

Botanical Society of Otago Newsletter

Number 36
Feb – March
2003

Hebejeebie trifida



BSO Meetings and Field Trips

7 March, Fri. 12:00 - 2:30 pm. **BSO BBQ** to welcome new botany/ecology students and new BSO members. Meet at the front lawn, Botany House Annexe, 479 Great King Street (across the road from the main Botany Building). Sausage sandwiches and juice \$1 each. All BSO members welcome!

12 March 2003, Wed. 5.30 pm. **BSO Annual General Meeting**. Drinks, nibbles and chat followed by a short meeting to elect a chairman and committee for 2003. Then, guest speaker **Kelvin Lloyd** will give one of his fabulous slide shows on *The Botanical Tramper*. More tantalising glimpses of untracked wilderness. Meet in the **Zoology Annexe Seminar Room**, Gt King St, back behind the car park between Dental School and Zoology Dept. **Bring** a gold coin donation towards costs

15 March, Sat. 9.30 am. Full day field trip to Mt Watkin/ Hikororoa with Robyn Bridges. A cross-country walk to a landform of interest both botanically and geologically speaking. The prominent bump on the horizon, on the left as you head north past the Karitane turnoff, is a volcanic hill 'standing alone in a schist landscape' Botanical species of interest include, *Coprosma virescens*, *Fuchsia perscandens* and *Gingidia montana*. Bring all-weather gear, stout footwear, food, drink and money for transport. Meet in the Dept of Botany Car Park, 464 Great King St, to car pool. Passengers pay driver 8c/km. Read *Wild Dunedin* by Neville Peat & Brian Patrick for more interesting details about Mt Watkin.

2 April, Wed 5.30 drinks & nibbles for 5.45. **Adrienne Markey**. *Walking with Western Australian Wild flowers*. Meet in the **Zoology Annexe Seminar Room** as above.

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**Refereed paper*

Cover pictures

Front cover (and Membership Form)

Habit sketch of *Hebejebe trifida* (= *Parahebe trifida*) by Nancy Adams. From *New Zealand Alpine Plants*, AF Mark & NM Adams, 1973, AH & AW Reed. This illustrates the new southern genus named by Michael Heads in this issue.

Back cover

Another SEM of a pollen grain, this time from a dandelion of the genus *Taraxacum*, which was collected by Mary Anne Miller for the Botany 326 *Plant Diversity and Evolution* paper. It was air dried and scanned by Liz Girvan, Scanning Electron Microscope Unit, University of Otago. Note the spiked ornamentation on the *exine*, or outer coat. Dandelions are *apomictic*, which means that they can produce viable seeds without fertilisation; so these are pretty, redundant pollen grains.

President's notes – David Orlovich

Welcome to another year with the BSO! We've started planning events for the first half of the year, but we'd love new suggestions, so let us know what you'd like to do. As I mentioned in the last newsletter, I'm keen to try to increase the membership of the society by inviting undergraduate students from the University of Otago to join. To facilitate this, we're going to invite the undergraduate students studying botany and ecology to a BBQ to be held at the end of the first week of semester (Friday 7th March from 12:00 - 2:30 pm). All BSO members are welcome to come along - hopefully it'll be a fun event and perhaps we might see new faces at our talks, trips and workshops as a result.

The Annual General Meeting is coming up, and we've lined up Kelvin Lloyd to give a talk. Kelvin's slide shows are always entertaining, as he recounts trips to hard-to-get-to places only seen by a few people and the odd stray dog (come along to find out about that dog). Just before the talk, we need to have a quick meeting to elect new members of the committee. The present committee have all indicated that they're able to continue in their current positions, although we would like to appoint a Treasurer and an Event Manager, as these two jobs are being done by the Chairman and Secretary at present. If you would like to find out more about what's involved in these jobs before the AGM, please get in touch with either me or Robyn Bridges and we'll fill you in.

Finally, it will come as a surprise to some to see we have published a refereed article in this issue of the newsletter. After a long debate, we accepted the view that the new genus described herein will be of interest to members of the Society, in line with our editorial policy, and we hope that its publication here will stimulate further interest in botany in Otago.

Treasurer's Notes – David Orlovich, Treasurer.

Recommendations from the committee for consideration at the AGM:-

- ξ That the annual subscription be raised to help cover the cost of an annual Geoff Baylis Lecture.

Suggested subscription rates for 2003:

Ordinary member; \$15 for 1 year, \$60 for 5 years

Student/unwaged; \$5 for 1 year, \$20 for 5 years.

- ξ That the passenger rate on trips be raised from 7 to 8 cents/km/passenger, to be paid to the driver.

Editorial Policy - Allison Knight, editor

After considerable discussion at the last BSO committee meeting the following editorial policy was moved and accepted.

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.

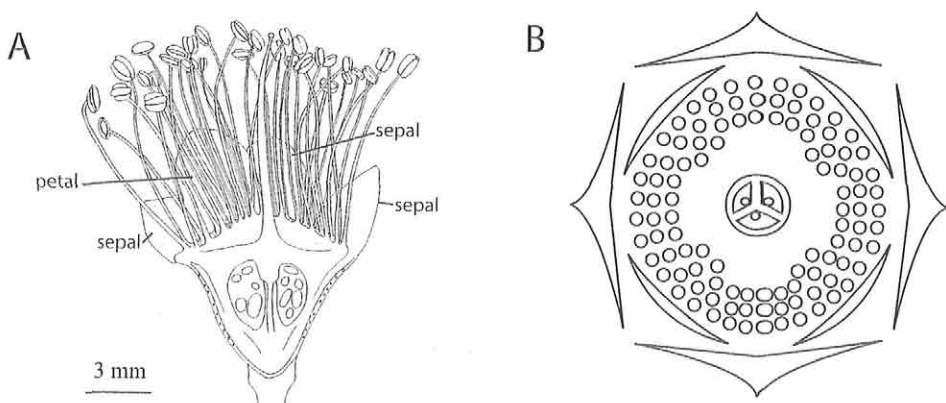


Fig. *Lophomyrtus bullata*. A. Half flower drawing, B. Floral diagram. SR Belsham and DA Orlovich, NZ J Botany 2002, V 40, 687 – 695. – NB Steve Belsham is talking about the floral development and classification of the fleshy-fruited Myrtaceae on 9 April. See Diary.

Panbiogeography and conservation of New Zealand's natural history

John R. Grehan,

Buffalo Museum of Science, 1020 Humboldt Parkway, Buffalo, New York 14211-1293, USA

Panbiogeography is an internationally recognized research program for the geographic study of plant and animal distributions. The research program began in the 1950's through the work of the Franco-Italian botanist Leon Croizat. During the 1980's panbiogeography entered the New Zealand scene through the pioneering efforts of Robin Craw and Michael Heads. The ensuing growth and productivity of research, generated almost entirely within New Zealand, culminated in 1989 with the world's first panbiogeography symposium sponsored by the Museum of New Zealand.

