisherman fishing from the rocks.

The genus *Durvillaea* is typically Australasian since four of the five species¹ in the genus are confined to our part of the world. The fifth species, *Durvillaea antarctica* — the only species with buoyant, honeycombed blades — has a wider circum-subantarctic distribution being found in New Zealand, Chile, Tierra del Fuego, the Falkland Islands, South Georgia, Kerguelen Islands and most other so-called subantarctic islands dotted around the Southern Ocean. In a few places, eg Gough Island on the mid South Atlantic Ridge it grows together with the typically North Atlantic kelp, *Laminaria* which

¹ The four solid-bladed species have relatively localised distributions being endemic to: Tasmania and southeast Australia (*D. potatorum*), central and southern New Zealand (*D. willana*), the Chatham Islands (*D. chathamensis*) and the Antipodes islands, where there is an undescribed species.

it resembles superficially.

Exposed rocky shores of Otago and Southland are best characterised by *D. willana*. Perhaps 90% of all plants, and most of the biomass comprising this endemic species occurs on these coasts where it forms thick, dense, fringing forest on exposed rocky shores from the low water mark down to depths of about 5 m. At Tautuku, in the Catlins area, the biomass of this kelp was measured at just under 100 kg per square metre of lower shore.

Durvillaea willana is one of the world's massive kelps. Unusually large plants may weigh 45 kg. Found only in central and southern New Zealand it is named after the famous French explorer, Dumont d'Urville, and Mrs Eileen Willa, a resident of Stewart Island and keen amateur marine botanist who died in 1998.

Together with its close cousin, *Durvillaea antarctica* — which grows right next to it, but higher on the shore in southern NZ — the undiscerning British settlers lumped the two *Durvillaea* plants as “bull kelp”. More observant Maori probably noticed that while the honeycombed, spongy blades of rimurapa (*D. antarctica*) could be used to manufacture bags for holding and preserving tītī (mutton birds), and possibly for carrying water, the solid leathery blades of *D. willana* were quite useless for such purposes.

(Interestingly *D. antarctica* is an important sea-vegetable in Chile where the whip-like thongs of the plant are bound into hanks, dried and sold in fish markets. Called *cochayuyo* or *hUILte*, the pieces of dried blade are soaked, cut into pieces, and boiled for at least two hours to form a meat substitute in stews and casseroles, or it is served cold in salads. There appears to be no record of Maori eating rimurapa, perhaps because of the long boiling time needed tenderise the plant).

Even on neap tides it is usually possible during calm seas to walk out amongst the spongy blades of *D. antarctica* to gather paua or collect mussels. Venturing out further into the zone of *D. willana* is, however much more precarious. For this species comes no higher on the shore than the extreme low water mark, and it is the front line of defence against the onslaught of the huge waves that typically pound these coasts.

How do you tell the *Durvillaea* species apart on Otago and Southland shores?

***Durvillaea antarctica*:**

D. antarctica has smooth stalks (stipes) commonly as thick as a man's arm or thicker in southern New Zealand (northern plants are much more slender), and usually shorter than 0.5 m. Initially each baby *Durvillaea* plant has a simple leafy blade supported by a single stipe arising from a small sucker-like holdfast which adheres strongly to the rock. With time, several plants often merge to produce a dome-like holdfast with an irregular outline and supporting ten or more stipes. So what looks like a single *D. antarctica* plant is often a cluster of plants.

Fig. *Durvillaea* species: *D. willana* (left); *D. sp.* "Antipodes Is." with perforated frond (centre); *D. antarctica* (upper left); *D. chathamensis* (upper right); these do not all occur together in one locality, but their relative positions on the shore are suggested.
Nancy M Adams, *Seaweeds of New Zealand*, 1994.



The flexible stipes supporting dozens of whip-like inflated thongs, thrash about in the surf. However, on very gently sloping shores (eg at Oaro on the southern Kaikoura coast) and in semi sheltered places (eg Paterson Inlet), the blade is almost undivided, and the stipe and holdfast much reduced in size. These broad-bladed plants, that can be sliced open to elongated bags, are best suited for packaging and preserving mutton birds. Fully grown plants have blades commonly 4-5 m long and up to 8 m+ on occasions

D. willana:

Stipes of *D. willana* are very much longer and thicker. Semi-rigid, they stand upright or in a drooped position at low tide. Some of the largest specimens have stipes up to 2 m long and 100 mm thick at their base. Unlike *D. antarctica* the stalks have leaf-like blades attached along their length and also along the lower margins of the main blade. Often the main blade has snapped off leaving a truncated plant. Although *D. willana* individuals also merge to form composite holdfasts with multiple stipes, this happens less frequently than is the case with *D. antarctica*. Many of the largest *D. willana* specimens are solitary; ie with a single stipe and holdfast. The blades of *D. willana* also commonly exceed 5 m.

Colour: While the colour of both *D. antarctica* and *D. willana* changes seasonally and with their level on the shore (palest plants are often highest on the shore) at most locations *D. willana* typically forms a dark chocolate brown zone (almost black in some lights) below a paler tan or yellowish brown intertidal zone of *D. antarctica*.

