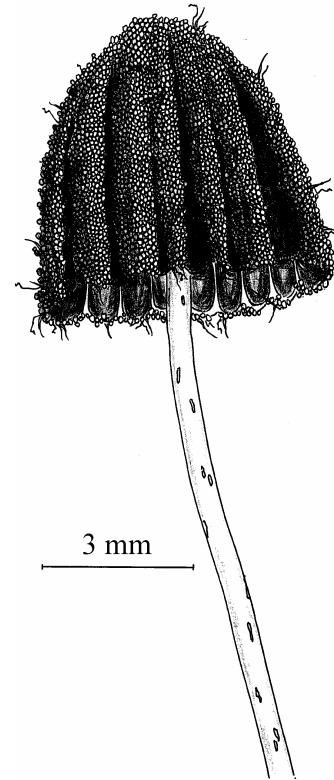


# Botanical Society of Otago Newsletter

Number 48

May 2006



## BSO Meetings and Field Trips

**24 May, Wednesday 5.20 pm. A magnificent obsession: the botanical life and legacy of Tony Druce** A talk by **Geoff Rogers**. An account of the wit, wisdom, mentoring role, and scientific achievements of a great New Zealand botanist. 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.

**27 May, Saturday 9 am. Fungal Foray to Orokonui** A fungal foray led by **David Orlovich (as seen on TV)** to Orokonui Reserve. Note this trip will run subject to DoC approval. 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. Leave 9 AM from the Botany Dept carpark or 9:15 AM at the Orokonui carpark. We will aim to collect in the morning, and then return to the Department of Botany to record and dry the collections we make for the herbarium, finishing by 4 pm. In case of really bad weather, we will go on Sunday 28th May instead. Contact David Orlovich, phone: (03) 479 9060. (daytime).

**14 June, Wednesday 5.20 pm Fungi: New Zealand's hidden diversity** A talk by Dr **David Orlovich**. Fungi are nature's recyclers. They form the connections between plants and soil, algae and rocks, toxic wastes and the atmosphere, even life and death! In New Zealand, fungi support the beech forests of Fiordland, the high country tussock grasslands and our agricultural pastures through symbiotic mycorrhizal associations. I will give an overview of research on fungi in New Zealand, illustrate the beauty of many species found in New Zealand, and emphasise the importance of societies like the BSO in furthering research on New Zealand fungi. Contact: David Orlovich, phone (03) 479 9060

**24 June**, Saturday 9.30 am. Prof **Bastow Wilson** will share his extensive knowledge of the plant communities on **Swampy Spur**. Explore wetlands, montane grasslands and shrublands (and see some fabulous lichens, too). Wear warm, windproof clothes and waterproof footwear. Date not definite - check the website first, or contact Allison Knight, 487 8265

**16 July**, Sunday 10 am, **Ross Creek-Woodhaugh Garden Track Network** This half day trip in the heart of Dunedin will explore the network of tracks that begin at Woodhaugh Gardens and wind their way up the Water of Leith and into the Ross Creek Reservoir area. There's quite a range of natural vegetation passed on the walk including kahikatea-kowhai-ribbonwood-lacebark forest through to more recent kanuka dominated successional communities. Be prepared for a couple of hours walking on well maintained tracks. The trip will start and finish at Woodhaugh Gardens. Meet at 10 am at the George Street entrance to Woodhaugh Gardens. Back about midday. Leader **John Barkla** ph. (03) 476 3686.

**19 July**, Wednesday 5.20 pm. **Aalbert Rebergen**, Biodiversity Officer with the Otago Regional Council will talk on "**The voluntary protection of native biodiversity in general and botanical values in particular, on farms and other privately owned land in Otago**".

**5 August** Saturday 9 am. **Lichen** trip to **Sutton Salt Lake** with **David Galloway**, author of the *Lichen Flora of New Zealand*. Orange *Caloplaca* on the shores of this lake are remarkably similar to coastal *Caloplaca*, while the schist tors bear rich communities of large foliose and smaller crustose lichens. Definitely bring a hand lens, or contact Allison Knight, 487 8265, if you would like to buy one.

**23 August**, Wednesday 5:20pm. **Pascale Michel. Insights of South American flora and fauna.** This informal talk presents the ecological uniqueness of two main national parks in South America: Parque Nacional da Serra do Cipó (Minas Gerais, Brazil) and Parque Nacional Nahuel Huapi (San Carlos de Bariloche, Argentina). Serra de Cipó NP was created in 1984 to preserve a rich endemic flora, specific to dry high-altitude plateaux, and in particular the canela-de-ema (*Vellozia pirstana*) and a rare orchid (*Constantia cipoensis*). Nahuel Huapi NP comprises a large diversity of habitats expanding from Andean mountain beech forests to Patagonian steppes, and is home to humming birds and chinchillas.

**16 September**, Saturday 8.30 am. **Waipori River Valley.** An exploratory visit to a patch of beech forest on the slopes of the Maungatua Range. Find out what plants and winter fungi inhabit this silver beech forest remnant. Trip leaves 8:30am from Botany Carpark, returning c. 4:00pm. Leader: Mike Thorsen 4536800.

**27 September** Wednesday 5.20 pm. **Co-evolution on the Galapagos Islands.** A talk by Drs **Allison and John Knight**. The Galapagos Islands rose steaming from the equatorial Pacific Ocean over the last 10 million years. Their sterile volcanic

slopes were gradually populated by a limited range of plants and animals, mainly those that could cross the 1000 km gap from the nearest land. As Darwin found, the fascinating thing is that on each island a different combination of plants, pollinators, herbivores and frugivores has evolved together. Humans and grazing mammals arrived late on the scene; there are other parallels with New Zealand.

**11 October**, Wednesday 5.20 pm. NOTE SPECIAL VENUE, Castle 1 Lecture theatre, Otago University. **Hugh Wilson**, 5<sup>th</sup> Geoff Baylis Lecturer, will present: **Banks Peninsula's Botany; the past, the present and the future**. Banks Peninsula is a unique part of NZ. It has suffered massive changes to its flora and fauna because of two waves of human settlement, Polynesian and European. Hugh will look at Banks Peninsula in pre-human times, at what happened as humans impacted on it, what it is like now and what it might be like in 100 years time. Hugh is guardian of more than 1000 hectares, 1%, of Banks Peninsula. He manages Hinewai Reserve under a policy of minimum interference and is documenting the reappearance of native vegetation.

**14 October**, Saturday 8.30 am. **Aramoana salt marshes**. A half-day trip to visit the Aramoana salt marshes. This salt marsh is one of the best remaining examples in the Otago area and is a prime example of a habitat increasingly under pressure elsewhere from land development. We'll also check out the population of Cook's scurvy grass on the Aramoana Mole. Leaves 8:30am from Botany Carpark, returning 12:30pm. Leader: **Mike Thorsen** 4536800

**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. Talks usually finish around 6.30 pm, keen discussion might continue till 7 pm.*

**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). 50% student discount now available on trips over 100 km. . **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

*John Barkla*

The AGM in April ushered in some new faces and a rearrangement of jobs. Kevin Gould takes over as Secretary from Robyn Bridges, though Robyn stays on in a new communications role. Abe Gray hands over his job as Events Manager to Mascha Bischoff while still remaining on the committee, along with third new comer Christina Lister. Moira Parker will look after the Talks Programme. Oh and I've taken over as President/Chairman from David Orlovich, giving him a well deserved break following several years of sterling work. Thanks for your leadership David and we look forward to your continuing magic with the web pages. While it's great to have all the new blood I'm equally pleased that all of the previous committee are staying on to continue their excellent work in running the Society. What a talented bunch we have!

Allison Knight and team have crafted another great newsletter full of the promise of trips designed to tempt you outside during the winter months, as well as great articles. Special thanks are due to Adrienne Markey for her substantive and evocative account of a trip to the subantarctic islands, and to all the other newsletter contributors. Don't forget to diary the stimulating talks coming up too, leading up to the 5<sup>th</sup> Baylis Lecture on October 11. Exciting new events include a photographic competition (get snapping now), with talk of a Botsoc calendar. It might seem early to be thinking about planning Christmas holidays but check out our combined summer trip with the Wellington Botanical Society to Stewart Island and the Catlins. So there you go – no excuses for idleness this winter!