Through the 1990's New Zealand panbiogeography became very influential internationally, leading to an expanding research program with particularly strong support from scientists in Latin America, Europe, and the South Pacific. If one were to look for a continued presence within the New Zealand literature, however, it would largely be in vain. In consequence I find myself in the incongruous position of writing (at the kind invitation of J. Bastow Wilson) this little note on a subject that should otherwise be well known and understood. Just as one cannot, in a few words, make a complete summary of modern genetic or systematic theory, I will not pretend this note offers anything more than a hint of the possibilities for the natural sciences in New Zealand.

Based on the very simple idea that geographic patterns are informative about earth history, panbiogeography represents distributions by graphs, called tracks, that link disjunct localities together to provide information on the spatial structure of the distribution. Tracks are correlated with overlapping tectonic or geomorphological features (called baselines) to make biogeographic predictions concerning geological history. It is even possible to predict new geological facts as Croizat did in 1958 for the Americas where he predicted the continents were made up of a fusion of terranes of Pacific and Atlantic origin. This prediction conflicted with geological theory of the time, but later received confirmation by geologists.

New Zealand's geohistory is widely portrayed as an inherited Gondwana biota with the addition of later waifs and strays. Panbiogeographic research suggests New Zealand inherited at least two different biotas - one centered on the tectonic basins now forming the Indian and Atlantic Oceans (e.g. ratite birds) the other centered on the tectonic basin now forming the Pacific (e.g. tuatara, southern beeches, primitive frogs). The presence of both groups in the New Zealand biota is concordant with a geological model involving accretion of Pacific terranes to the eastern margins of Gondwana preceding the separation of New Zealand from Australia and Antarctic. This hybrid origin continues to leave its Mesozoic footprint upon New Zealand's modern ecological landscape.

Many puzzling disjunctions in the distributions of New Zealand organisms can be resolved into a series of concentric tracks linking different parts of the mainland and

nearby islands. One component of this Parallel Arcs Model involves the Chatham Islands where some groups form a Chatham-eastern South/North Island track while other form a Chatham southeastern South Island and sub-Antarctic track (Fig. 1). Intersection (called a node) of the tracks in the Chathams and southern South Island has its geological parallel in the suturing of Pacific and Gondwanic terranes in both the mainland and Chatham Islands. This geological correlation leads to the biogeographic prediction that the distributions co-evolved with the geological formation of New Zealand in the Mesozoic and millions of years of subsequent geological upheaval have not obliterated their tectonic provenance.

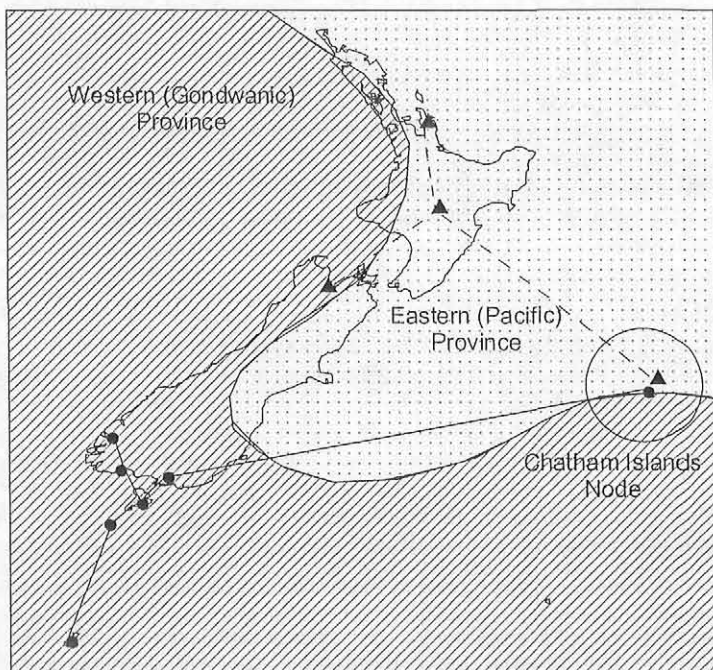


Fig 1. Highly generalized map for two of New Zealand's major geological sectors involving a western (Gondwanic) province and eastern (Pacific) province, and their spatial correlation with different standard tracks. Example distributions represented here by the beetle *Notochoragus nanus* (solid circles) for the western track, and moths of the *Exeiratus setarius* species group (triangles) for the eastern track. The two patterns are statistically significantly different from a random distribution ($p < 0.04$) using the Clique-Compatibility Program (Craw, 1989). This biogeographic correlation suggests the distributions coevolved with the formation of New Zealand's geology in Mesozoic times and the occurrence of both groups in the Chatham Islands is a consequence of its composite geological structure.

One may refuse to believe in biogeographic stability over the millennia because it does not agree with one's beliefs about fossils, molecular clock theory, or geological narratives. The other course is to consider biogeography as an independent historical science generating new insights that questions the validity of long-held traditions. Perhaps fossils are not the last word on the age of a biota. Perhaps molecular clock assumptions are sometimes misleading, and perhaps the lack of geological evidence is not exclusive of other historical alternatives. The maps of panbiogeography are as factual a source of evidence as any one may find in evolutionary biology, and it is by the critical study of these maps that the integration of geography, biology, and geology may move forward.

Correlation of tectonic and biological patterns has major implications for understanding the evolutionary significance of animal and plant distributions since biodiversity has evolved geographically. Panbiogeography provides a method of documenting the spatial structure of biodiversity and analyzing its potential historical and evolutionary significance. Without this method conservation science in New Zealand lacks the biogeographic resources necessary for implementing a management program capable of managing and conserving both the physical form (organism) and spatial (geographic) structure of organic distributions.

Panbiogeography might be far better known in New Zealand if it were not denied research funding or locked out of the scientific and popular literature. These are troubling times for the science of New Zealand's natural history. There is an evident need for accountability from the institutions of research funding and publication within New Zealand. Only then will there be a fully informed scientific growth for the conservation of New Zealand's remarkable natural history.

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Articles

The Botanical Art of Robert Donn FSA, Scot. - *Mary Anne Miller*

The watercolours reproduced opposite are from a portfolio of 76 paintings entitled *Plants of New Zealand* by Robert Donn, who presented them to the Department of Botany, University of Otago, on his retirement.

As works of botanical art they are almost unknown, although brief reference is made to them in David Bell's "Art In Education" (2000), and since being in the Department of Botany they have received little attention. However, two are presently on display in the foyer and it is now known that three framed watercolours in the Botany tea-room are part of the series. They were produced from 1921 to 1940 in locations corresponding to Donn's teaching appointments.

Robert Donn was a leader in art education, especially in the period 1920-32, when his enthusiasm for art and efforts to have it recognised as a means of self-expression, particularly for children, made him a pioneer on the New Zealand art scene. The range of his talents was broad. Besides drawing and painting he was proficient at illustrative design, calligraphy and printmaking. Donn's elegant and carefully executed designs were inspired by both Celtic and Maori influences. His *Maori Fire Myth* (an oil on canvas) can be viewed outside the Principal's office at the Dunedin College of Education. He was, however, more widely known as a landscape water-colourist. The Hocken Library has three examples in its collection.