As mentioned, both kelp species are attached to the rock by massive sucker like holdfasts (rather like a sink plunger). However whereas the holdfasts of *D. antarctica* are often bored and excavated internally by a myriad of small crustaceans (the boring starts with a small fluffy isopod called *Phycolimnoria*), and molluscs, the holdfasts of *D. willana* are typically solid and woody throughout. By being impervious to boring and tunnelling animals the holdfasts of *D. willana* adhere so strongly to the rocks that during storms it is often the bed rock that shatters before the holdfast gives way. Which explains why on beaches quite large rocks are often cast near the high tide mark? They arrived originally with a drifting kelp plant (commonly *D. willana*) which has since rotted away.

The discovery of *D. willana*

It was only in relatively recently that scientists noticed that *D. willana* was a different species from *D. antarctica*. In 1923 specimens of *D. willana* that washed up on New Brighton Beach near Christchurch were described in *Proceedings of the NZ Royal Society* as a peculiar form of *D. antarctica*. A factor perhaps contributing to this late discovery was that for many years New Zealand seaweeds were studied by Prof VJ Chapman of the Botany Department, University of Auckland and by one of his keenest seaweed-collecting students, Victor Lindauer (son of the famous portrait painter of Maori). In the north of New Zealand, eg at places like Piha and Bethells, the only species of *Durvillaea*, is *D. antarctica*. Knowledge of a distinctive southern *Durvillaea*

species was slow to reach the north, and because of the huge size of the plants, nobody was able to press an entire mature plant onto a herbarium sheet.

In the south, however, Mrs Eileen Willa, life-time resident of Stewart Island, was busily collecting and pressing seaweeds onto herbarium cards which were kept at Rakiura Museum in Oban. Her favourite collecting place was Ringaringa beach where large quantities of drift seaweed washed ashore after easterly storms. Over the years Mrs Willa communicated with several of the world's most famous marine botanists including Prof F Papefuss at the University of California and many of her specimens are now scattered throughout plant herbarium collections world-wide. Mrs Willa always knew that there were two types of *Durvillaea* in the south. There is a very accessible bed of *D. willana* at one end of Ringaringa beach where she collected so many specimens after easterly storms. In letters and with drawings and specimens she communicated this information to Victor Lindauer at the University of Auckland who described the new species in 1949, naming it after Mrs Willa.

This discovery of such a large undescribed kelp seaweed in 1949 may seem inconsequential. For many folk, seaweeds are pretty much all the same — an infernal nuisance when they get around the propeller! But for marine botanists, the late discovery of such a distinctive and ecologically dominant kelp, widely distributed on mainland southern New Zealand, was as if terrestrial botanists had suddenly stumbled on an undescribed dominant tree like rimu of kahikatea.

Currently there are 17 marine reserves on the mainland New Zealand coast. Several are in estuaries and just seven are south of Cook Strait. Collectively they amount to far less than 1% of the length of the mainland coast and none in South Island includes any significant area of exposed *Durvillaea* coasts.

Fig. BSO & *Durvillaea*, Shag Point - Allison Knight. See also Chris Hepburn's pictures of named seaweeds on our website: <http://www.botany.otago.ac.nz/bso-ed>.



It is therefore important that we protect a very good example of the type of shoreline on which endemic *D. willana* is the ecologically dominant species. On land we have land reserves for red tussock, for rimu and even ranunculus. Several sites along the Otago and Southland coasts and on Stewart Island would be ideal candidates for protecting this endemic and dominant kelp and the flora and fauna that lives within the forests of Mrs Willa's *Durvillaea* kelp.

Botanical Art Feature

Geranium 'Von'

Janet Atkinson, 2004 Art competition.

In 1993 Tony Druce found a little white root in with a specimen he was potting up from a botanising trip in Otago. He potted the root separately and up came this little geranium, which he nicknamed *Geranium* 'Von', as it was from a kettle hole or from boggy habitat surrounding a tarn in the Von valley. Plants grown from that specimen have flourished and spread in the gardens of several botanists since then, but no one has yet, despite intense searching (especially this summer), found a wild specimen of this particular new native geranium.



"Geranium Von"
(nickname - not yet described
by taxonomists) Feb 2004.

Sketch of *Geranium* "Von" by Janet Atkinson. Her colour painting of the same specimen can be seen on the BSO website, along with the other entries in the inaugural Audrey Eagle Botanical Drawing competition. See: <http://www.botany.otago.ac.nz/bso>