## Treasurer's Notes

*Lyn Bentley*

2006 subscriptions are now due. Thankyou to those who respond spontaneously each year. Other members will receive an account. The Newsletter address label indicates the year your membership is current for - any errors please don't hesitate to contact me. I will be contacting Newsletter recipients who have not paid since 2003 to ascertain whether they wish to continue with BSO Membership, issuing a gentle reminder. There is provision on the account to indicate 'discontinue membership', or contact me Ph 467-9616, email [stevelf@ihug.co.nz](mailto:stevelf@ihug.co.nz), or send a note to The Treasurer, P O Box 6214, Dunedin North.

BSO has 157 Members (71 financial) 40 of whom have paid beyond 2006, 70 subs are due now for this year, 12 have not paid beyond 2004 and 4 unpaid since 2003. Four times each year, complimentary copies of the BSO Newsletter are sent out to secondary schools in Otago, other Botanical Societies in NZ, libraries and herbaria both here and overseas plus other organisations.

**STUDENTS**, don't forget there is a Travel Subsidy available to assist you with a 50% subsidy on expenses for trips over 100 km. Details are on the BSO website. Come along and enjoy the field trip.

## Editor's notes

Allison Knight

Here's Newsletter 48, full of more activities and articles for 2006. Autumn has been so bountiful that two members have waxed lyrical, and been kind enough to share their verse. For those who would rather capture poetry through a camera lens we have introduced a photographic competition, and hope to produce a calendar next year with the results, which should be stunning. Meanwhile keep the interesting photos coming to add another dimension to the newsletter. Then I won't have to bore you with too many shots of lichens. Great to have a professional update on the taxonomy of *Aciphylla*, followed by an article on the flora of the subantarctic islands by an ex-student whose enthusiasm shines through. Meeting and trip reports are the backbone of the newsletter. Extra thanks to those who contributed there – the more diverse the outlook the more interesting the newsletter (and the less pieces I have to pick up). It's good to have a knowledgeable review of an interactive key to Australasian liverworts on DVD, and a relevant website featuring mistletoes and other parasitic plants, but where are the book reviews? Such a long time since we had one – doesn't anyone read books anymore? But the newsletter is still filled with an ever-widening variety of things botanical, thanks to all you wonderful contributors – keep up the good work and surprise me again in the spring.

**Editor's guidelines** Contributions are always welcome, but newsletter space is a little limited. 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 September 2006

**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.*

Subantarctic gentian  
-Adrienne Markey



# Beans and Poems

**Bean Poem** – to Audrey

*Sandie Legge*

**To bean or not to bean – that was the Question!**

These beans did a runner  
from Macandrew Bay to Central  
Bean here, Bean there, Bean everywhere  
Have Beans, Is Beans, Was beans

Bean watching them grow  
Beans making a show  
Bean to tea  
with beans galore

These Beans  
Been around a while  
Been here before  
Bean then, bean now  
Always will Bean  
It's Bean a Pleasure  
*Thank you*

Photo: Audrey Eagle's  
'Heritage' runner Beans  
growing in Central Otago,  
– Feb 2006, *Sandie Legge*



*Allison gives me a poem*

*purple, red, green and yellow  
in a yellow plastic bag*

*the words are hidden  
but she speaks them to me*

*Coe's Golden Drop, Billington, greengage, Cox's Orange,  
Spartan, Black Hamburg, redcurrants, see –*

*Her finger rescues a strand of sweet red jewels from behind  
a plum, drapes them over an apple –*

*the giant, the king in the middle –  
the Right Honorable Peasgood Nonesuch*

*Esquire*

## **Buckets full of Beans**

*Chuck and Carol Landis*

By 15 Feb 2006 we had picked a whole bucket full of beans off 3 plants grown from 3 of Audrey Eagle's beans that were planted 2 years ago in Warrington. Can anyone beat that?

## **Articles**

### ***Aciphylla* research at the Allan Herbarium, Landcare Research, Lincoln: a progress report, 25 March 2006**

*David Glenny,*

*Aciphylla* (Apiaceae) is a genus of c. 27 species, found mainly in New Zealand but with two species in Australia. It was last revised completely by Oliver (1956).

#### **Reasons for revising the genus**

*Aciphylla* is an example of a recent species radiation, and as with other such radiations, taxonomically difficult mainly because of geographical variation. Oliver's revision is inadequate. While Oliver described a number of common species (e.g. *Aciphylla aurea*) the revision failed to take account of geographic variation; everything was described as a species, whereas in fact a number of widespread species show a lot of variation and are neither sympatric nor separated by any geographical barriers.

John Dawson started to revise the genus in the 1970s, publishing an overview of the genus (Dawson and Lecomte 1978), and a revision of the small pinnate species that



include *Aciphylla monroi* (Dawson 1979). John Dawson, now retired, was happy to hand further revision of the genus to me.

### **The revision now in preparation**

My revision of the genus will be based almost entirely on morphology, but used the results of a DNA-based phylogeny presented by Radcliffe et al. (2001).

I started making collections for the revision in 1998. Progress so far has been:

- New, more adequate collections made, as *Aciphylla* was not a well-collected group and specimens were often incomplete.
- Data from these fresh specimens has been compiled for analysis and incorporated into descriptions. At least vegetative descriptions for most species are completed.
- Two keys, to fresh and dried material, are done.
- Nearly all types have been examined and the synonymy done, completion pending resolving species complexes.
- Statistical analysis done of the *Aciphylla aurea* and *Aciphylla monroi* species complexes.

What remains to be done is analysis of the various species complexes to decide on how best to deal with geographic variation in these. The species complexes that need this kind of analysis are:

- *Aciphylla ferox* – *aurea*;
- *Aciphylla colensoi* – *scott-thomsonii*;
- *Aciphylla hectorii* – *kirkii* – *poppelwellii*;
- *Aciphylla lyallii* – *montana* – *monroi* – *gracilis* – *similis* – *lecomtei*;
- *Aciphylla multisecta* – *divisa* – *polita* – *dissecta*;
- *Aciphylla squarrosa* in the wide sense (including *A. glaucescens*).

Other species don't need this kind of analysis, only adequate keys and descriptions and up to date distribution and habitat information.

My time on this revision is for the next 5 years quite limited as I'm involved in coauthoring a New Zealand liverwort flora with John Engel of Field Museum, Chicago, which is being done to a very tight schedule. I intend to publish first a revision of the *Aciphylla aurea* group of species and of the *Aciphylla monroi* – *multisecta* group of species, probably as two papers. For these two groups, what remains to do is preparation of figures from the statistical analyses already done, and illustrations showing variation in leaf morphology.

Should you have specimens or require further information we would be interested to know and can be contacted at Allan Herbarium, Landcare Research, Lincoln, P.O. Box 69, ph 03 3256700, email: David Glenny [glennyd@landcareresearch.co.nz](mailto:glennyd@landcareresearch.co.nz). I have provided a number of Doc staff with provisional keys to species and descriptions of species, and could provide these to others who need it for their work.

## References:

- Dawson, J. W. 1979: *Aciphylla montana* Armstrong, *A. lecomtei* sp. nov. and related species. *New Zealand Journal of Botany* 22: 403–411.
- Dawson, J. W.; Le Comte, J. R. 1978: Research on *Aciphylla* – a progress report. *Tuatara* 23: 49–67.
- Oliver, W. R. B. 1956: The genus *Aciphylla*. *Transactions of the Royal Society of New Zealand* 84: 1–18.
- Radcliffe, E. A.; Watson, M. F.; Preston, J. 2001: Phylogenetic relationships of species of *Aciphylla* (Apiaceae, subfamily Apioideae) and related genera using molecular, morphological, and combined data sets. *New Zealand Journal of Botany* 39: 183–208.

## A journey southwards to the subantarctic islands: finding New Zealand's flora in the middle of the Southern Ocean. *Adrienne Markey*

*“Considering how many beautiful plants different from those of New Zealand these islands contain, it is obvious that they deserve a very close and careful botanical scrutiny”*

*Hooker 1864*

### Why did I go there?

The flora of the subantarctic islands, and its affinities to the flora of New Zealand has always held the interest of botanists, starting from Joseph Dalton Hooker on the Antarctic voyages of the H.M. Discovery Ships *Erebus* and *Terror* (1839 – 1843), to recent research using molecular markers to track the dispersal and evolution of plants in these regions. So, with great boldness, I found myself able to make a direct comparison of these regions. Yes, the origins and evolution of the subantarctic plants fascinate me, and fall neatly within my interests in plant systematics, ecology, biogeography and phylogeography. Plus, it offered a chance to collect both *Coprosma perpusilla* ssp *subantarctica* and *Nertera depressa* from their southernmost distributions and to complement current studies that I, and fellow researchers, had in progress.