Donn was born in Dundee, Scotland, in 1878. He studied at the School of Arts in Dundee and Glasgow before being appointed Senior Lecturer in Art at Dunedin Training College in 1921. He worked closely with the La Trobe painters of the Dunedin School of Art to successfully raise the standard of art instruction. Artists to flourish under this tutelage included Harry Vye Miller, Myra Kirkpatrick, Alexander Hare McLintock and Stuart Bell MacLennan. When the College closed in 1932 during the depression, Donn continued his teaching at Auckland Training College. He later retired to Blenheim, although he did some part-time teaching and exhibited locally.

Donn's relative obscurity results from the fact that few of his works were deposited in public collections. However, at a time when New Zealand painters, if not the whole of Antipodean society, were experiencing a period of change, Donn characterised the move from utilitarianism towards the 'fine arts' in the years following World War I when writers and artists alike grappled with the notion of national identity. He died in Dunedin in 1966.

References:

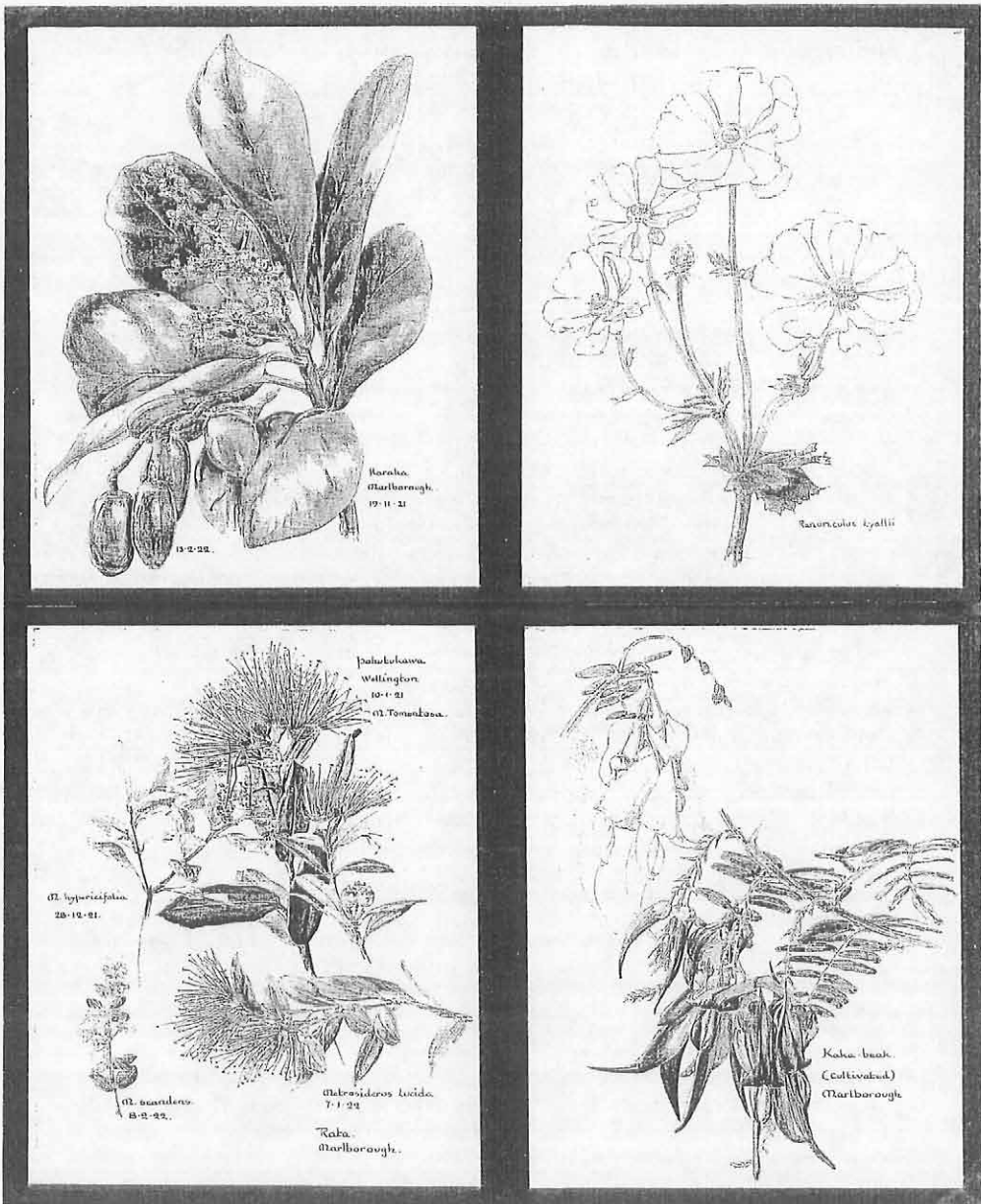
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Microcopies of four paintings by Robert Donn. His 1921 names, clockwise from top left, are: Karaka, *Ranunculus lyallii*; Pohutukawa, *Metrosideros tomentosa*, and three species of Rata, *Metrosideros hypericifolia*, *M lucida*, *M scandens*; and Kakabeak.

Hebejeebie* (Plantaginaceae), a new genus from the South Island, New Zealand, and Mt. Kosciusko, SE Australia.

Michael Heads,

Biology Department, University of the South Pacific, PO Box 1168, Suva, Fiji Islands.

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**This paper was refereed in accordance with the BSO editorial policy.*

As a beginning Botany student at the University of Otago in the 1970s under Professors Geoff Baylis, Alan Mark and Bastow Wilson I found the generic placement of three beautiful alpine subshrubs particularly confusing. In Allan's (1961) *Flora of New Zealand* one was placed in *Pygmaea* Hook. f. (= *Chionohebe* Briggs et Ehrendorfer) as *P. tetragona*, and the other two in *Parahebe* W.R.B. Oliver (Moore in Allan 1961), as *P. trifida* and *P. birleyi*. However, while there are obvious differences between the three species and typical members of the genera they were allocated to in the *Flora*, the three are all similar in appearance (Heads 1994a; Wagstaff et al. 2002); they share decussate not bijugate phyllotaxis, leaves with glandular hairs, large flowers with more or less regular, 5-lobed corollas, and purple anthers. Lucy Moore revised most of the species of the *Hebe* complex for the *Flora* after Allan's untimely death but felt obliged to continue with his generic concepts, despite having some reservations (pers. comm. 1987).

The comparative morphology and biogeography of the three plants are discussed and illustrated elsewhere (Heads 1993, 1994a,b,c). Parsimony analysis of internal transcribed spacer (ITS) sequences (Wagstaff et al. 2002) confirmed that *P. tetragona* and *P. trifida* form a monophyletic group (these authors' '*Chionohebe* B clade') which branches from the remaining New Zealand hebes after the basal *Leonohebe* Heads s.s. and *Chionohebe* s.s. Wagstaff et al. (2002) suggested that 'There is little evidence from morphology to separate the *Chionohebe* A and B clades', but this is contradicted by the data on phyllotaxis and floral morphology presented in my earlier papers.