Meeting & Trip Reports

Brief reports, Sept – Dec 2004

Allison Knight

- 5 Oct, **Dr Dave Kelly** the 2004 Leonard Cockayne Memorial Lecture, also talked to the BSO on: -*The current state of bird-plant mutualisms in New Zealand* Plants adapted for pollination by birds, such as *Peraxilla*, *Fuchsia*, *Sophora* and *Phormium* are at risk if bird numbers decline. More importantly, 70% of the 240 woody species in New Zealand have fleshy fruits but the kereru is the last surviving bird with a beak big enough to swallow large seeds. This presents a bigger problem for dispersal and replacement.
- 18 Sept, **Dr Lisa Russell** led an interesting exploration of the sea shore at **Shag Point**, to examine seaweed growth forms and communities in the intertidal zone. Chris Hepburn has supplied some excellent photos of named seaweeds, from this trip for our website, including *Durvillaea*. There are shots of the people and scenery as well, so take a look.
- 13 Oct, BSO **3rd Annual Geoff Baylis Lecture, *A modern taxonomist in a postmodern era - Servant or Master*** Our distinguished speaker was **Henry Connor**, DSc, FRSNZ, co-author of Flora of New Zealand Volume V, Grasses. Dr Connor said, among other pearls, that it was easy to just describe a new species, or rename an old one and move it around, (as Michael Heads did with *Hebejeebie* BSO Newsletter 36, 2003), because this avoids fitting it into a key to all related species. He emphasised that a master taxonomist should always think of the users needs
- 11 Nov, **Beatrice Hale**, author of 'The New Zealand Pleasure Garden' talked on *Plants with a Purpose*, and broadened our horizons on the uses of plants.
- 3-4 Dec. **Postponed**. Weekend trip to see the fabulous **fossil forest at Piko Piko**, with Geologist **Dr Daphne Lee**. Hopefully this trip will be rescheduled for 2005.
- 8 Dec. **Diane Campbell-Hunt** spoke on *Developing an urban sanctuary - the Karori Experience*, and it's relevance to the proposed Orokonui Sanctuary.
- 28 Dec 04 – 6 Jan 05. **Wellington Botanical Society Summer Trip**, based at **Staveley**, Western Canterbury. Three keen BSO members joined the Wellington crowd for 8 glorious days of botanising from the kettle holes of Spider Lakes and the banks of the Rakaia River to the alpine tops of Mt Hutt, Mt Somers and Little Mt Peel. Vascular highlights included the cryptic penwiper, *Notothlaspi rosulatum* and the golden *Ranunculus haastii* in full flower on the scree slopes of Mt Hutt. Finding the genuinely rare lichen *Ramalina pollinaria* by the track to Sharplin Falls was another highlight, as it is known from only 2 other sites in New Zealand.

It is hard to distinguish which parts of the Botanical Society's trips are the most enjoyable. Is the mix of people, the conversations travelling to and fro, or the botanising? Probably it's the combination, which was certainly the case on the weekend trip to Nugget Point in October last year. This was the second trip in two consecutive years to Nugget Point, which hopefully may have set a precedent. Like the previous trip, it was superbly led by John Barkla who was ably assisted by his family, some of whom kept some of us very much on our toes!

The botanising began at McLean Falls where within a few metres of the cars one of the botanical highlights, *Pittosporum obcordatum* with a very colourful juvenile specimen, was found growing next to the track. Other species in the bush margin were *Coprosma decurva*, *C. rotundifolia*, *C. wallii*, *Olearia ilicifolia* and *Meliccytus flexuosus* which grows well in frosty riparian areas.

Heading into the bush of note were large swards of the Umbrella fern, *Gleichenia cunninghamii*, a magnificently huge *Dicksonia fibrosa*, *Cyathea smithii*, and the very stunning Prince of Wales Feathers fern, *Leptopteris superba*. Crookes and Dobbie in 'New Zealand Ferns' (1963), p.20 were also much impressed by this fern and their description is worth reading!

With a bit of fancy footwork, we climbed onto the rocks surrounding the edge of upper pool below the main fall. At the lip high above us, where the water poured over the edge, a large *Metrosideros umbellata* was magnificently silhouetted against the sky. On the rocks at our feet species of *Hydrocotyle*, *Acaena*, *Epilobium*, *Oxalis*, *Lagenifera* and fruiting *Pratia angulata* were found.

Semantics often take centre stage on these trips (as does food). After a voluble epicurean feast; definition 'to mangegiferate', a term kindly explained to us by a visitor from Wales as eating and talking at the same time, we headed to the significant wetland area of the Tautuku Estuary. Flowering *Pittosporum tenuifolium* and *P. eugenoides* marked the beginning of an extensive estuarine boardwalk. Our first wetland was a large still body of water to which one observer was heard to describe as an ephemeral wetland because, "Still bodies of water were always ephemeral". But perhaps it belongs to another wetland class. Though a still body of water, its depth and the fact that it looked like it has 'standing water for most of the time', would indicate a less transitory nature. I think it fits better with the classification of 'shallow water' as described in the recently published '*Wetland Types In New Zealand*' by Peter Johnson and Philippe Gerbeaux (2004).