Strangely enough, because of the very high level of floristic affinities between these particular subantarctic islands and the montane – alpine regions of New Zealand, I expected to see a scene somewhat like that on Swampy Summit or Maungatua (now Maakatua) – except with copious quantities of megaherbs, an absence of pungent *Aciphylla*, a far greater abundance of seabirds and a different species of *Chionochloa*. Not that there is anything wrong with the montane - alpine tussock grasslands flanking Dunedin, but it may be sacrilegious to some to compare these iconic southern islands with the greater Dunedin metropolitan area! Therefore, when I received the chance to head south and compare the two regions, it was a dream come true! Opportunities to visit the subantarctic islands are, for botanists and botanical enthusiasts, certainly very rare. But two Otago BotSoc members made the journey last year; both me (searching for *Coprosma* and *Nertera*; and Alex Fergus (who was collecting insects).

### *Getting there ....*

The journey southwards by sea to the subantarctic islands has a reputation for being one of the most wind-swept, wave-heaved, tumultuous journeys that could be undertaken. However, and to say with gloating pride, my voyage was greeted with mirror-calm seas, clear blue skies and absolutely balmy weather that put Dunedin's rare sunny summer days to shame. We left a grey and mist-laden Bluff and flooded South Island to sail to Campbell Island over two sunny days of bliss. We were flanked at all times by an entourage of black browed mollymawks, southern Royal Albatross and cape pigeons. At the end of the second day, we caught sight of the distinctive profile of Campbell Island. At dusk (which was after 11pm), we motored into Perseverance Harbour, to be surrounded by the silhouetted basaltic columns and ridges of Mt Col and Mt Lyall. The sky by now had been reduced to pale golden glow, punctuated by wisps of faint, grey mist, which licked the highest ridges. The still waters of the harbour were occasionally broken by the wake of sea lions as they porpoised out to challenge the boat. The boat weighed anchor near the old meteorological station, to sleep for the night, dwarfed by the size of the harbour and dark shadows.

### *Campbell Island ...*

#### *Meteorological Station - Col Saddle*

Boated to the station, and started the climb to the saddle. I was met by familiar vegetation in the form of a 3 m high thicket (or dwarf forest *c.f.* Meurk *et. al.* 1994) consisting primarily of *Dracophyllum longifolium* var. *cockayneanum* and *Myrsine divaricata*, together with *Coprosma ciliata* and *C. cuneata*. In the understory were familiar ferns, *Polystichum vestitum* and *Blechnum montanum*, the giant bog lily, *Bulbinella rossii* and the club mosses, *Lycopodium australianum* and *L. varium*. Some enormous species of *Pseudocyphellaria*, a foliose lichen, formed flowing, green, gelatinous lobes on *Dracophyllum* trunks. Many of these shrubs and ferns were not greatly dissimilar to their mainland counterparts, which surprised me considering how far isolated and far south they were. Then again, it should not be so surprising since they were relatively recent arrivals following the retreat of glaciers following the Pleistocene. However, other conspecifics, such as *Geranium microphyllum*, *Lycopodium varium* and *Anaphalioides bellidioides*, looked considerably more robust than mainland New Zealand forms.

Here I encountered my first Stag daisies, a magnificent *Pleurophyllum criniferum* and *P. hookerii*. This encounter was brief and I could not stand around and enjoy the flowers as large, male Hooker Sea Lions were charging all and sundry who passed by. Moving promptly along, we walked around Beeman Hill, and were greeted with a strange, wailing cry, like a strangled inhalation, coming from a pair of light-mantled sooty albatross. They were nesting, as they had for years, in the craggy basalt outcrops of this landmark.

We passed the *Dracophyllum longifolium* thicket into a mosaic of more open, low shrubland of *D. scoparium*, herbfield and cushion bog in the damp, peaty depressions in

the landscape. The most common cushion bog species here was *Phyllachne colensoi*, although cushions of *Centrolepis ciliata* and *Oreobolus pectinatus* were not uncommon. Among these cushions were colourful gentians, forget-me-nots, *Coprosma perpusilla* and the orchids, *Aporostylis bifolia* and *Caladenia carnea*. Surrounding the bogs and ranging up the interfluves of the mountainside were tussock grasslands of *Poa litorosa* and *Chionochloa antarctica*. These supported rich and colourful intertussock megaherbs, low shrubs of *Hebe benthamii* and the inconspicuous plants like *Coprosma perpusilla* and *Lycopodium scariosum*. This grassland was, itself, interspersed with rich megaherbfields of *Anisotome latifolia*, *Stilbocarpa polaris*, *Bulbinella rossii* and *Pleurophyllum hookerii*. Since sheep were eradicated between 1970 and 1990, these areas have been steadily recovering from grazing (Meurk *et al.* 1994). *Dracophyllum* and *Coprosma* shrubs dominated the valleys and gullies, and were best kept away from.

From a distance, and if you ignored the megaherbs, the landscape did resemble Maakatua or Swampy Summit! However, familiar genera here were magnificently enlarged, megaphyllous versions of mainland genera. The bog lily, *Bulbinella rossii*, had developed to comparatively monstrous proportions, possessing strapping leaves 5 cm wide and 50 cm long! Its inflorescence consisted of a dense spike of yellow flowers more of the dimensions of an African *Kniphofia* than a diminutive New Zealand congeneric. Similarly, *Anisotome antipoda* had not only relatively massive, plumose leaves, but the inflorescence was also greatly enlarged and succulent. As a departure from the New Zealand mainland standard of white flowers, its flowers were pink, from the perianth and mericarps down to the fleshy peduncle and umbel. Even more ridiculous an example of insular gigantism was *Anisotome latifolia*, where garish, celery-like foliage nourished several flower heads, each the approximate shape and size of a cauliflower. A strange cauliflower, which ranged in colour from ivory - white to rose to deep pink. These grew alongside *Stilbocarpa polaris*, looking all the world like an overgrown rhubarb plant upon which yellow broccoli had been stuck!

The other notable feature of subantarctic plants is that, compared to their close relatives on mainland New Zealand, the flower colours have diverged from white to deep, cyanic hues. I did manage to see the blue-flowered *Myosotis antarctica*, but the plants that I saw were in bud. This was a shame really, as Cockayne (1919) decreed this to be “the most beautiful plant in the New Zealand flora”. None the less, I was privileged to see other floral displays which were much brighter than the mainland NZ counterparts. This included the purple-blue petals of *Hebe benthamii*, pinks and purples of *Epilobium confertifolium* and *Gentianella antarctica*, and the deep blue disc florets of *Damnania varicosa* (formerly *Celmisia*). Cockayne (1919) described the leaves of this species as “like polished greenstone”, and these leaves framed beautifully the stunning concentric discs of white ray and blue disc florets. Among these megaherbs, the most colourful floral displays were from the overgrown daisies in the subantarctic endemic genus, *Pleurophyllum*. Lush, hot pink capitula of *P. speciosum* and *P. hookerii*, matched by the dark black velvet of *P. criniferum*, were draped across the landscape like the garish furnishings in a *boudoir* of ill repute. The spectacular inflorescences of these plants were nicely counterbalanced by their remarkable foliage.

*P. hookerii* and *P. criniferum* both possessed tightly bunched, soft, silky-smooth, grey leaves. Those of *P. speciosum* were comparatively quite different, in that they were villous, strangely concertinaed, pea green and considerably larger.

I travelled with Alex, keen on placing his invertebrate pitfall traps, the anti-freeze contents of bottles sloshing about in my pack. We climbed from Col-Lyall saddle up a ridge to Mt Lyall, scrambling among southern royal albatross. Once up high on the ridge, covered in tall tussocks of *Chionochloa antarctica* and laced with the fern, *Polystichum cystostegia*, we could view the solifluction terraces around Northeast Harbour, which lined the bottom of a glacial cirque. From a distance the pattern of vegetation was dictated by these terraces, and this patterning is no doubt an interesting story warranting further investigation. As an interesting feature which betrayed the volcanic history of the island, the bare tops of massive doleritic ridges protruded from the hillsides to form fissured, lichen-encrusted walls. Strangely, these resembled the old farm rocks walls which line paddocks on the Otago Peninsula.