The position of *P. birleyi*, a Southern Alps vicariant of the Central Otago *P. trifida*, is less clear. The obvious phenetic similarity in the corollas has led most authors to treat it with *P. trifida* and this is followed here. The position of *P. birleyi* is unresolved in the strict consensus tree from the ITS studies (Wagstaff et al. 2002: Fig. 3), but the species is grouped with *P. trifida* and *P. tetragona* in the single maximum parsimony tree presented (Wagstaff et al. 2002: Fig. 4).

Wagstaff et al. (2002) showed that the *Hebe* complex is nested in *Veronica* s.l. The possible taxonomic alternatives are to accept either a very broad *Veronica*, or a smaller *Veronica* s.s. as well as *Hebe* and several smaller segregate genera. Wagstaff et al. favoured the latter approach and this is followed here.

Olmstead et al. (2001) showed that Scrophulariaceae in the traditional sense is not monophyletic. According to the ICBN the conserved name Plantaginaceae must be used for the clade including the *Hebe* complex (if it is accepted at family rank), although some authors are currently using the name Veronicaceae for the group.

Hebejeebie gen. nov.

Fruticuli alpini, foliis decussatis non bijugatis, foliorum trichomatibus longis glandularisque, inflorescentiis paucifloribus, floribus grandibus, et antheris purpureis.

Alpine shrubs with decussate, not bijugate, phyllotaxis, leaves with long glandular hairs, few-flowered inflorescences, large flowers, and purple anthers.

Type species: *Hebejeebie densifolia* (F. Muell.) Heads.

Etymology: The name refers to the anxiety these plants have often caused taxonomists.

Distribution: Southern South Island, New Zealand, and Mt. Kosciusko, SE Australia. All three species occur in Otago.

1. ***Hebejeebie densifolia*** (F. Muell.) Heads, comb. nov.

= *Leonohebe densifolia* (F. Muell.) Heads 1987.

= *Chionohebe densifolia* (F. Muell.) Briggs et Ehrendorfer 1976.

= *Paederota densifolia* F. Muell. Trans. Philos. Soc. Victoria 1:107. 1855.

= *Pygmea tetragona* (Hook. f.) Ashwin 1961.

= *Logania tetragona* Hook. f. 1864.

= *Hebe dasyphylla* (Kirk) Cockayne et Allan 1926.

= *Veronica dasyphylla* Kirk 1896.

Distribution: Southern South Island and Kosciusko.

2. ***Hebejeebie birleyi*** (N.E. Brown) Heads, comb. nov.

= *Parahebe birleyi* (N.E. Brown) W. R. B. Oliver 1944.

= *Veronica birleyi* N. E. Brown, Kew Bull 1911: 345. 1911.

Distribution: Southern South Island.

3. ***Hebejeebie trifida*** (Petrie) Heads, comb. nov.

= *Parahebe trifida* (Petrie) W. R. B. Oliver 1944.

= *Veronica trifida* Petrie, Trans. New Zealand Inst. 55: 437. 1924.

Distribution: Southern South Island.

Acknowledgments

I'm grateful to G.T.S. Baylis, J.B. Wilson, and the late Prof. W.R. Philipson for supporting my earlier work on *Leonohebe* and its publication, and to Richard Olmstead for information on 'Scrophulariaceae'.

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Brief Botanical Glossary and Etymology - Allison Knight

(bi)jugate: yoked together as a pair

decussate: leaves or other organs that are opposite, with successive pairs at right angles to each other, so forming 4 rows, as with leaves in the *Hebe* species.

phyllotaxis: arrangement of leaves or floral envelopes on a stem

vicariant(s): closely related taxa isolated geographically from one another by a vicariance event (natural biogeographical barrier)

heebie-jeebies: a state of nervousness or agitation. "It seems pretty certain that this term was invented about 1923 by the American cartoonist Billy De Beck. Its first appearance was in one of his *Barney Google* cartoons in the *New York American* on 26 October 1923, though there it was spelled *heeby-jeeby*. Where it came from, apart from his fevered imagination, is open to question. There was a dance at about the same time, and a song in 1926, both said to have originated from Native American witch-doctor chants before human sacrifices. But the dance and the song both seem to be later than the first appearance of the phrase." - from Michael Quinion, *World Wide Words*; Web page.

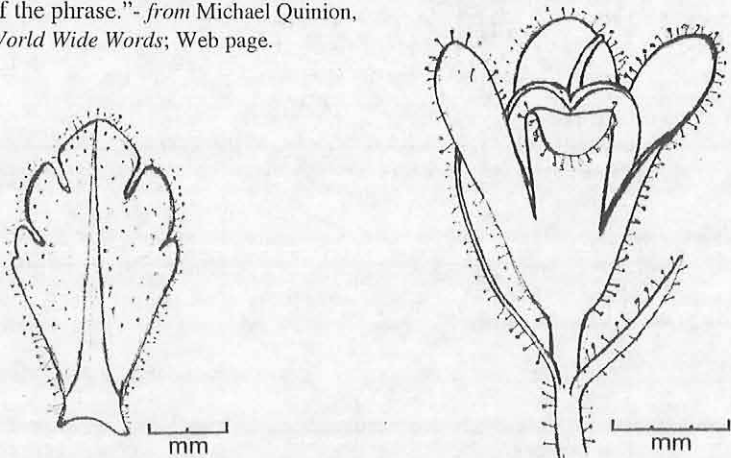


Fig: Details of 'three-cleft' leaf tip, left, and flower, right, of *Hebejeebie trifida* (= *Parahebe trifida*) by Nancy Adams. From *New Zealand Alpine Plants*, AF Mark & NM Adams, 1973, AH & AW Reed.

Abstracts from Annual Student Symposium, 11 Oct 2002

Department of Botany, University of Otago

Ratites revisited: plant defenses and mega-herbivores in New Zealand.

William G. Lee, Landcare Research, Private Bag 1930, Dunedin, New Zealand

In collaboration with several colleagues from mammal infested regions of the world I have been attempting to understand the interaction of woody plants and large avian herbivores in New Zealand. In this talk I will describe the challenges of doing research on the ecology of extinct species, and the progress we have made over the last few years using empirical, experimental, and modelling approaches. The results of our studies have changed my perspective on the type of changes that probably occurred in New Zealand vegetation following human settlement, and on the disturbance regimes we can utilise to conserve a representative range of indigenous plant biodiversity.

Simulated vertebrate grazing and invertebrate diversity in alpine snow tussock

Steve Rate

New Zealand has no native ungulates, but tussocklands are commonly grazed, including many in protected natural areas. However, there has been limited local research on the effects of vertebrate grazing (simulated or real) on invertebrate populations.

This study aims to answer the following questions: 1. Does clipping snow tussock (to simulate grazing) affect invertebrate populations? 2. Do different levels of clipping have different effects? 3. Are these effects consistent with altitude?

Two patches of snow tussock were selected at different altitudes in the Rock and Pillar Reserve, Otago, New Zealand. Randomly selected tussocks were severely clipped, moderately clipped, or not clipped (controls). Invertebrates were sampled by taking a core of each tussock's base, once before treatment and twice post-treatment.

Preliminary results indicate that the invertebrate communities differed between the sites and sampling periods but that there were no differences between treatments 3 or 12 weeks after clipping. Trophic level analysis and sampling at 9 months post-treatment may reveal patterns not yet evident.