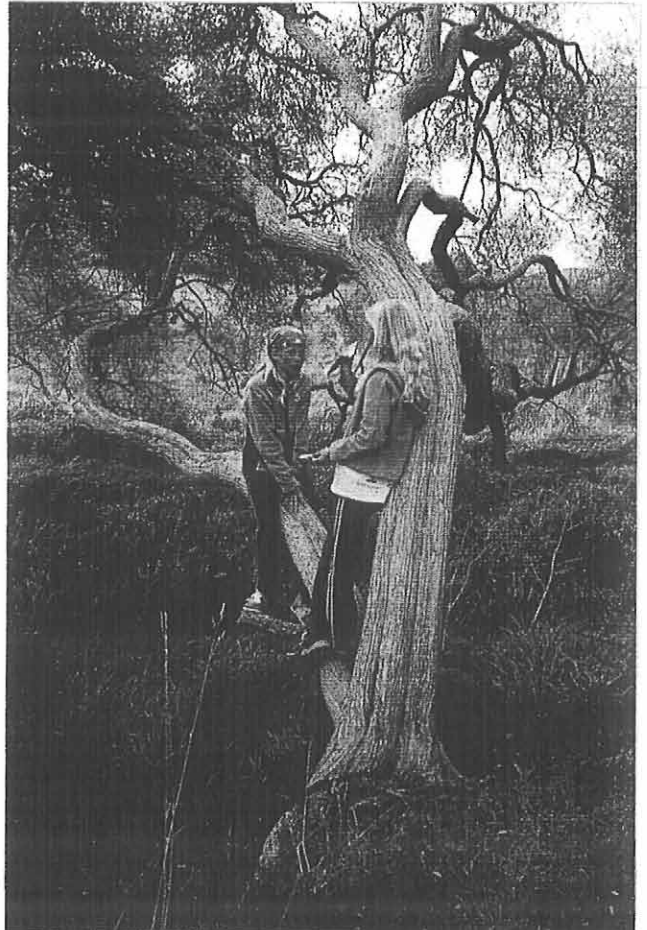
The boardwalk took us deep into the estuary giving access to areas previously inaccessible by foot. The views of the estuary from this point were stunning. The backdrop of bush covered coastal hills contrasted well with the gentle brown colours of great swathes of *Apodasmia similis* (endemic jointed rush) in the foreground. *A. similis* provided perfect shelter to the brilliantly camouflaged but very shy fern bird which rewarded our patience by making several, albeit brief, appearances.

In several groups the next morning we botanised the immediate vicinity around the Nugget Point lighthouse. As with other species the *Olearia fragrantissima* was late flowering and we were deprived of its wonderful scent. Memorable was a large remnant of original forest cover, a very large and severely wind topiaried specimen of Rimu 'horizontalis'. It had a tenuous, but obviously successful foothold in a damp spot and despite its prostrate form, seemed quite healthy. The unusually close proximity of its foliage to the ground was providing excellent shelter to local penguins, not many of which can lay claim to a *Dacrydium cupressinum* foliage rooftop!

Having read about the discovery of several specimens of one of our most endangered species, *Olearia hectorii* the deciduous tree daisy, in the ODT in 1997 it was reassuring to visit the site of some good specimens of this lovely tree, on the way home. Here the Department of Conservation is working to secure these specimens, which were once widespread in this area. *Olearia hectorii* is one of our largest small leaved trees reaching a height of nine and half metres on maturity and a close relation of the North Island *O. gardnerii*. They are truly magnificent and we were fortunate to see them in flower. Looking across the valley, their distinctive colouring and form stood out clearly tracing the edge of the river as it wound its way through the alluvial plain.

Kirsten & Rebecca Barkla
on *Olearia hectorii*.
Owaka Valley,
October 2004.
- Moira Parker

(See BSO website
for more images
of the Nugget
Point – Catlins trip)



Thought to be hundred to hundred and fifty years old, there are about thirteen specimens remaining in the area.

In 2000 a local farmer allowed a riparian strip with several good specimens, together with other structural elements of alluvial river systems, *Plagianthus regius* and *Hoheria angustifolia*, to be fenced off. This enabled DoC to establish an experimental site to return these structural elements back into this particular alluvial river system. *O. hectorii* seed has been collected and successfully germinated; it germinates easily! The seedlings are fast growing but the challenge in establishing the juvenile plants comes from introduced grass species. When grass cover under the mature trees has been kept clear, natural regeneration has occurred. Possum control at this site has benefited the mistletoe, *Tupeia antarctica*, which has established on an old *Olearia* host. The main threat to the natural regeneration of *O. hectorii* in this area would appear to be the density and vigour of introduced grass species.

It was a high botanical note to end a wonderful weekend of botanising. Many thanks to John Barkla and his family for organising and leading the trip. We all enjoyed it immensely.

Lichens, Nugget Point Trip, 16–17 Oct, 2004 Allison Knight & Jennifer Bannister

Nugget Point Lichens	Nugget Point ctd.
<i>Baeomyces heteromorphus</i>	<i>Stereocaulon ramulosum</i>
<i>Caloplaca circumlutosa</i>	<i>Teloschistes velifer</i>
<i>Caloplaca cf. litoralis</i>	<i>Trapelia</i> sp.
<i>Cladonia</i> sp.	<i>Usnea inermis</i>
<i>Collema</i> sp.	<i>Usnea</i> spp.
<i>Diploschistes scruposus</i>	<i>Verrucaria microsporoides</i>
<i>Flavoparmelia haywardiorum</i>	<i>Xanthoparmelia pustuliza</i>
<i>Lecanora dispersa</i>	<i>Xanthoparmelia scabrosa</i>
<i>Lecanora</i> spp.	<i>Xanthoria ligulata</i>
<i>Lecanora</i> sp.	
<i>Neofuscelia verisidiosa</i>	McLean Falls
<i>Ochrolechia parella</i>	<i>Usnea capillacea</i>
<i>Parmelia sulcata</i>	<i>Usnea oncodes</i>
<i>Parmelina labrosa</i>	<i>Usnea</i> spp.
<i>Parmotrema chinense</i>	
<i>Peltigera</i> sp.	Lake Wilkie
<i>Pertusaria graphica</i>	<i>Baeomyces herteromorphus</i>
<i>Pertusaria obvelata</i>	<i>Pertusaria sorodes</i>
<i>Physcia nubila</i>	<i>Cladia schizopora</i>
<i>Placopsis gelida</i>	
<i>Pseudocyphellaria crocata</i>	Owaka Valley
<i>Rhizocarpon reductum</i>	<i>Leptogium menziesii</i>
<i>Rinodina subtubulata</i>	<i>Teloschistes chrysophthalmus</i>
<i>Rinodina thiomela</i>	<i>Xanthoria parietina</i>