Once insect collecting was done at this spectacular viewpoint, we progressed to the Col-Lyall saddle and upwards to Mt Col. This ramble was met with encroaching fog and rain. As the day aged and the weather closed in (as it also does on Maakatua and Swampy Summit), we abandoned the fieldwork and unceremoniously departed Campbell Island for the day.

#### *Ramp Point to Penguin Point*

The next day, overcast but otherwise fine, calm weather granted us the privilege of visiting Penguin Point via Ramp Point, on the far south-western coastline. For me, this was the dense garden of lush *Stilbocarpa polaris*, *Anisotome latifolia*, *Poa litorosa* and, in more sheltered embankments, *P. foliosa*. Both grasses were flowering *en masse*. Inter-tussock herbs, such as the magnificent *Leptinella plumosa*, were absolutely huge by New Zealand standards, being 2 – 3 times larger than mainland conspecifics. Such lush growth lined brilliantly white limestone cliffs, and this complemented a stunningly azure, calm sea. From our vantage point, we could look down upon a leopard seal resting on a bed of *Durvillaea antarctica*, Campbell Island shags and nesting pairs of light-mantled sooty albatross. Furthermore, we could also look across the gap to Folly Island – a spectacular island that escaped the introduction of sheep, and Dent Island – the last refuge of the Campbell Island teal. Such vistas of wild, windswept, subantarctic coastline were spectacular; a truly wonderful and majestic landscape!

Around the corner to Penguin Point was a noisy colony of Rockhopper penguins (a colony which has been in decline since the 1940's), which grabbed our attention for most of the day. Despite their comical antics, I was still entranced by the plants. The site was a magnificent garden of megaherbs, cliffs dripping with *Poa ramosissima*, and massive tussocks of *Poa foliosa* and *Poa litorosa*.

From around the moored boat, the Auckland Islands appeared to be a series of smoothed ridges, dark green at lower altitudes from rata forest, grading into lighter ochres of the higher altitude tussock grasslands. It was short work to jump into NAIADS and land at Sandy Bay. From there, we headed through dwarf forest of *Metrosideros umbellata*. These were the ‘goblin forests’, as Cockayne (1919) described them, ‘weird and grotesque’. Although flowering of the rata had yet to commence, the stunted canopy (one metre from the ground) still had put forth a vermillion flush of new growth as colourful as full bloom. Fortunately for me, having had no luck in locating *Nertera depressa* on Campbell Island (bah, it was probably introduced to Tucker Cove anyway!), I found a dense carpet of this herbaceous species both on the forest floor and meandering among the shrubs, *Ozothamnus vauvilliersii* and *Dracophyllum longifolium*. There was also a good growth of the most beautifully thick and shiny leaved *Asplenium obtusatum*.

This stunted forest gave way to thick shrubland, which became progressively more stunted to give way to cushion bog, low sedges and herbfield. The boardwalked track continued westward over this expanse until it reached the western coastline. Again, there were plenty of familiar kiwi plants such as *Coprosma perpusilla*, *Cyathodes empetrifolia* *Phyllachne colensoi* and *Oreobolus pectinatus* – the dominant cushion plant in this spot. Along the north-western coastline of Enderby Island, grazing and burning practices had obliterated the rata forest, leaving only stunted, burnt, wind-etched trunks. Dense, succulent herbfield had occupied the coastal margin, punctuated only by the lichen-coated bones of long-dead cattle, shot out by DoC rangers some 15 years previously.

Subantarctic gentians are widespread on bogs, herbfields and fellfields (Wardle 1991). Here, along this section of Enderby Island, the gentians were conspicuously widespread within the upland cushion bog and coastal herbfields and turfs. Remarkable as the *G. cerina* was, it was more remarkable to me to notice the variation in colour, as had also been noticed on Campbell Island for *Anisotome latifolia*. In this instance, the entire plant body of purple-flowered variants was more richly pigmented, not just the petals. This suggested a systematic up-regulation of pigment synthesis. Another remarkable feature of these coastal turfs was the thick mats of *Plantago triandra*. With thick, fleshy leaves, this was a most remarkable looking plantain. Closer inspection of these turfs also revealed a bounty of other delights; including *Epilobium pedunculare* and *Rumex neglectus*. Such coastal turfs were grazed intensively by a chattering flock of red crowned parakeets – a sight not seen on mainland New Zealand.

Moving to the northern tip, we passed through tall and handsome tussocks of *Poa litorosa* and *Poa foliosa*. The latter species was in full flower, although a few individuals of *P. litorosa* carried inflorescences. Considering how sensitive these plants are to grazing, this area was, by all appearances, doing very well. On the more inland margins, there were stands of *Hebe elliptica*, all in full flower. We made our way back to Sandy Bay, at a brisk walking pace, but still with a detour through the tangled maze of rata goblin forest. Here we were privileged to view a yellow-eyed penguin and two

chicks. Unlike the mainland counterparts on the marram-infested shores of the Otago Peninsula, these birds were able to nest freely in the peaceful, sheltered forest. Which they did, with minimalist flair! I was so surprised to find that the shaded lee of a bent rata trunk would suffice, and the chicks lay on bare earth. This really emphasized the need of predator-free forest for penguins, and keenly illustrated why they are so vulnerable on mainland New Zealand.

And.. oh the rata forest, it was beautiful. It breathed! Neighbouring branches swayed in unison. Its floors were either a green velvet carpet of *Acaena minor*, or vermillion rata leaf litter, or swards of leafy *Stilbocarpa polaris*. And there were the other shrubs like *Myrsine divaricata*, *Coprosma foetidissima* and *Raukaua simplex*, all very familiar species but transported here to a remote and magical location. The still, peaceful rata forest. Wonderful, interlaced, ‘goblin’ forest! Full of warbling bellbirds, and even Auckland Island teal. With reluctance, we left this forest, to sail onto our final destination.

### *Snares Islands / Tini Heke*

Our final day around a subantarctic island was at the Snares, which proved to be a pleasant boating trip around the north part of the island. This outcrop of granite and gneiss juts out from the depths of the Southern Ocean, and is a magnet for sea birds – especially titi, Snares crested penguins and Buller’s mollymawks. Again, the weather was wonderful and calm. Although we were not to land on this reserve, seeing the island from the NAIADS was an excellent way to view both aquatic and terrestrial delights. The lower rocky parts of the islands are fringed by the massive, sweeping fronds of *Durvillaea antarctica*. The succulent megaherb, *Stilbocarpa robusta* poured out from under a dense, tangled low forest of the tree daisies, *Brachyglottis stewartii* and *Olearia lyallii*. The former species was still in flower, the yellow ray florets disclosing the identity of this genus.

### ***At the end of the day....***

The subantarctic islands that we were privileged to visit struck me with both their similarity and strangeness. There has been an obvious influx of New Zealand montane – alpine species. Given the high level of floristic similarity between these regions, I can further appreciate the treasures found on mainland New Zealand, and to appreciate how far they have roamed into the high latitudes. And, as I had imagined, Campbell Island looked a little bit like Swampy Summit or Maakatua, because there were many familiar species and structural vegetation communities. However, these regions were set apart because of the incredible novelties which characterise the subantarctic islands; including the distinctive megaherbs, colourful gentians and stunning subantarctic tussock grasses such as *Chionochloa antarctica*, *Poa foliosa* and *Poa litorosa*.

And what is most remarkable is that, floristically, these islands are relatively untouched in comparison to the ravaged mainland New Zealand. As commercial ventures, hunting and grazing have long since ceased on the islands. Feral mammals have now been, with some unfortunate exceptions, largely eradicated from these islands. Not only is there

reduced herbivory but, as a flow-on effect, indirect effects on the plants from these recovery and restoration efforts. For example, a high abundance of seals and seabirds leads to high nutrient inputs into the soil – a situation which may once have been the case on mainland New Zealand (Cockayne 1919, Ogle 1987, Meurk & Foggo 1988, Wardle 1991, Norton *et al.* 1997). Therefore, these subantarctic regions are of high significance because they are not as perturbed as mainland New Zealand.