Walking with Western Australian Wildflowers.

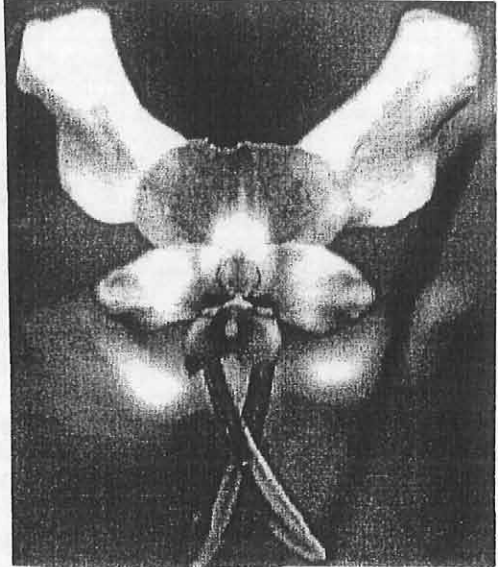
Adrienne S. Markey

This pedestrian talk will "walk" the listener through the spectacular floral landscapes that have made Western Australia internationally renowned as the "Wildflower State". The southwest of Western Australia (WA) is one of the top biodiversity "hotspots" on the planet, having in excess of 7500 species of angiosperms and climatic extremes that

- the *kwongan* or mediterranean-type sandplain heaths that rival the Cape *fynbos* in diversity and ecological intricacy,
- tall wet-temperate rainforests of karri and tingle that retain Gondwanan relics and contain some of the tallest and strangest trees in the world,
- coastal vegetation perched on Devonian limestone reefs stranded atop 100 m high cliffs and on coral atolls precariously placed 2 m above sea level,
- ephemeral everlastings in mulga scrub,
- precambrian granite outcrops,
- oases of ferns and palms in canyons surrounded by a sea of arid-zone spinifex and iconic ghost gums.

*Fig. Donkey orchid,
Diuris longifolia.*
- Adrienne Markey

*NB: There's another chance
to see these wonders
when Adrienne talks to
BSO on Wed 2 April.*



The citizens' voice in conservation: applying ecological science in a statutory policy-advice environment
Kath Dickinson

The New Zealand Conservation Authority and conservation boards are statutory bodies set up under the Conservation Act. These bodies provide advice on conservation areas, policy, activities and responsibilities of the Department of Conservation. Their responsibilities include land management, wildlife and plant protection, national parks and reserves, recreational and tourism facilities, pest and weed management, walkways, marine reserves and historic and culturally important sites. In the case of the fourteen conservation boards around the country, their advice is given to the conservator of the Department of Conservation conservancy in which they are based. In the case of the Conservation Authority, its role is a national one and it gives advice to the Director-General of Conservation and the Minister of Conservation.

The Boards and the Authority are the citizens' voice for conservation in New Zealand under statute and as such they have an important role to play in setting conservation policy in New Zealand. A conservation board consists of a group of 9 -11 individuals,

The Boards and the Authority are the citizens' voice for conservation in New Zealand under statute and as such they have an important role to play in setting conservation policy in New Zealand. A conservation board consists of a group of 9 -11 individuals, independent of the Department, appointed by Government. The Authority has 13 members, four of whom are selected by Government from public nominations, one is the nominee of Ngai Tahu, and eight others are appointed on the recommendation of either certain Ministers (Maori Affairs (2), Tourism (2), Local Government (1)) or organisations (Royal Forest and Bird Protection Society (1), Federated Mountain Clubs (1), Royal Society of New Zealand (1)). I have been on the Authority since 1996 on the recommendation of the Royal Society of New Zealand and was a member of the Wellington Conservation Board, 1993-96. I have been a member of the Scientific Advisory Group of the Otago Conservation Board since 1986. During this time, many science issues have emerged. I will discuss several these in the context of science communication and advice.

Phylogenetic analysis of *Festuca* spp.

Angela Hunter, Suzie Draffin, Kelly Leonard

Previous phylogenetic analyses of *Festuca* identified two clades, the "broad-leaved" and the "fine-leaved" *Festuca*. It is commonly accepted that the New Zealand *Festuca* belong to the "fine-leaved" clade. We carried out phylogenetic analyses on the New Zealand species of *Festuca*. DNA amplification using the polymerase chain reaction was carried out with the Taberlet (1991) primers "e" and "f". We constructed a phylogenetic tree that indicated that *Festuca* have had at least two phylogenetic origins in NZ. We are currently completing analyses of the internal transcribed spacer (ITS) region.

Growth and erosion rates of *Macrocystis pyrifera* in differing hydrodynamic environments in Paterson Inlet, Stewart Island, New Zealand.

Christopher Hepburn, James Holborow, Catriona L. Hurd, Steven Wing, Russell Frew

Seaweeds play an essential role in primary production and nutrient cycling. The control of seaweed growth and production rates is attributed to variations in light levels, nutrient supply and temperature. Of these factors, the role of nutrient supply is poorly understood because it requires knowledge of both nutrient levels in the surrounding seawater and the rate of transport of those nutrients to the seaweed. Rates of nutrient transport and hence seaweed production rates are thought to be reduced in habitats where seawater flows are low because a region of stagnant flow forms at the seaweed surface. We examined the influence of hydrodynamic environment on growth and erosion rates of *Macrocystis pyrifera* at eight sites in Paterson Inlet, Stewart Island. Seawater velocity at *M. pyrifera* blade surfaces were estimated using gypsum dissolution nodules attached to the blades. Nitrogen status of the seaweeds was determined from ratios of tissue C:N. The results provide new information on production rates of *M. pyrifera* in different hydrodynamic environments and the potential contribution of *M. pyrifera* to the coastal food web.

Chasing crayfish and bothering kelp in Otago Harbour.

Chris Hepburn

The exclusively epifaunal bryozoan *Membranipora membranacea* is commonly found on the giant kelp *Macrocystis pyrifera* in both southern and northern hemispheres. The bryozoan gains many benefits from its close association with the giant kelp including kelp-derived dissolved organic matter as a supplement to its diet, a more favourable filter-feeding environment and a refuge from the high sedimentation rates and competition of the benthos. It is however unclear what benefits if any the kelp gains from bryozoan colonisation. The objective of this work was to compare the possible benefits of *Membranipora* colonisation to *Macrocystis* through the provision of ammonium excreted directly onto the kelp surface during N limitation with potential costs such as damage to underlying blade tissue or by providing a barrier to nutrient uptake. A variety of methods including determinations of environmental factors, the growth and physiological status of *M. pyrifera*, natural $\delta^{15}\text{N}$ values, ^{15}N enrichment, and biomechanical assays were used to investigate this relationship. It became clear that advantages as a result of colonisation by *M. membranacea* to *M. pyrifera* were most likely in a kelp bed which exhibits high levels of N limitation coinciding with high bryozoan colonisation levels, a scenario which wasn't observed in Otago Harbour over the three year study period.

Note – A fuller account of Chris Hepburn's prize-winning talk was published in the 2002 Dec-Jan BSO Newsletter.