Special Book deals and details



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www.mwpress.co.nz

Websites

NZ Plant Conservation Network (NZPCN)

Tom Myers

This website is a mine of New Zealand botanical information, including threatened and threatening plants, Botanical societies' trips & activities, NZPCN plant conservation awards and much more. The NZ Plant Conservation Network will be holding its annual conference in Christchurch from Friday 12th August till Sunday 14th August 2005. Check it all out at <http://www.nzpcn.org.nz/>

NZ Ecological Restoration Network (NZERN)

NZERN website contains much practical information, including a list of 270 plant nurseries, lists of useful websites, organisations and publications, advice on how to grow everything from *Aciphylla* to *Weinmannia*, and a long list of interested people, some of whom have taken up the opportunity to post relevant writing and photos. Chris Rance has put up a good display of the wetland and the Southland Community Nursery they have created. The website is under reconstruction, so not all the links work, but it is worth checking out at www.bush.org.nz

Botanical Society of Otago Website: <http://www.botany.otago.ac.nz/bsot/>

Our web site contains trip details, membership forms, contact details and links to other websites of Botanical interest. Check it out to see updates on trips and activities. New additions include colour images of entries in the inaugural Audrey Eagle Botanical Drawing competition, plus judging criteria and entry forms for this year's competition. There's also a growing gallery of images from various trips and meetings.

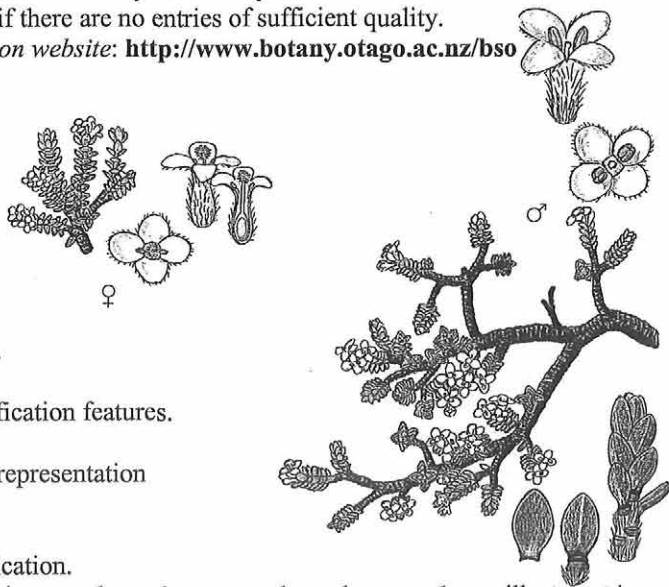
BSO 2nd Audrey Eagle Botanical Drawing Competition, 2005

Conditions of entry

1. A prize of \$100 will be given to the best botanical drawing submitted to the Botanical Society of Otago, PO Box 6214, Dunedin North, by 31 August 2005.
2. The drawing must be your original work, with the understanding that BSO can use copies of it, with due acknowledgement, to illustrate the Newsletter, website or other BSO material.
3. It will also be displayed at the 4th annual Geoff Baylis Lecture, October 2005, where the winner will be announced and the prize awarded.
4. The size should be similar to A4 and no bigger than A3.
5. Your entry should include a title, notes of interest and contact details as requested on the entry form, and described in the judging criteria.
6. There is no entry fee, so please include an addressed, pre-paid envelope or tube if you would like your entry returned.
7. Entries are open to all current Botanical Society of Otago members.
8. The judges will be kept unaware of your identity until their final decision is made.
9. No prize will be given if there are no entries of sufficient quality.

Entry forms on p 26, and on website: <http://www.botany.otago.ac.nz/bsob>

Fig. *Pimelia urvilleana*
- Audrey Eagle,
Eagle's Trees and Shrubs
Of New Zealand, 1982



Judging criteria

1. Botanical accuracy.
2. Detailed drawings, especially of identification features.
3. Clarity of lines.
4. Good proportional representation and scale.
5. Layout
6. Suitability for publication.
7. Preference will be given to plants that are rarely, or have not been, illustrated in a readily available form. For example an illustration of an uncommon wetland plant would be of more scientific value than a picture of a lancewood.
8. Caption to go with illustration e.g. name of plant, where it came from and the date it was collected and/or drawn.
9. Botanical notes, or comments of interest about the plant or both. These could include a key to botanical details, notes on history, distribution, uses etc.
10. Artistic merit.

Drawings from the inaugural 2004 competition are posted on the BSO website.

NZ's tallest tree remeasured

The officially recorded tallest tree in NZ is a mountain ash (*Eucalyptus regnans*) in the Orokonui Reserve near Waitati (just north of Dunedin). It was measured in 1968 at 58.8 m, then again in 1982 at 69.1 m. Mark Roberts from Otago Polytech recently climbed the tree to remeasure it at: 76 m!

