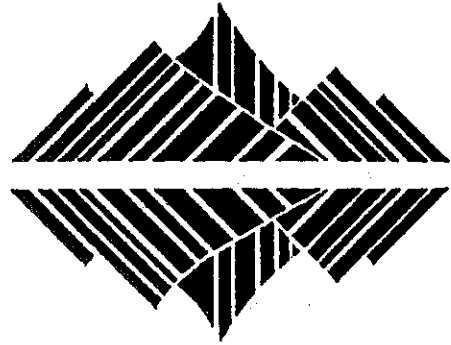


Ecological Society Newsletter

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GIARDIA IN NEW ZEALAND

During the last couple of years we have heard quite a lot about the parasite *Giardia*. Just how much of a problem is this nasty little bug? A recent meeting of the Biology Section, NZ Royal Society, Wellington Branch, learnt a great deal about this little beastie from Natalie Walker who works at the New Zealand Communicable Disease Centre.

Giardia lamblia is one of the most common intestinal protozoan parasites in the world. *Giardia* has a two stage life cycle – a motile, flagellate non-infective trophozoite (feeding) stage, and an infective cyst (resting) stage. It causes a condition known as giardiasis which varies in severity from having no symptoms at all, to severe symptoms including chronic diarrhoea, malabsorption of fats, abdominal cramps, bloating, frequent loose and greasy malodorous stools, weight loss and nausea. It occurs in many mammals including man, as well as in some birds and reptiles. It is suspected that *Giardia* can be transmitted from other mammals to humans, but the most common way that people catch this nasty disease is from other people. Children are more susceptible than adults, especially in the age group of one to four years.

Giardiasis is not difficult to cure but the drugs used are expensive and have unpleasant side effects, so prevention is preferable to cure. High standards of personal hygiene, particularly hand washing following toilet visits, are the best method of prevention. The disease tends to spread in day-care centres, mental and other institutions and is common amongst sewage workers and in male homosexuals.

The least common way to contract *Giardia* is via water and, thankfully, it is not present in all our water supplies. There are many places in New Zealand where tests on the water to identify *Giardia* have proved negative. It is wise, however, to take

precautions, especially when out tramping, and the best way to treat water is to boil it for 3–5 minutes.

Giardia has probably been in New Zealand for many years. It was frequently identified in returned servicemen during the 1940s but was generally considered not to be disease-causing. It was only in the early 1950s that it became more apparent that *Giardia* did cause disease and in 1965/66 this was confirmed when there was an epidemic at a ski resort in Colorado.

If you suspect you might have *Giardia* do go to your doctor; as a carrier you risk spreading the parasite to the environment and to other people.

Mary McEwan

1992 ZONTA AWARD

Zonta is an international service organisation of executive and professional women. The Wellington Zonta Club initiated the biennial Zonta Science Award to encourage young women to pursue a scientific career, to further the careers of women in science, to acknowledge the valuable contribution of women scientists, and to provide the opportunity for

INSIDE:

Centre for Resolving Disputes ..	2
Newsletter Coordinator	2
Ecol Soc Conference 1992	3
Council Activities	3
Student Conference 1991	4
Publishing Science in NZ	7
Ecol Soc Office Holders	8

developing international contacts.

Applications for the 1992 Zonta Award are invited from women graduates who have excelled in the fields of pure or applied science. The applicant must either be studying for a further qualification, involved in research, or employed by a public or private company. The contribution to the community of her current work and her own potential to benefit from the award will be considered.

The Award recipient receives: \$5,000, an Around-the World air ticket (courtesy British Airways), and a silver and gold Medal (designed by Tanya Ashken).

Applications must be received on or before 31 March 1992. Forms are available from:

Zonta Club of Wellington
Attention: Science Committee
P O Box 10274, Wellington.

CENTRE FOR RESOLVING ENVIRONMENTAL DISPUTES

If, in the course of your work as a professional ecologist, you become involved in conflicts and disputes about some aspect of the environment, there is a new organisation that can help you.