Fungi of Sweden and Scotland.

Alison Stringer

Selected slides of fungi from the Upplands and Gotland areas of Sweden, and the Lothian region of Scotland. It won't be all mushrooms, there will be scenery, architecture and human interest slides as well!

Mushrooms of the Yunnan Province, China.

David Orlovich

China is one of the world's largest producers and consumers of mushrooms. In August this year I spent two weeks in Yunnan province, south-western China, where I visited many mushroom farms, met many mycologists and talked about the research on fungi we are doing here at the University of Otago. My talk includes a photographic tour of this beautiful and botanically rich part of the world

Lizards and fruit choices: Preliminary results.

Jane Marshall

It has long been thought that fruit colour is an important trait in fostering frugivory; most fruit is red and most fruit is eaten by birds. As part of my PhD, I am investigating fruit choices made by native skinks of the *Oligosoma* genus. In this talk, I will present the results of the trials I have conducted where skinks were presented with choices of either red or red-orange *Coprosma* berries and white or pale blue *Coprosma* berries.

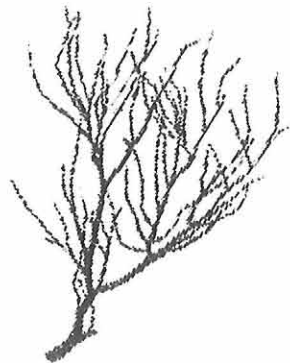
The relative roles of light and salinity in controlling the upper depth range of black coral communities in the New Zealand fiords.

Louise T. Kregting and Mark T. Gibbs

The shallowest populations of black coral colonies so far documented are located in the remote fiords on the south-western coast of the South Island of New Zealand. The majority of populations of black coral are found in deep water habitats; presumably a result of the intolerance of these colonies to high levels of incoming irradiation. By contrast, black coral colonies in the New Zealand fiords are observed as shallow as a few metres in some cases. However, this is not qualitatively inconsistent with the other populations since surface low-salinity-layers in the New Zealand fiords act to significantly reduce incoming irradiation. The role of these surface freshwater layers in controlling the upper depth of the black coral colonies is investigated here. In particular, the relative roles of low salinity and incoming irradiation are investigated in order to ascertain controlling factors on the distribution of the populations.

Fig. The plant-like appearance of the black coral *Antipathes fiordensis* (*Antipatharia*) makes it hard to imagine that these corals are really colonies of millions of polyps joined together by their white epidermis. It is the black skeleton underneath, composed primarily of protein and chitin, that forms the hard tree-like skeleton that the black coral is named for.

- Louise Kregting



The role of scientists in science communication. Gudrun P Wells.

Science has a huge impact on society these days, so it should be no surprise that communication of science matters is happening all the time. The communication of science is itself a very broad field and can be roughly broken into three parts: communication within the scientific community; communication between the scientific community and the public; and communication among members of the public.

Communication between scientists is an integral part of doing science and as such is something scientists do every day. The importance of communication between scientists and the general public is becoming more important as scientific discoveries are more widely reported by general media, become more mainstream, and scientists have to justify their research to funding bodies. The communication of science among

members of the general public on the other hand is often ignored. This is the main channel through which the majority of the population receives its science information and often involves inaccurate science that can give people the wrong idea about how science is done. The antidote to this inaccurate science is to become involved in communicating good science directly to the public.

Making reductionist ecology useful: Examples from beech forest.

Dave Kelly

In the past much ecology has been single-species (autecology) or community based. The former is too narrow and the latter so broad it never tells you anything useful. A challenge is to do meso-scale ecology where we understand species interactions well enough to predict the behaviour of ecological systems (or model them). I present three examples from recent work in *Nothofagus* communities; looking at tree- scale insect interactions over honeydew production, at how climate change alterations to beech masting will affect birds, and at how predators affect bird-plant pollination mutualisms

Report

WBS Summer trip, Bay of Plenty 2–12 Jan 2003. – Allison Knight

A keen Otago contingent of Audrey Eagle, Moira Parker, Neill & Barbara Simpson, and John & Allison Knight joined the Wellington Botanical Society's trip in the Bay of Plenty this summer. There Graeme Jane and Gael Donaghy of Tauranga had prepared a wonderful array of trips for us, complete with the latest species lists and maps to aid our explorations of the many and diverse plant communities in the area. They led us from the mangrove, *Avicennia marina* subsp. *australasica*, swamps of the coastal estuaries through dense tawa, *Beilschmiedia tawa*, stands to the goblin fog forests of the Kaimais, from the spectacular red-flowering coastal pohutukawa, *Metrosideros excelsa*, forests to the regenerating kauri, *Agathis australis*, forest of Mt Te Aroha; from the special ferns and prostrate kanuka adapted to the hot soils of Waimangu thermal area to the towering remnant podocarp forests of Whirinaki. Always there was much to see and marvel at – (even a hidden patch of marijuana, *Cannabis sativa*). The Tawari, *Ixerba brexioides*, in full flower, was just as fragrant and magnificent as Geoff Baylis had said it would be.

Many thanks to Graeme and Gael for hosting such an excellent trip, to Joyce Wilson for keeping the home base ship-shape and well fed and to Barbara Clark for her quiet background organisation. It was another fascinating, fun, full-on ten days of total immersion botany and I would recommend a summer Bot. Soc. trip to anyone, at any level, who would like to get more familiar with our native plants.

Books

Meanings and origins of Botanical Names of New Zealand Plants

Marie Taylor (2002) \$21 incl post& packaging.

“This eagerly awaited book is now available! A little treasure trove of information, surprises and insights as to why plants carry the names they do. A must have for any keen botanist.”

Available from Auckland Botanical Society, c/- Kerry Bodmin, 24 Laingholm Drive, Laingholm. Ph 09 816 8291

-From the Auckland Botanical Society newsletter

Special Book deals for BSO members!

Wild Dunedin: Enjoying the Natural History of New Zealand's Wildlife Capital. Neville Peat & Brian Patrick. 144pp, RRP \$39.95

This wildly popular book has been reprinted. With a new, redesigned paperback cover and almost 200 colour photographs, *Wild Dunedin* is an example of that rare thing – an authoritative book enjoyed by the general reader. *Wild Dunedin* explores every corner of our gorgeous region, from the ocean to the high alpine zone of the inland ranges. It provides a comprehensive full-colour introduction to the area's geology, flora and fauna. – *From the flyer, and I can thoroughly recommend it, too –Ed.*

PS Otago University Press are generously offering a 40% discount if BSO buys 10 or more copies for resale to members. Give your details to David Orlovich if you would like to be on the list.

The Conservation Requirements of New Zealand's Nationally Threatened Vascular Plants

Dobson SR, de Lange PJ, Ogle CC, Rance BD, Courtney SP and Molloy J.

Threatened species Occasional Publication No. 13. Department of Conservation 1999.

A few Free copies are still available! John Barkla, DoC, has generously made several copies of this book available to keen members who have paid their BSO subscription for 2003. The first 7 members who call in to the Department of Botany Office, 464 Great King St, can claim a copy from Trish, the department secretary.