From the *Auckland Botanical Society Newsletter*, Nov 2004.

Botanical Diary

International Events

Hunza Wildflowers Tour, June-July 2005

Under the auspices of Silk Road Adventures, Cathy Jones is once again leading a Hunza Wildflowers Tour to the mountains of Northern Pakistan in 2005. The trip in June 2004 was a great success and we saw wonderful alpine flowers. The itinerary will be similar to 2004, departing New Zealand on June 18th, returning July 7th. The cost of the Pakistan part of the tour will be \$NZ3650. This does not include airfares to Pakistan and back which are just over \$2000. Brochures are available or you can look at the itinerary and other details on the Silk Road Adventures' website, www.silkroad.co.nz under Small Group Guided Journeys. Contact Cathy on 03 546 9499 if you have any questions or would like a brochure.

Third International Conference on Plants & Environmental Pollution (ICPEP-3) in Lucknow, India during 29 November to 2 December 2005.

Through your Society I wish to inform the Scientists, Botanists and Environmentalists of New Zealand that International Society of Environmental Botanists, India and National Botanical Research Institute, (a constituent unit of Council of Scientific & Industrial Research (CSIR), Government of India) are jointly organizing the above international conference. On plants and environmental pollution.

The Conference is co-sponsored by *International Union of Biological Sciences, Paris* and aims to provide an international forum for serious scientific discussions and deliberations on the role of plants in indication and bio-remediation of environmental pollution and related areas such as biodiversity conservation, sustainable development, climate change, environmental pollution effects on agriculture, forestry and human health.

Free pre-registration for the conference is still open and all the details about the Conference and the Society can be seen at our Website - <http://www.geocities.com/isebindia/index.html>.

(Dr. K J Ahmad)

Secretary,

International Society of Environmental Botanists,

National Botanical Research Institute,

Rana Pratap Marg, Lucknow - 226001, India.

Phone: +91-522-2205831 to 35 ext 223; Fax: +91-522-2205836 / 2205839

E-mail: isebnbrillko@satyam.net.in / kjahmad@sancharnet.in

Website: <http://www.geocities.com/isebindia/index.html>

Local Events - see front pages and website for details of **BSO events**, and following pages for details of local groups meeting places and times.

- **Orokonui Sanctuary/Te Korowai o Mihiwaka.** Guided walks are offered on the second Sunday of each month (except school holidays) by the Otago Natural History Trust. Contact Geraldine 482 2517 or Sue 482 2687.

2-10 April Tracks Week. There is a full week of walking/tramping activities around Dunedin scheduled in the DCC/DOC Tracks Week Programme 2-10 April. Copies available from these offices. A great chance to get out and explore some of our natural treasures in the company of others.

8 April, Fri. 12 noon. Botanic Garden *Southern weeds – recent arrivals and how to deal with them.* Peter Johnson, Landcare. **HortTalk**, Botanic Garden Centre, Upper Lovelock Ave.

9 April, Saturday 8:00 am Old Man Range Field trip with Prof. Alan Mark.

21 April, Thurs 5:20 PM. AGM and *The World's most beleaguered biome: Temperate grasslands and their conservation status.* A brief AGM will be followed by a talk by **Emeritus Professor Alan Mark.**

24 April, Sun 10 am Pyramids, Okia, Otago Peninsula. STOP workday (2 hrs). Bring hedgeclippers, gloves. Contact Lala Frazer 478 0339, Moira Parker 478 0214

7 May, Sat 8:00 AM. Fungal Foray to Knight's Bush

13 May, Fri. 12 noon. Botanic Garden *Attracting native birds to your garden* Philip Dunn, Ribbonwood Nurseries. **HortTalk**, Botanic Garden Centre, Upper Lovelock Ave.

28 May, Sat 10 am Pyramids, Okia, Otago Peninsula. STOP workday (2 hrs). Bring hedgeclippers, gloves. Contact Lala Frazer 478 0339, Moira Parker 478 0214

8 June, Wed 5.20 pm Philip Dunn, Ribbonwood Nursery
Eco-sourcing local plant material for use in restoration projects

10 June, Fri. 12 noon. Botanic Garden *Raising Native Plants and how to make “seed balls”* Anita Pillai & Margaret Suman, Yellow-eyed Penguin Trust Native Plant Nursery. **HortTalk**, Botanic Garden Centre, Upper Lovelock Ave.

18 June, Sat 10 am. Field trip. Sutton Salt Lake

8 July, Fri. 12 noon. Botanic Garden *Otago in the time of the moa.* Geoff Rogers, Dept. of Conservation. **HortTalk**, Botanic Garden Centre, Upper Lovelock Ave

Conservation Volunteers Community Noticeboard

These groups would appreciate a hand – please contact them if you are able to help:

George Sutherland 467 5999. **Track Group**. Silver Peaks area. Every Wednesday
Rex Malthus 473 7919. **Track Group**. Mainly in Silver Stream/Silver Peaks area. First
Thursday of every month

Dave McFarlane 473 7259. **Yellow-eyed Penguin Trust**. Clearing, planting and maintaining
areas of coastal penguin habitat. Frequent workdays

Nigel McPherson 476 1109. **Colinswood Bush Committee**. Clearing, planting and maintaining
covenant of native bush on Otago Peninsula. Interested to know of anyone able to help
occasionally on week days

Don McKechnie 482 2021. **Mopani Ecological Environmental Society**. Clearing, planting
and maintaining areas of coastal shrubs. Meet 10.30am at Long Beach, last Sunday of
every month.