To conclude; these subantarctic islands warrant far more botanical research (and I would be the first among many to volunteer my services). Firstly, they offer a valuable comparison to mainland New Zealand. Furthermore, the impact of feral pest eradication campaigns on the flora needs to be continually monitored to document the recovery of vegetation (i.e. Meurk 1982). Introduced weeds may also need to be documented to elucidate their distribution following the cessation of grazing. Additionally, given the potential impacts of global warming on the Southern Ocean, these regions are likely to be sensitive to climate change. However, considering the intensive research being conducted on Australia's Heard and Macquarie Islands, the effects of climate change on vegetation appears to be going relatively unmonitored on New Zealand's subantarctic heritage.

Finally, the unique flora contributed to the status of this region as a World Heritage Area (Ell 1998, Peat 2003). Consequently, research should be driven by this fact alone, as these islands offer fascinating models for botanical studies on evolution, ecophysiology and reproductive ecology. Already, research is being undertaken by institutes to investigate the evolutionary history of the subantarctic flora, including Massey University, Landcare Research (Lincoln) and Victoria University. The scope for future subantarctic research is limitless, but the ability to conduct such research is (as always) constrained by limited finances.

Finally, Dunedin Botanical Society members should appreciate how fortunate they are to be in such close proximity to such amazing landscapes as Swampy Summit, Maakatua, the Otago Peninsula, the Waituna wetlands and the Catlins coastline, where they can catch so much more than a glimpse of what New Zealand's subantarctic has to offer.

### ***Thanks***

The author is in deep gratitude to the Heritage Expeditions ([www.heritage-expeditions.com](http://www.heritage-expeditions.com)) and the Enderby Trust for this enviable and remarkable opportunity to visit these islands and to be able to collect plant material for evolutionary and systematic research.

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Mt Lyall daisies. Formerly known as *Celmisia*, the flowers of *Damnomenia varicosa* have intensely blue central discs surrounded by white ray ligules. Found growing among *Bulbinella rossii*, *Coprosma ciliata* and various mosses and lichens on Campbell Island. - Adrienne Markey





Goblin forest on Enderby Island: a canopy of *Metrosideros umbellata* rises over a dense carpet of biddi-bids (*Acaena minor*). – Adrienne Markey

## Original Art Feature

*Coprinus stercoreus* Fr.

Jinty Mactavish

Jinty won second prize in the 2005 BSO Audrey Eagle Botanical Drawing Competition

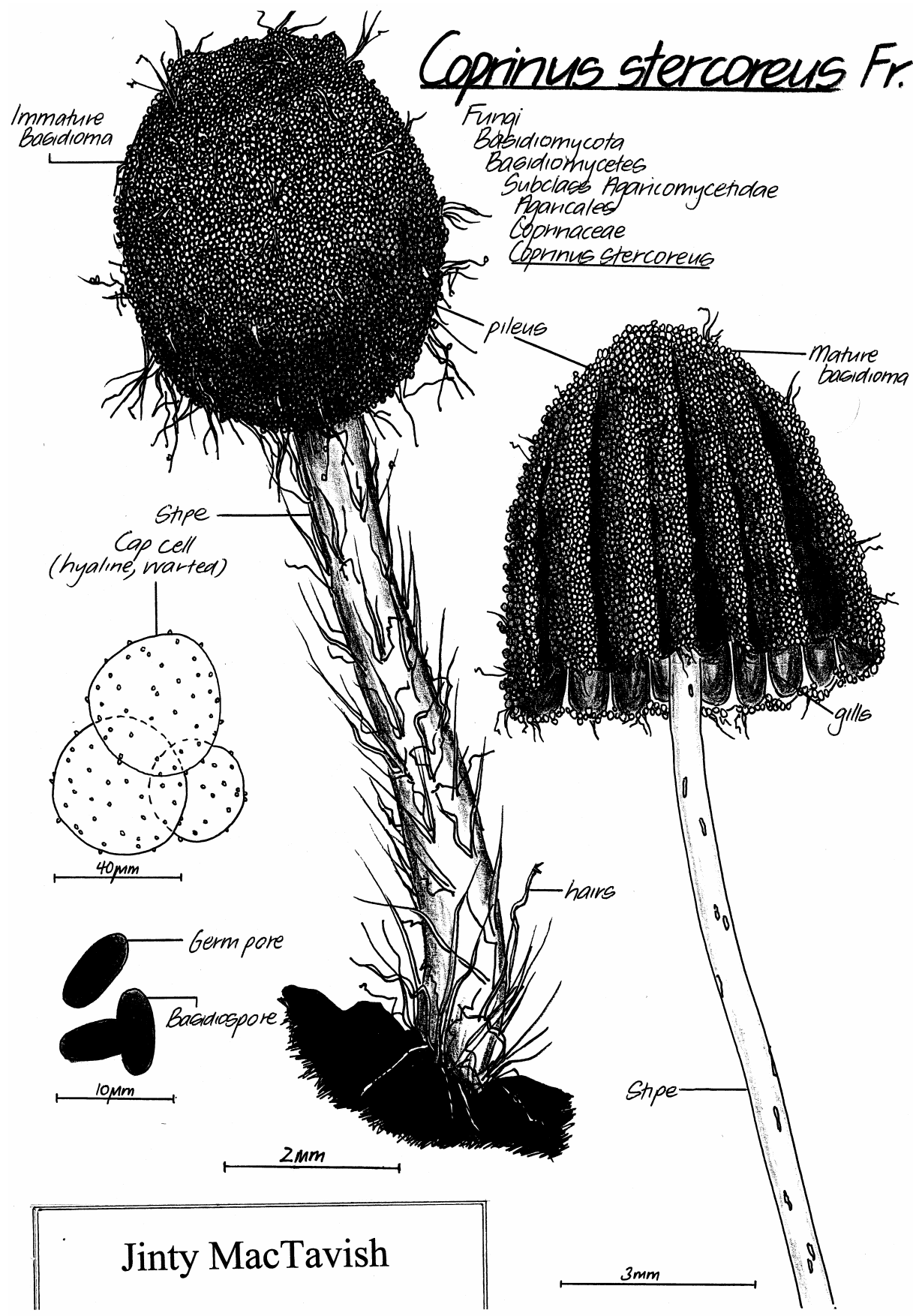
Collected in the field: – as basidiospores on deer dung,  
Rock & Pillar Range, Otago, April 2004

Cultured in the laboratory: – on dung & damp filter paper,  
in a petri dish at room temperature. Culture began  
22/06/05. Immature basidioma was present & drawn  
12/07/05. Mature basidioma was present, drawn &  
identified 15/07/05.

Additional botanical notes: – Four basidiospores appear to  
be produced on each basidia, but this was observed only  
with immature spores. Coprinus is the most common  
basidiomycete dung fungi genus. This species was  
separated from other Coprinus species mainly on the  
basis of its large, hyaline, regularly warted cap cells. Stipe  
has a long, wavy habit in mature basidiomata.

# Coprinus stercoreus Fr.

Fungi  
 Basidiomycota  
 Basidiomycetes  
 Subclass Agaricomycetidae  
 Agaricales  
 Coprinaceae  
Coprinus stercoreus



Jinty MacTavish

## Art and Photography Competitions

### 2006 BSO Audrey Eagle Botanical Drawing Competition – call for entries

Budding artists are encouraged to enter our 3<sup>rd</sup> Botanical Drawing competition. Rules are simple – draw something of botanical interest and write a few notes of interest to accompany it. Size should be no greater than A3: limit of two entries each, to reach the BSO PO Box or BSO pigeon hole in the Botany mailroom by the first week in September. Prizes are simple: \$100 for 1st, \$50 for 2nd and \$25 for 3rd place. There haven't been many entries so far, so you have a good chance of scoring something. Plus your entries are published in the newsletter and hung on the BSO web site. Open to all members of the Botanical Society of Otago. Prizes will be announced and paintings displayed at the Baylis Lecture on 11 October, Outside Castle 1 Lecture Theatre.