Botany of Rotorua, 140 pages, 130 colour plates, \$20 a copy + \$5 postage. 10 or more copies \$10 ea. + postage. The 10 copies that BSO ordered are all gone – they were snapped up fast, but more copies are available direct from Chris Ecroyd – see next page.

Other Botanical publications from the Rotorua Botanical Society

BSO has donated a full range of the publications described in the last newsletter to the Botany Dept library. A few copies of some publications are still available for a donation to the Botanical Society of Otago". To order directly from Rotorua, where any profits go to the Rotorua Botanical Society Student Research Grant (to encourage botanical or plant ecology research in the Bay of Plenty and Central North Island).

Contact: Chris Ecroyd
Forest Research, Private Bag 30 20, Rotorua
phone 07 3479067 (evenings),
email: chris.ecroyd@forestresearch.co.nz

The Story of the Dunedin Botanic Garden

Eric Dunlop. Friends of the Dunedin Botanic Garden. Nov 2002. 288pp, with plant index. 74 b/w photos, 64 colour.

The Friends of the Botanic Garden are generously offering a **special price of \$39.95 to members of BSO** if we order in bulk. Send your money and contact details to the BSO treasurer. We will process orders before each BSO meeting.

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

Email: MWPress@landcareresearch.co.nz (NOTE CHANGE of email address!!)

Online ordering website: <http://www.mwpress.co.nz>

Post: Manaaki Whenua Press, PO Box 40, Lincoln 8152, NZ.

Telephone: +64 3 325 6700, Fax +64 3 325 2127

Web Sites

Prize for best school website about lichens! The International Association of Lichenologists is offering an award for the best website devoted to lichens prepared by a class or school at pre-university level between 2000 – 2003. What a fascinating school project. More details and application forms on the BSO noticeboard and at:

http://dbiodbs.univ.trieste.it/lichens/Sharnoff_Award

Allison Knight and Jennifer Bannister at the Herbarium, Department of Botany, University of Otago, are happy to help with identification of lichens for any schools that are interested. Deadline for entries is 31 December, 2003.

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

Our web site has had the basics reinstated but David Orlovich is still working on improving it. Good things take time!

Lichen Corrections

David Galloway has pointed out that *Parmeliella nigrocincta* is actually quite an old name in the Pannariaceae being one of Montagne's earliest lichen names (he described it as a *Parmelia*) and was introduced into *Parmeliella* by Muller Argoviensis in 1881. Also, the epithet of the *Teloschistes* ends in "us" not "os".

Look forward to an article later this year from David on lichen name changes –ed.

News

New Head for Department of Botany

Congratulations to BSO member, Dr Paul Guy, who has become the new Head of the Department of Botany at the University of Otago. As Paul said, it is a hard act to follow in the footsteps of Prof Peter Bannister, (BSO patron) who led the department through a period of dramatic increases in student numbers.

BSO wishes them both well in their new roles and we hope that they will both continue to play an active and supportive role in our society.



Photograph, from left, of Dr Paul Guy, HOD, Botany, University of Otago, and Professor Peter Bannister, BSO Patron, in the Botany Dept. glasshouse

Rare lichen rediscovered at Trotters Gorge.

Dr Dan Blanchon's January visit to search for an elusive species of *Ramalina* was not in vain. He spent a long, hot day with Allison Knight searching for a rare *Ramalina* sp, containing evernic and obtusatic acid unlike any other New Zealand *Ramalina* sp. This lichen, yet to be identified or given a new name, was first collected by John Scott Thomson in the 1930s, found again by Charles Murray in the 1950s and had not been seen since. We scaled many calcareous bluffs, often surrounded by gorse and/or bush lawyer, before we stumbled on our prize and took it to Jennifer Bannister, who had requested the specimen. Dan and Jennifer also visited Victory Beach to survey the *Ramalina fimbriata* there.

Prize for updated botanical names! BSO is offering a prize of a year's free subscription for the first person to provide the current botanical names, with references, for the taxa illustrated by Robert Donn and featured in the article by Mary Anne Miller.

News from other Botanical Societies

The Canterbury Botanical Society is celebrating its 50th anniversary by holding a symposium entitled **Conserving Native Plants for the 22nd Century**. See below for details. Check out the excellent January newsletter from the Rototrua Botanical society. Current newsletters from botanical societies in Auckland, Waikato, Manawatu, Wellington, Christchurch, Wakatipu and Berlin! are also displayed on the display shelf in the Department of Botany tea room. Back copies of newsletters, including the Botanical Society of New Zealand and BSO, are stored in the Department of Botany computer room.

Conserving Native Plants for the 22nd Century

The Canterbury Botanical Society is celebrating its 50th anniversary by holding a symposium entitled **Conserving Native Plants for the 22nd Century**.

It will take place at the University of Canterbury on Saturday 7 June 2003.

The Society has invited speakers who are active in conservation as scientists, managers, or advocates.

They will contribute forward-looking discussions, rather than accounts of research in progress.

While the emphasis is on plant species, communities and habitats of Canterbury and Westland, the topics are relevant to New Zealand as a whole.

The programme will interest Society members, scientists, conservation managers, and others with a concern for native plants.

Offers of poster papers are welcome.

The Society intends to publish the proceedings of the symposium as a special 50th anniversary issue.

Conserving Native Plants for the 22nd Century Symposium etc...

To assist the committee with planning, we would appreciate your indication of interest.

Please reply by 1 March 2003 to:

Peter Wardle
Symposium Secretary
Canterbury Botanical Society
Phone 03 980 9724
P.O. Box 8212 Riccarton, Christchurch
wardlep@paradise.net.nz

**I am interested in attending 'Conserving Native Plants for the 22nd Century'
at the University of Canterbury on Saturday 7 June 2003.**

Please send a registration form and programme: yes/no

I will probably attend the buffet dinner in the evening: yes/no

Name: _____

Postal/e-mail address: _____

Proposed New Zealand Plant Conservation Network

BSO committee has endorsed the concept of a New Zealand Plant Conservation Network, proposed recently by Mike Oates, Wellington City Council, John Sawyer, DoC. Their vision is

"that no indigenous species of plant will become extinct nor be placed at risk of extinction as a result of human action or indifference, and that the rich, diverse and unique plant life of New Zealand will be recognised, cherished and restored".

More details on BSO noticeboard or from: New Zealand Plant Conservation Network, PO Box 16-102, Wellington South, New Zealand.

Visitor

6 Feb – 18 March. Prof Dr I Ullman (Ulli), recently retired from the University of Würzburg, Germany, is staying with Peter and Jennifer Bannister while she continues her research on the vegetation of braided rivers.

Botanical Diary

Pakistan/China

Wild Flowers Tour, June 2003. 15 day visit to the spectacular mountains of Hunza Pamir, led by Nelson botanist Cathy Jones. Brochures on BSO noticeboard and Department of Botany display shelves. More information from Silk Road Adventures NZ Ltd, Ph 0800 349 739, email Rubicon.Travel@xtra.co.nz

Australasia

17th NZ Fungal Foray, 5-10 May, 2003 Katikati, Bay of Plenty.