The Centre for Resolving Environmental Conflict (CRED) has been established at Lincoln University. Staff work alongside the research team from the Centre for Resource Management and also have links with the University of Canterbury. CRED can assist when people disagree over the way natural resources should be used, or the relationship between environmental, community and economic well-being. Types of disputes dealt with so far include waste management, mining consents, water rights, and commercial developments. Confidential and structured negotiation processes, tailored to the needs of each situation, are offered.

Gay Pavelka, Centre Manager, has considerable experience in mediating and facilitating the resolution of disputes within and between organisations, and has conducted workshops in negotiation for a wide range of groups. Jane Chart, Senior Lecturer in Law, University of Canterbury, works as CRED affiliate. Jane has an extensive background in both training and the practical application of negotiation and mediation.

CRED can offer a range of services including training, workshops and in-house presentations. These are aimed at developing co-operative and efficient ways of dealing with conflict within or

between organisations, facilitating public meetings, clarifying problems and generating creative solutions. In particular, CRED can provide facilitated negotiation to assist parties in a dispute to analyse and understand the conflict, clarify needs and issues, develop a negotiating agenda, build constructive communication and seek workable solutions.

Some of the benefits of facilitated negotiation (which has a proven track record in Australia, Canada and the United States) are that the decision remains in your hands (rather than with an arbitrator), costs are significantly lower than for traditional processes of litigation and other adversarial processes, parties control the timing of decision making, relationships between the parties can be improved, stress and antagonism are reduced, and workable outcomes can be crafted that address as many concerns as possible.

If you would like to know more about the Centre, please contact :

Gay Pavelka, CRED, PO Box 56
Lincoln University, Canterbury
Phone (03) 325 2811; Fax (03) 325 2156

COMMENT FROM NEWSLETTER COORDINATOR

As you will have seen in your last newsletter, I have taken over (from Alison Ballance) the role of coordinating the newsletter. The actual job of editing copy and producing the newsletter is still done by Kim Pritchard, the editor. My role is to stir up members and obtain interesting articles for each issue. It seems that few people have had the time recently to write articles for Ecological Society News, and the main problem is lack of copy.

Perhaps we can generate a little enthusiasm by asking your opinions about the value of the newsletter itself. Do you enjoy receiving it? Do you know how many issues you receive each year? Do you think there should be fewer issues? What do you think should be the purpose of the newsletter? Please put pen to paper right away and write a letter to the editor with your opinions on these or any other topic of interest to members of the Ecological Society. While you are in the mood, how about telling us about any interesting ecology-related seminars or workshops you have been to recently. As well, you might like to use the newsletter to publicise any forthcoming meetings with ecological topics. See the deadline for copy for the next newsletter on the back page.

Keep those articles and letters to the editor rolling in, so that the newsletter is a useful channel of communication within the New Zealand ecological community.

Mary McEwen

PRELIMINARY NOTICE

New Zealand Ecological Society Conference 1992

The Conference 1992 will be held in Christchurch, 24–27 August, at the Ngaio Marsh Conference Centre, Students Union Building on the University of Canterbury Campus, Ilam.

There was enthusiasm for a format similar to that at the Nelson Conference (i.e. the entire programme taken up by contributed papers; those with similar themes arranged into sets). Think about what you might speak on as invitations for papers will go out in the next newsletter (March).

The Institute of Agricultural Science is holding a conference at Lincoln University about the same time, so we may be able to organise a session on a theme of mutual interest.

Enquiries about the conference to organizer: Colin Burrows
Department of Plant and Microbial Sciences
University of Canterbury, Christchurch
Phone (03) 667 001 ext. 6786; Fax (03) 642 999

WHAT THE COUNCIL HAS BEEN DOING

1. Media Training Workshop:

MORST commissioned the Royal Society to run a series of workshops on how scientists should deal with print and television media. Courses held in Wellington and Christchurch were run by journalists (e.g. Geoff Robinson of Radio NZ), and Ecological Society member attendees included John Parkes, Carolyn Mason, Mick Clout, and Graham Hickling.