To view other entries in the first and second Audrey Eagle Botanical Drawing competitions, 2004-5, see: <http://www.botany.otago.ac.nz/bso>

### New Photography Competition – first announcement!

Calling all those with cameras! As announced at the AGM, the Botanical Society of Otago is launching an annual photographic competition. There's plenty of time to take the perfect shot – entries will close at the end of February 2007. They will be judged in March, and displayed in April at the AGM, where the winners will be announced. First prize is \$100, and there will be several smaller prizes. The aim is to get at least a dozen stunning pictures to make a calendar for 2008, which will be available at the Baylis Lecture in October for posting overseas for Christmas 2007. Check on the BSO website for more details – we're still feeling our way with this.

*Lichenomphalia (Omphalina) umbellifera* by a tarn near Swampy summit. This is one of the few lichenised basidiomycete fungi in New Zealand. It is often found on nutrient-poor peat bogs, where the association with a photosynthetic algal partner can confer an advantage.

- Allison Knight



## Meeting & Trip Reports

**An overview of the animal life of pre-human Central Otago, and how it interacted with the vegetation.** 16 Nov 2005

Reviewed by *Geoff Rogers*

PhD student, Jamie Wood is studying the more recent paleontological history of Central Otago by searching for fossils in the dry soils beneath rock overhangs, the dry soils within caves, and excavating peat bogs. He came to this study, undertaken within the Geology Department of Otago University, following a recent wave of paleoecological investigations into Otago's pre-human vegetation. That preceding work points to extensive scrub and forest dominating below treeline in today's grassy landscapes.

Jamie first described the three phases of palaeontological discovery in Central:

- 1) The first documented European discoveries during the gold-rush phase commencing from 1860. This phase of curiosity-driven fossicking started with the first discovery of gold and extended through the 1900-1970 period of land clearance and development. Horse-drawn dray-loads of bones from swamps often resulted in indiscriminate collecting.
- 2) Hydroelectric development of the Clutha River in the 1980s spurred discovery of fossils, bones and ancient birds' nests in rock shelters.
- 3) Lastly, recent scientific enquiry including Jamie's thesis study and Trevor Worthy's reconstructions of Otago's pre-settlement avifauna.

Amongst the discoveries, three complete moa eggs have emerged, including one by an Earnsclough dredge worker, which subsequently sold to a Rothschild family member for 280 pounds. There was real money to be made from fossils when the gold deposits failed!

Jamie's data sources are wide and varied: moa coprolites (faeces), bird feathers, bones, woody twigs, leaves, dried fruits of trees, fossil pollen from peat bogs, gizzard stones, gizzard contents, and insects. One excavation of 2m x 2m x 0.8m deep in a swamp of the upper Styx basin returned approximately 1000 bones. From all this, he is expanding the list of birds no longer found in Central Otago over previously published lists; for instance, he has confirmed adzebill remains from a Dunback Cave and strong evidence that a nest deposited in the Alexandra museum was not that of an "eagle", rather that of a kakapo. He has acquired finely tuned detective skills in tracking down and thoroughly elucidating previously vague accounts of palaeontological and archaeological material. By reworking some of Otago's iconic fossil sites such as Earnsclough Cave, he is providing a landscape picture of plant and animal habitats and relationships. One "eye-opener" was the size of individual gizzard-stones and the total gizzard weight reputed to have been carried by *Pachyornis elephantopus*, a large, squat, rhino-like moa from dryland South Island...stones > 50 mm diameter and the total weighing 2.5 kg, clearly a woody-twig-processing grinding mill.

The overall impression is that Jamie is dealing with a massive amount of both minute and massive data elements. Yet, we should expect a novel picture to emerge from his thesis of the pre-human vegetation habitats of birds, albeit compromised by the birds' selective use and the differential preservation of those plants. He tantalised us with emerging evidence for a raft of regionally- and nationally-extinct birds of forest, treeland, and scrub vegetation.

**Flora of Macraes and potential skink/plant interactions in a changing environment.** 22 Feb 2006

*Allison Knight*

Mike Thorsen, DOC, has helped identify a surprising 328 native and 72 exotic plant species in Macraes Reserve, which sits on the edge of the Central Otago dry country. Twenty eight nationally threatened or at risk species hang on in this mosaic of pasture, tussock grassland, shrubby gullies and ephemeral wetlands. Lichen-covered schist tors are one of the last hide-outs of two impressive and nearly extinct skinks, the huge giant skink and the large black and yellow Otago skink. These have hung on despite Maori burnings, the extinction of large browsing birds, pakeha farming, and introduction of many predators.

These days a predator-proof fence keeps out all ground predators and all browsers except rabbits. But is the resultant increase in tall tussock, kanuka and broadleaf helping the nearly extinct skinks and the rare and endangered plants? This could change the pattern of plants, availability of berries and insects, shade the tors and reduce the amount of sun available for thermoregulation and change the ease of travel between tors for the skinks.

Shading of rare and endangered plants could also be a problem, as the ephemeral wetlands in the fenced area are already being invaded by weeds such as the tall sedge, *Carex ovalis*. The tiny mousetail, *Myosurus minimus*, a rare spring annual, is already doing better in areas which are still grazed, such as the Crater. Under shady overhangs grow the rare native grass, *Simplicia laxa*, the threatened forget-me-not, *Myosotis tenericaulis* and the prickly shield fern, *Polystichum vestitum*. There was a suggestion that some of these plants had found refuge in these dry shady places as their habitat on the dry shady forest floor disappeared. Graeme Loh suggested that a decrease in frost with recent climate change, not just the removal of browsers, could have contributed to the emergence of frost-tender trees such as broadleaf.

One wonders whether excluding the browsers along with the predators is the optimum strategy for protecting the skinks or the threatened plants. Would it be possible to erect a simple stock fence across some of the predator proof area, to allow some controlled browsing, particularly of the ephemeral wetlands. This might protect some of these threatened species from being shaded out and give them another chance.

It was a hot dry Dunedin day to be climbing an untracked volcanic cone through creeper-encrusted scrub and scratchy fragments of coastal forest – and an interesting way for Bastow and Raewyn to be spending the first day of their honeymoon. Botanical chat ranged wide: when does a forest become, or cease to become, a coastal forest; how effective are crushed Ngaio (*Myoporum laetum*) leaves at repelling sandflies; were outbreaks of Ergot associated with witchcraft; could *Muehlenbeckia* vines be nature's healer, sealing off disturbed bush edges from more invasive weeds, as well as an important host for the native copper butterfly; why would a mistletoe (*Tupeia antarctica*) grow upon another mistletoe (*Ileostylus micranthus*); why were the lichens most prolific on dead branches and deciduous trees?...All this and more was triggered by what we saw. What with the brilliant view back down the coast to Warrington and John Barkla's excellent notes and guidance it was another sparkling trip to remember. Lichens noted on one small hawthorn (*Crataegus monogyna*) twig included: *Ramalina celastri*, *R. inflexa*, *Teloschistes chrysophthalmus*, *Physcia* sp., *Hyperphyscia plinthiza*, *Usnea* 'tenerior' (OTA). Participants included John, Marilyn, Kirsten & Rebecca Barkla, Bastow & Raewyn Wilson, Jean Bretherton, Nina Hewitt, Julia Reimann, Pat Enright, Chuck Landis, Allison Knight.

**Fish, frustules, fungi, flowers and foliage** 15 March

Mary Anne Miller

Imagine a lake, formed by water accumulating in a volcanic crater in schist, surrounded by lowland forest. A myriad of diatoms, freshwater algae, sponges, galaxids and insects make this their home and it was all 20 million years ago at Middlemarch. This was the scene set by Jennifer Bannister when she presented, to a packed Benham Seminar Room, an update of research she and Daphne Lee of the Geology Department have been involved with, which focuses on well preserved Early Miocene sedimentary deposits on private property at Foulden Hills.