This will follow the format of three days of collecting and a one day "Mycological Colloquium". More details and registration form at <http://www.botany.otago.ac.nz/foray/> and on BSO noticeboard

Fungimap 2nd National Conference, 15 – 20 May, 2003. Victoria, Australia.

The ideal opportunity for anyone with an interest in fungi to learn and practice fungi identification with help from some of Australia's leading fungi people. There is fully catered accommodation available on site, at Rawson, Gippsland, and transport available from Melbourne if attending the whole event, so people travelling from overseas would not need to hire a car. Cost \$A400 all inclusive. Further details from **Gudrun Evans, Fungimap coordinator**, Royal Botanic Gardens, Melbourne. **Email:** <http://fungimap.rbv.vic.gov.au>

Website: fungimap@rbg.vic.gov.au

The Canterbury Botanical Society is celebrating its 50th anniversary by holding a symposium entitled **Conserving Native Plants for the 22nd Century**. 7 June, 2003. Details in News section and on BSO noticeboard.

Melbourne, 29 Sept - 3 October 2003. A joint conference of the **Australian Systematic Botany Society** and the **Australasian Mycological Society** with the **7th Australasian Bryophyte Workshop** and the **Orchid Conservation Forum II**. Email: bhewitt@unimelb.edu.au. Register online at: www.conferences.unimelb.edu.au/150years. Flyer on BSO noticeboard.

19th John Child Bryophyte Workshop, 11-16 Sept, 2003. Hunua Ranges, Auckland

The Hunua Ranges, 50 km SE of Auckland, rise to 688 m and are a water catchment area. Major vegetation types are podocarp/broadleaf forest, with some kauri (*Agathis australis*), and small areas dominated by hard beech (*Nothofagus*

truncata). There are also some areas of second growth forest dominated by kanuka (*Kunzea ericoides*). In addition an excursion is planned to swamp land to the south. **All levels of expertise welcome, including beginners**, who might like to know that bryophyte is a general term which includes mosses, liverworts and hornworts. The workshop will run from evening of Thursday 11th September to morning of Tuesday 16th September. It will be held at Kokako Lodge at Hunua Falls in the Hunua Ranges, less than an hour's drive south east of Auckland City. Transport will be arranged from Auckland airport. Accommodation is in bunkrooms. A great chance for southern botanists to enjoy 4 days in the beautiful northern NZ forests and swamps, and learn more about the smaller plants. For further information, or to be placed on the list to receive the first circular, contact Mei Nee Lee:

Botany Dept. Auckland Museum, Private Bag 92018, Auckland, New Zealand.

Email: Meineel@akmuseum.org.nz

Local events: BSO events in boxes, details on front cover.

5 March, Wed 12.00. Department of Botany Seminar. *Spatial distribution of chaparral shrubs: The role of life histories, functional traits, and drought severity.*

Associate Professor **Aaron Moody**, Dept of Geography, University of North Carolina.

7 March, Fri. 12:00 - 2:30 PM. BSO BBQ, front lawn, Botany House Annexe, 479 Great King Street (across the road from the main Botany Building). Sausage sandwiches and juice \$1 each. All BSO members welcome!

12 March, Wed. No Department of Botany Seminar.

12 March 2003, Wed. 5.30 pm. **BSO Annual General Meeting**. Guest speaker **Kelvin Lloyd** will give one of his fabulous slide shows on *The Botanical Trampler*. More tantalising glimpses of untracked wilderness. Zoology Annexe .

15 March, Sat. 9.30 am. Full day field trip to Mt Watkin/ Hikaroroa with Robyn Bridges. Meet in the Dept of Botany Car Park, 464 Great King St, to car pool.

19 March, Wed 12.00. Department of Botany Seminar. *A 500-Year Annually Resolved History of El Niño-Southern Oscillation and Central Andean Climatic Variability Revealed by Reanalysis of Quelccaya, Peru, Ice Core Data*
Anton Seimon, PhD student, Colorado University.

26 March, Wed. No Department of Botany Seminar.

2 April, Wed 12.00. Department of Botany Seminar *The role of fluid mechanics in aquatic macrophyte survival.* **Dr Craig Stevens**, NIWA, Wellington

2 April, Wed 5.30 drinks & nibbles for 5.45 Talk. **Adrienne Markey**. *Walking with Western Australian Wild flowers*. Meet in the **Zoology Annexe Seminar Room**.

9 April, Wed 12.00. Department of Botany Seminar. *Floral development and classification of the fleshy-fruited Myrtaceae*. **Steve Belsham**, Botany Department, University of Otago

16 April, Wed. No Department of Botany Seminar

Mid-Semester break 18-25 April

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, in the Zoology Dept Seminar Room, (NOTE CHANGED VENUE) Great King St. Their field trips leave from the Citibus Depot, Princes St. Visitors are welcome. **Contact: Beth Bain, President, 455 0189, email: bethbain@ihug.co.nz**

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

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

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 Caren Shrubshall, DOC: Ph 474 6932, or Steve Broni, email: sbroni@doc.govt.nz**

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

Southland Natural History Field Club. Meetings 7.30pm 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**

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

Botanical Society of Otago: whom to contact

Our mailing address is:

Botanical Society of Otago, c/o Botany Department,
University of Otago, P.O. Box 56, Dunedin, New Zealand

For membership enquiries, email the **chairman, David Orlovich**,
david.orlovich@botany.otago.ac.nz, ph 479 9060, or **secretary**, as below:
(We are looking for a new treasurer. Can you help?)

For media, publicity or event enquiries, email the **secretary**:
Robyn Bridges, *robyn.bridges@stonebow.otago.ac.nz*, ph 479 8244

To suggest or send newsletter items, email the newsletter editor:
Allison Knight, *bso@botany.otago.ac.nz* (note new email address!)

To suggest or offer trip ideas or speakers for our monthly activities, email any of the
above, or one of the other **committee members**:

Kelvin Lloyd, *lloydk@landcareResearch.co.nz*;

John Barkla, *barklaj@doc.govt.nz* or **Bastow Wilson**, *bastow@otago.ac.nz*

For information on activities contact the trip leader or see our notice board.

This Newsletter was published on 20 February 2002. ISSN 0113-0854
Please submit copy for next newsletter by end of March 2003

Membership form: Botanical Society of Otago, 2003

(Join now – the fee might go up at the AGM!)

Title: _____

Name: _____

Mailing Address
(work or home) _____

E-mail address: _____

Phone: work () _____ home () _____



Annual Subscriptions are due by the beginning of each calendar year.

Only \$5 Student (unwaged), **\$10 Waged** (salary), or
\$15 Family (2 adults + children) Donations are welcomed

Cheques to: "Botanical Society of Otago". Post to: Treasurer, BSO,
c/- Botany Dept, Otago University, Box 56, Dunedin, New Zealand

BOTANY DEPARTMENT
UNIVERSITY OF OTAGO

Permit Post 

NEW ZEALAND
PERMIT No. 1007

John Barkla
26 Larkins Street
Dunedin
New Zealand

[2001 : Family]

L= SE1

EHT= 10.0 KV
20.0µm

WD= 11 mm

PHOTO= 1

Taraxacum sp.

DICOT

Family: Asteraceae