Ken Mason 476 7100. **Forest and Bird Protection Society**. Clearing of weed species in
Otanomomo Scientific Reserve near Balclutha. Frequent workdays.
Also restoration and maintenance of Moores Bush, Leith Valley.

Lala Fraser 479 8391. **Save The Otago Peninsula. (STOP)** Clearing, planting and maintaining
natural environments on Otago Peninsula. Frequent workdays

Marilyn Egerton 481 7171. **Taieri Mouth Amenities Society**. Clearing, planting and
maintaining public areas around Taieri Mouth. Frequent workdays.

Gordon Johnston 473 9779. **Aramoana Arboretum**. Clearing, planting and maintaining
revegetation project at Aramoana. Any assistance appreciated.

Please come prepared for all **weathers**, with sturdy **footwear**, **lunch** and a **drink**.

From the *DOC Conservation Volunteers Newsletter* (more events on BSO Noticeboard)

Local contacts and meeting places of groups with overlapping interests.

University of Otago Botany Dept 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, email: trish@planta.otago.ac.nz

Dunedin Naturalists Field Club (DNFC) Meetings are at 7.30 pm, first Monday of the
month, at Room 215, new Zoology Benham Building, 346 Great King St. Their field trips
leave from Citibus Depot, Princes St. Visitors are welcome. **Contact: Beth Bain, 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, 9 am,
Saturday. **Secretary: Paul Star 478 0315. Web** <http://www.dunedinforestandbird.org.nz/>

Friends of the Botanic Garden meet on the second Tuesday of the month at 4.30 pm in the
Lower Garden Information Centre. **Web Page-** <http://www.friendsdbg.co.nz/>. **“HortTalk”**=
monthly talks at the Botanic Garden, at 12 noon on the second Friday of the month, in the
Botanic Garden Centre, Upper Lovelock Ave. Also available, **“HortHelp”** =problem or
mystery plants can be left at the Botanic Garden’s information centre for staff advice.

DOC Conservation Volunteers: ongoing opportunities for hands on conservation work in
coastal Otago. Learn new skills in some neat places, help conservation efforts and have fun all

the while! To sign up, and receive newsletters and event programmes, **contact David Mules:** dmules@doc.govt.nz, phone 474 6926

Otago Institute (OI) contact: Michelle McConnell, secretary, phone 479 5729, email: michelle.mcconnell@stonebow.otago.ac.nz . Web site: <http://otago institute.otago.ac.nz/>

Southland Natural History Field Club. Meetings 7.30 pm on the second Thursday of the month, currently at the Otatara Hall, just out of Invercargill. Field trips the following Saturday or Sunday to places of botanical, ornithological, ecological or geological interest. **Contact** Lloyd Esler 032130404, email esler@southnet.co.nz

Otago Alpine Garden Group Meets every 3rd Thursday of the month at the Dunedin Botanic Gardens Centre, Lovelock Avenue at 7.30 pm. The Group operates a seed exchange and holds periodic field trips and garden visits. **Contact: Secretary, P.O. Box 1538, Dunedin or Les Gillespie Ph 489-6013**

Entomology Society of NZ, Otago Branch bimonthly meetings are held 7:00 pm, 3rd Thursday of the month in the Hutton Theatre, Otago Museum. Guest speaker programme and natural history sessions on insects. To get newsletter and invitations for meetings and field trips contact **Eric Edwards**, 03 213 0533, email: eedwards@doc.govt.nz. *Guests welcome*

Southland Forest and Bird Society Winter talks - second Tuesday of each month, 7.30pm, Southland Museum, Invercargill. See Southland F&B web site for speaker details <http://www.converge.org.nz/fbsth/>. Working Days (contact Barbara Boyde 03 2160353) Tautuku Lodge 25-26 May 2004. Te Rere yellow-eyed penguin Colony planting days (contact Brian Rance 03 2131161) 10 July 2004, 14 August 2004.

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

Botanical Society of Otago: Patron: *Professor Peter Bannister*

Committee 2004 –April 2005

Chairman, **David Orlovich**, david.orlovich@botany.otago.ac.nz

Secretary, **Robyn Bridges**, robyn.bridges@stonebow.otago.ac.nz, ph 479 8244

Treasurer, **Lyn Bentley**, stevelf@ihug.co.nz

Events Manager, **Moira Parker**, moiraparker@clear.net.nz

Program Manager, **Ian Radford**, ian.radford@botany.otago.ac.nz

Committee; **Bastow Wilson**, bastow@otago.ac.nz, **Abe Gray**, graab419@student.otago.ac.nz, **John Barkla**, jbarkla@doc.govt.nz, **Norm Mason**, norman.mason@botany.otago.ac.nz

Newsletter editor, **Allison Knight**, bso@botany.otago.ac.nz, ph 487 8265

Please submit copy for next newsletter by 30 May 2005

For information on activities contact the trip leader, or see our notice board in the Botany Dept corridor, or website: <http://www.botany.otago.ac.nz/bso/>

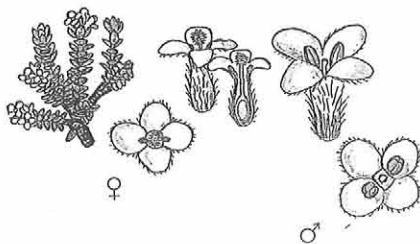
This Newsletter was published on 31 March 2005. ISSN 0113-0854

Membership form:

Botanical Society of Otago, 2005

This form is also available on our website;

http://www.botany.otago.ac.nz/bs0



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Name: _____

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E-mail address: _____

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Cheques to: "Botanical Society of Otago".