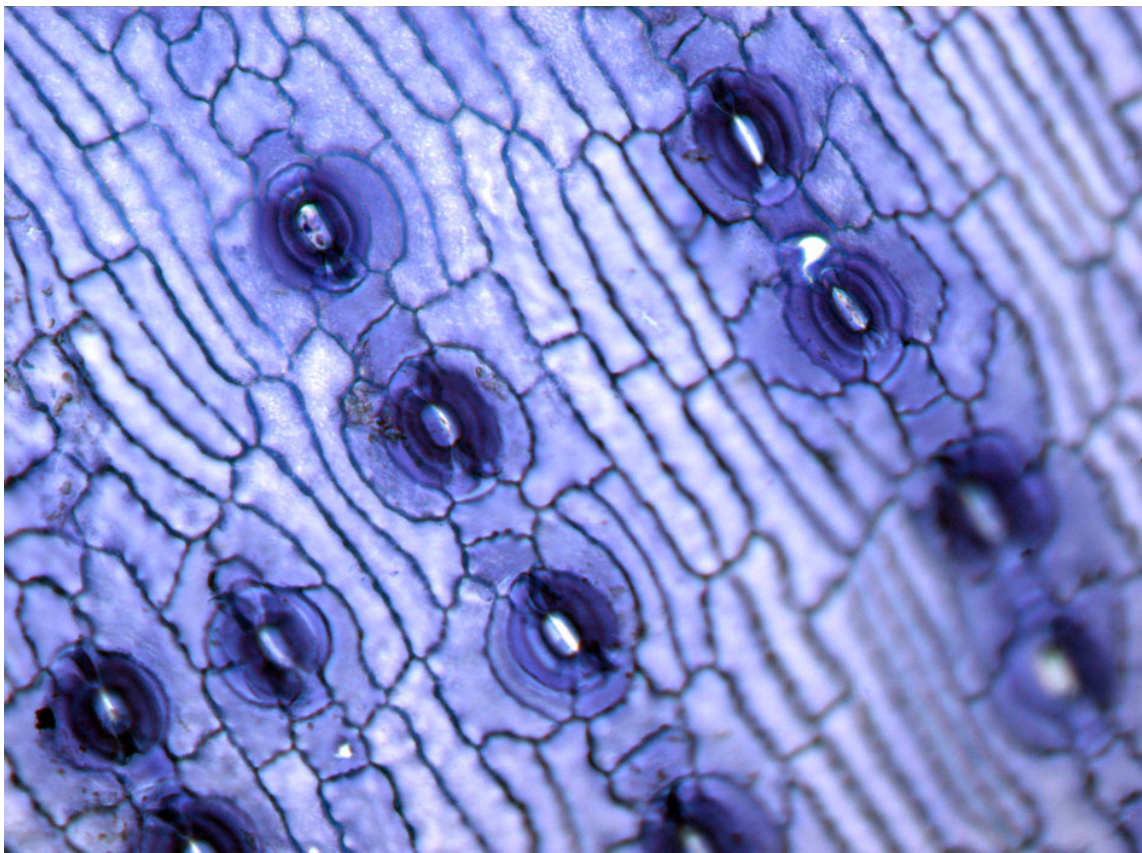
The range of biota was well illustrated with light microscope, SEM (Scanning Electron Microscope) and UV light images. Jennifer's love of microscopy and microphyta was obvious as we were treated to some beautiful examples of diatoms, pollen, fungi and algae. On a larger scale were leaves, fruits and flowers, including Jennifer's *Fouldenia staminosa*, the only fossil flower found in New Zealand with pollen in the stamens.

The challenge for Jennifer is to identify plants, particularly trees that surrounded the lake. Pollen analysis revealed 9 fern, 12 conifer, 1 monocot and 35 dicot species in the sediment. However, pollen gives a distorted picture as it can blow in from far away, so Jennifer has been perfecting techniques of identification using leaf cuticles as leaves are well preserved in this deposit and are more likely to have fallen from the immediate vicinity as there were no incoming streams to the lake. Once processed the next step is to compare these cuticles with contemporary samples, but when there is no such resource you are forced to make your own database and that is what Jennifer is now doing – another first in New Zealand.

So far, in the leaves, she has found no ferns, 1 conifer, 4 monocots and a variety of dicots, the most prominent being those from the Lauraceae family, which is now represented in New Zealand by *Beilschmiedia* and *Litsea*. There was no evidence of Lauraceae pollen. Other means of identification are the pattern of cells around trichome or hair bases and stomatal arrangements so Jennifer has been recording these as well. The low number of epiphyllus fungi and the presence of sub-tropical trees indicate a low rainfall, warm climate for this era and location.

One could easily appreciate the time and effort involved in the research and clearly it is a journey of immense pleasure for someone as dedicated to detective work and detail as Jennifer.

20 million year old fossil stomata on *Podocarpus* sp. leaf- *Jennifer Bannister*



18<sup>th</sup> March 2006, **BotSoc foray to Akatore**

*Harry Livesey*

On a chilly Saturday morning a small number of people gathered outside the Botany building under a sky that threatened rain. Squeezing into three cars we completed the short journey to the Akatore river without losing anybody along the way.

We were visiting a remnant of coastal shrub land that covers the hill slope on one side of the Akatore River. The area is particularly fertile owing to the proximity to the Akatore fault and, hence the broken nature of the rock. The shrub land at Akatore supports a diverse range of species and some particularly rare species among them.



The low tide gave us plenty of room to amble along the river bank where Mike Thorsen pointed out many species of interest. These included marsh ribbonwood – *Plagianthus divaricatus* – a relative of ribbonwood that likes brackish situations and is often confused for a small coprosma; *Korthalsella clavata* – a hemi-parasitic mistletoe; *Meliccytus flexuosus* – a relative of mahoe that is divaricating and has almost no leaves with the stems being the main photosynthetic organ; narrow-leaved lacebark - *Hoheria angustifolia* – rare nationally but common around Otago and Southland; and *Olearia fragrantissima* – a deciduous tree with branches that zigzag between leaves.

Of special interest was the rare and threatened *Coprosma obconica* – so named for the obconic shape of its fruit. Two shrubs were previously known from this area, and on this occasion we managed to add a third.

Once we reached the river mouth there was a brief break for lunch before exploring the rich flora of the coastal platform. Plants of interest were: *Carex litorosa*- a coastal sedge in serious decline, and *Raoulia subsericea* – a species of vegetable sheep belonging to a genus I am more used to associating with alpine environments. We failed to find *Myosotis pygmaea* which had been seen in the area before, but found a healthy population of *Lepidium tenuicaule*, most individuals of which were particularly large and green.

All in all a very pleasing day, the threatened rain never eventuated and we had a fine wander along the scenic Akatore. My day was also completed after a find near the car-park of plentiful juicy *Rubus fruticosus* - delicious in apple crumble.

**Akatore Lichen list:** Some of the lichens on one short Coprosma twig overhanging the estuary we have identified so far include: *Chrysothrix candelaris*, *Lecanora* sp, *Megalospora gomphaloma*, *Opegrapha agelaeoides*, *Pyrenula deliquescens*, *Ramalina glaucescens*, *Teloschistes chrysophthalmus*, *Thelotrema lepadinum*, and *Usnea* sp. In places the crustose lichen, *Opegrapha diaphoriza* formed a distinct white zone on the bank of the estuary.

*Allison Knight and Jennifer Bannister*

**BSO AGM 5 April 2006**

*Allison Knight*

Didn't take much more than 15 minutes to elect and welcome a new Chairman, Secretary, Event Manager, Web Manager, Communication officer, Talks co-ordinator and 2 new committee members, not forgetting to thank heartily the out-going and the remaining office-bearers. Details on back page and web site. A new botanical photographic competition was announced, see p20, and reminders given for the BSO Audrey Eagle Botanical Drawing competition. Then followed a mistletoe feast – an authoritative talk and an intriguing video.....

## **New Zealand Mistletoes**

After the AGM came the really interesting presentations. Emeritus Prof. Peter Bannister is a real authority on mistletoes and his talk was a revelation. First, the nuts and bolts. New Zealand mistletoes can be divided into 3 groups; the green, the beech and the dwarf mistletoes. There are two green species, both found in Dunedin. *Ileostylus micranthus* has yellow berries in autumn and is abundant on native and introduced trees. *Tupeia antarctica* has white berries and scented pollen, possibly to attract flies. Colourful red or orange flowers distinguish the three beech mistletoes. In the summer the orange flowers of *Alepis flavida* can be seen perched in *Nothofagus* near the Mavora Lakes. The red flowers *Peraxilla colensoi* (Maungatua) and *P. tetrapetala* (Craigieburn) are pollinated by tui and bellbird. When the birds tweak the flower open to get at the nectar the pollen explodes over their head feathers. The dwarf *Korthalsella* mistletoes are the most mysterious. They are so tiny and cryptic that even though they often occur at eye level on shrubs it is easy to miss them. Their flower is little more than a naked ovary, the fruits appear to just drop off and the dispersal mechanism is unknown. *K. clavata* occurs in limestone areas such as Castle Hill. The other two can be found around Dunedin if you look hard enough – *K. salicornioides* on kanuka (*Kunzea ericoides*) and *K. lindsayi* on divaricating shrubs such as *Melicope* and *Coprosma* spp. The dwarf mistletoes all mimic their hosts extremely well. But why? What do they have to hide from now that all the sharp-eyed, flightless browsing birds are extinct? These mistletoes are xylem parasites, with one-way uptake, which makes them more nutrient-rich than their hosts. With painstaking measurements, Prof Bannister found, to his surprise, that the biggest nutrient differences between *Korthalsella* and host were on divaricating shrubs - classic moa fodder! In addition, Peter's water potential measurements show that New Zealand mistletoes are more succulent as well as more nutritious than their hosts – another reason to hide from herbivores – either up a tree or in disguise! Fascinating work.