2. Federation of Scientific & Technological Societies:

The old Member Bodies Committee of the Royal Society has evolved into a much more active organisation (FOSTS). John Parkes and Murray Potter attended its first AGM and our nomination, Murray Potter, was elected a Councillor on FOSTS.

3. The Royal Society Publishing Workshop:

The Royal Society, through SIR Publishing, ran a workshop in Wellington on scientific publishing. Ecological Society sponsored Gill Rapson and Mary McEwen.

4. *Hieracium* Workshop:

Ecological Society (Carolyn Mason) sponsored a workshop at Cass on the problems of the weed *Hieracium*. A consensus of research requirements was produced by Alan Mark. **Note:** The Ecological Society is pleased to sponsor/facilitate/promote/report workshops in any relevant ecological field.

The general rule is that the Society expects these to be self-funding, especially if they have restricted attendance.

5. FOSTS Workshop on Sustainable Agriculture:

FOSTS sponsored a workshop to discuss MAF's draft policy on sustainable agriculture. Paul Blaschke attended as Ecological Society Representative.

6. Urban Ecology Workshop:

The Ecological Society sponsored a workshop in Christchurch on urban ecology. Judith Roper-Lindsay gave a paper.

7. Submissions:

Ecological Society has made submissions on the following:

- The Royal Society Act to the MORST taskforce.
- Hieracium* research needs to the Minister of Science, FRST, and MORST.
- MAF's draft policy of sustainable agriculture.
- The Minister of Conservation's policy on Himalayan thar.

8. Under Action:

Council has been asked to comment on the following:

- The proposal to introduce myxomatosis (deadline 10 Jan. 1992)
- A DOC document on setting priorities for the conservation of New Zealand's plants and animals (deadline 20 December 1991).

John Parkes

STUDENT CONFERENCE 1991

On Sunday 25 and Monday 26 August the 1991 Ecology Society Conference began with the student session, a friendly informal session in which students gave short presentations of work they are beginning or completing to a student audience. This very successful event was well attended and 19 papers were presented, resulting in useful and stimulating discussion.

The session ended with a discussion, chaired by Richard Harris, on the changes that will occur through the formation of CRIs (Crown Research Institutes), in conjunction with contestable funding, and the impact this will have on us as the scientists of tomorrow.

The following are short abstracts from some of the presented papers.

THERMO-ECOLOGY OF THE COMMON GECKO *HOPLODACTYLUS ACULATUS*

The common gecko, *Hoplodactylus maculatus*, is distributed over a wide climatic range. Differences in response to temperature between two populations from differing climatic regimes were investigated.

Oxygen consumption was measured at 5, 10, 15, 20, 35 and 30°C in *H. maculatus* collected in winter and summer.

Animals from the 'cooler' climate (Craigieburn) have oxygen consumption Rate-Temperature curves (R-T curves) significantly higher than that of 'warmer' climate (Banks Peninsula) geckos.

To separate genetically based responses from those environmentally induced, geckos were laboratory acclimated at 5 and 25°C for 1 month and 5°C for 4 months.

R-T curves of Banks Peninsula geckos show an acclimatory response over part of the temperature range (typical of warm temperate species). Craigieburn geckos have a broader acclimatory response typical of cool-temperate species.

Physiological distinction of these two populations may aid the current taxonomic revision.

Mary Tocher

Zoology Department, University of Canterbury

SIXTY YEARS OF CHANGE IN A FOREST RESERVE: OTARI PLANT MUSEUM, WELLINGTON

Work involves the preparation of a vegetation/topographical map at 1:2000 scale, and the placing

of plots in strategic areas of vegetation. Plots originally placed in the 1930s by J.S. Reid for his 1934 MSc are being re-mapped and permanently marked. A comparison will be made between present data and Reid's thesis.