Post to: Treasurer, BSO, P.O. Box 6214, Dunedin North, New Zealand

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Entry Form
BSO 2nd Audrey Eagle Botanical Drawing Competition, 2005

Name

Address

Email

Phone

Title of entry

Enclosed

No. of drawings

No. of Botanical Notes.....

Return

I would like my drawings back and have included prepaid and addressed packaging. *Yes/no.*

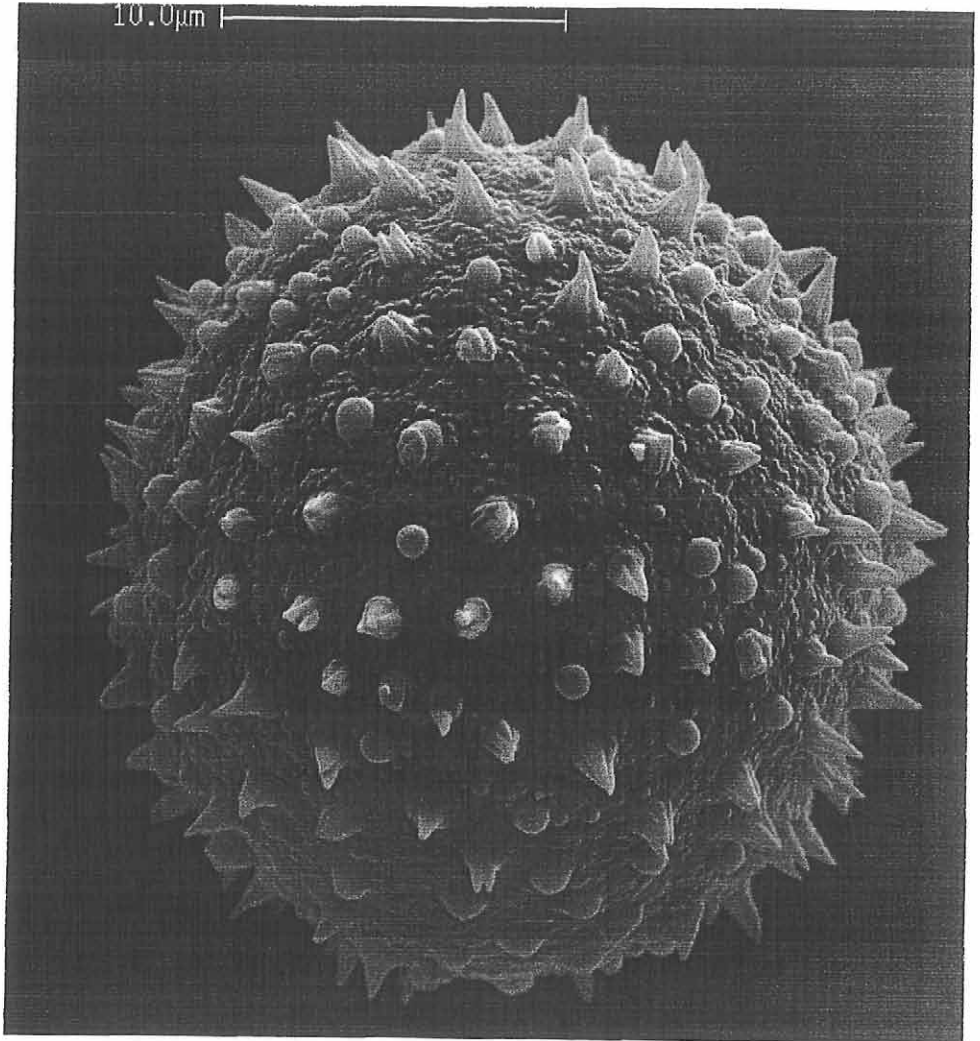
Membership: I am a current financial member of the Botanical Society of Otago, and this is all my own work.

Signed..... *Date*.....


Post to: Botanical Society of Otago, PO Box 6214, North Dunedin, to arrive by 31 August 2005

18 June, Sat 10 am. BSO Field trip. Sutton Salt Lake ctd. Surrounding grasslands and shrublands have not been grazed since 1991 and contain uncommon plants such as the endemic spargrass, *Aciphylla subflabellata*, while the rock tors harbour an undescribed native forget-me-not. There will be a species list we hope to add to. It's an easy walk, bring your lunch and be prepared for frost. Back mid – late afternoon. Contact John Barkla, 476 3686 (evenings).

This Newsletter was published on 31 March 2005. ISSN 0113-0854



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