## **Exhuming Adams. (DVD)**

Thassilo Franke and Brant Backlund are two botanical sleuths who covered a lot of country in their one year Natural History Film Making Course. Their aim was to discover why the Adams mistletoe became extinct some time after Europeans arrived in New Zealand. They presented their findings in a most dramatic way, exploring all manner of archived material. There was a wonderful interview with Audrey Eagle, who was the last person to record Adams mistletoe, when she painted it in 1954. Dave Kelly described the recent discovery that existing red-flowered mistletoes need to have their flowers tweaked by a bird, and how the flowers then explode pollen over the bird's forehead as it dips its beak in for nectar. By carefully measuring herbarium and museum specimens from around the world our filmmakers re-created a 3D flower and 3D beaks. Their graphics showed that a tui's beak was too large but the bellbird was a perfect fit for Adam's mistletoe, suggesting that the bellbird was the main pollinator. More sleuthing found that, according to Buller, bellbirds were abundant in Northland in 1859, very rare by 1862 and extinct by 1866. But what killed the bellbirds? In 1830 the ship-borne Southern House mosquito arrived in Hawaii, along with bird malaria, and bird genocide followed. This same mosquito formed a northern distribution in New

Zealand. Around 1860 European songbirds were shipped to home-sick New Zealanders. This timing and distribution fit with the blood-sucking mosquitoes transmitting a European disease to native birds that had no resistance, just as European human diseases were devastating to native people around the world. A fascinating illustration of the need to preserve the pollinator as well as the plant to maintain biodiversity. Thanks to Lloyd Davis, for making the DVD available, and to Lyn Bentley, for tracking it down just in the nick of time.

29 April. **Nenthorn** trip – postponed till better weather. Watch the BSO website.

*Korthalsella lindsayi* on *Melicope simplex* - Peter Bannister



## DVD review

Reviewed by *Rodney Lewington*

## Interactive "*Key to Australasian Liverworts and Hornwort Genera* "

David Glenny and Bill Malcolm. Published by the ABRS.  
Manaaki Whenua Press.

Available in New Zealand from

If you can read a CD on your computer and have an interest in liverworts and hornworts then this key is a must. It comes with the Lucid Player software, a glossary and is generously illustrated.

It is more than a key. The notes and illustrations make it the most complete liverwort and hornwort flora at the generic level available for New Zealand. The comprehensive references to literature and the lists of species for each genus provide a lead-in to the species level.

The tutorial is short and to the point and gets one started quickly. Once first principles have been grasped then the system is easy to use. Short cuts can be learnt as you go along.

Using the key starts with the 182 genera in the flora. Each choice of a “state” under a character removes genera that don’t have that condition. You take your specimen, choose a character and eliminate genera until there is just one. There are additional features which speed the identification. For example the software will prune irrelevant characters and suggest the best character to differentiate remaining taxa.

Bill Malcolm’s illustrations serve two purposes. They illustrate the characters used in the key and they provide illustrations of species within each genus. They give relevant, clear close-up and microscope pictures.

The essence of the Key is in the choice of characters. David Glenny has organised the 90+ characters into an order which will be familiar to bryologists. There are between 2 and 5 states for any character. Being interactive allows the most obvious character to be used first.

The supporting Notes are comprehensive with the diagnostic characters, description, habitat and distribution. Being only for genera does lead, inevitably, to rather generalised descriptions which are not as helpful as they might be when trying to identify a species.

Are there shortcomings? The software has not failed to do my bidding in the four months I have been using the key. Some relevant references are missing and of course more recent literature is not included. On the other hand there are references included which I was previously unaware of.

I have found a few errors in character states which can lead to wrong answers. This seldom happens as the Lucid software can be set to tolerate errors - be they in the system or made by the user.

Does it work? - Usually, certainly far better than dichotomous printed keys that often fail because a character is not apparent on a specimen. My initial wrong identifications are usually traced back to my own failing in observation or interpretation.

David Glenny and Bill Malcolm are to be congratulated on a useful tool and a worthwhile addition to the Australasian liverwort and hornwort literature.

## **Web Site**

**The Parasitic Plant Connection** by Dan Nickrent

*Jennifer Bannister*

<http://www.parasiticplants.siu.edu/>

Covers all parasitic plants, which are found in 19 families containing 277 genera and 4178 species, including mistletoes and orchids. There are images of 6 species of *Korthalsella*, for instance. The photographs are good, and free to download. Have a look and find out more.

## Cover Pictures

### Front cover.

*Coprinus stercoreus* Fr. Drawn by *Jinty Mactavish*, second prize winner in the 2005 BSO Audrey Eagle Botanical drawing contest. See original art feature, p 20.

### Back cover

May is the month for fungi and fungal forays. My guess is that this is the white coral fungus, *Clavulina cavipes*, framed by a delicate, fluted *Mycena* sp. under *Nothofagus solandri* at Tuapeka West in early May - *Allison Knight*

## Botanical Diary

### National

**Cheeseman Botanical Symposium**, Auckland 20-22 Nov 2006

Call for papers now out. See BSO noticeboard or email Mei Nei Lee, mnlee@aucklandmuseum.com for more details.

**28 Dec – 11 Jan. Combined Wellington and Otago Botanical Societies Summer trip to Stewart Island and the Catlins.** Numbers limited, so register early on the form inserted in this newsletter.

### Local

**Botany Department DEPARTMENTAL SEMINARS : 2006**

**Please note change of date : Wednesday 24 May at 12 noon**

**Union Street Lecture Theatre (upstairs), Cnr Union St West and Great King St**

**The role of an insect herbivore (*Curculionidae: Irenimus posticalis*) in determining alpine plant distributions**

Tom Long, PGDip (Ecology), Botany Department, University of Otago

and

**Pollination ecology of the New Zealand alpine flora**

Mascha Bischoff, PhD proposal, Botany Department, University of Otago and Heidelberg Institute of Plant Science

**25 August – 2 Sept. 2007. Linnaeus/Solander celebrations.** Watch for more.

*Cupressus macrocarpa* – the suavely groomed beside the wildly natural. The entrance cut into this magnificent hedge is at least 2 m high. Other plants showing in this dramatically contrasting section of Chuck and Carol Landis’ garden are sweet chestnut, *Castanea sativa*, rainbow grass *Anemanthele (Oryzopsis) lessoniana* and an ice plant.

Photo – Pen Creeley



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### **Committee 2006–April 2007**

Chairman, **John Barkla**, *jbarkla@doc.govt.nz*

Secretary, **Kevin Gould**, *kevin.gould@botany.otago.ac.nz*

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

Events Manager, **Mascha Bischoff**, *mascha.bischoff@botany.otago.ac.nz*

Communications, **Robyn Bridges**, *robyn.bridges@otago.ac.nz*

Program Manager, Trips, **Mike Thorsen**, *mthorsen@doc.govt.nz*

Program Manager, Talks, **Moira Parker**, *moiraparker@clear.net.nz*

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

Committee; **Bastow Wilson**, *bastow@otago.ac.nz*, (on sabbatical 2006) **Abe Gray**,  
*graab419@student.otago.ac.nz*, **Christina Lister**, *lisch221@student.otago.ac.nz*  
Newsletter editor, **Allison Knight**, *bsa@botany.otago.ac.nz*, ph 487 8265

Please submit copy for next newsletter by 10 September  
2006

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### **Membership form: Botanical Society of Otago, 2006**

*This form is also available on our website;*

**<http://www.botany.otago.ac.nz/bs/>**

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