Data are being analysed by several methods, including Twinspan and Spatial Pattern Analysis. The primary purpose of the thesis is the elucidation of pattern and process in Otari, particularly in relation to future management.

Yvonne Marjot

School of Biological Sciences, Victoria University

CHROMOSOME SPECIES IN TREE WETA?

The formation of a species requires mechanisms and/or events that provide a population with some degree of genetic isolation in order to develop and maintain its own separate identity and fate. Various speciation models using chromosome rearrangements as barriers to gene flow have been proposed as initiators of speciation. A recent model of speciation by monobracial centric fusion, it avoids some of the problems of other chromosome speciation models; it does not require extreme bottle necks, selection, or meiotic drive. Independent populations become fixed for fusions of different combinations of chromosome arms but with one or more of the same arms involved. Hybrids formed during secondary contact of these populations are sterile because of aberrant segregation during meiosis. Because this model requires fixation of two independent chromosome fusions, its application has been restricted to taxa (such as shrews, mice, bats and geckos) that show a high incidence of such chromosome rearrangements.

It appears that in tree weta (*Hemideina*) fusions and/or fissions of chromosome arms are a frequent rearrangement. If the wide-spread karyotype of $2n=17$ in *H. thoracica* is ancestral it is possible that two forms of $2n=15$ have arisen independently involving the fusion of different acrocentric chromosomes. I wish to determine if this is the case and determine if chromosome variation is acting as a barrier to gene flow and thus test whether the speciation by monobracial centric fusion model could apply to this group.

Mary Richards

School of Biological Sciences, Victoria University

ASPECTS OF THE BREEDING BIOLOGY OF NEW ZEALAND SCAUP

The endemic scaup, *Aythya novaeseelandiae*, is New Zealand's only surviving true diving duck.

Distribution is nationwide but, through habitat loss, scaup are now mainly restricted to the freshwater lakes and lagoons in the north and east of the North Island, and to the high-country lakes of the South Island.

To expand our limited knowledge of this species, research into the breeding biology of an island-nesting population was undertaken at Lake Clearwater, a high-country lake 150 km southwest of Christchurch, over two breeding seasons: 1989/90 and 1990/91.

Breeding occurs from October to February with peak hatching in November and December. An average of eight eggs are laid, and incubation takes between 29 and 31 days. Chicks are brooded for up to 24 hours before leaving the nest, whereupon they are capable of self-feeding and diving. By two months of age chicks have acquired their juvenile plumage, and by three months males can be distinguished from females by their bright yellow iris.

Nesting success (the proportion of nests surviving through to hatching) was 64% in the first season and 26% in the second season; the reduction was due in part to the establishment of a feral cat on the breeding island. Harriers, *Circus approximans*, also took their toll on the breeding females. In all, 20% of all nesting females were destroyed through the activities of both mammalian and avian predators, during the 1990/91 season.

Brood success, calculated as the proportion of chicks which survive to juvenile stage, was low in both seasons (2.5 and 4.3%).

An equivalent number of chicks (7) survived to juvenile stage in both seasons. Fewer than 2% of all eggs laid each season actually produced juveniles.

Sarah Stokes

Zoology Department, University of Canterbury

THE DIET OF KAKAPO *STRIGOPS HABROPTITUS*, ON LITTLE BARRIER ISLAND, HAURAKI GULF

The fat, flightless, nocturnal kakapo is not only one of New Zealand's rarest birds, but also one of the world's most critically endangered. With the discovery of a sizable population on Stewart island in 1977, hope for the preservation of the species was rekindled and many of the birds have been transferred to island reserves. Little Barrier Island in the Hauraki Gulf at present has a population of at least five females and nine males; a total of 22 have been placed on the island and only one of these is known to have died.

The reproductive system of the kakapo is

unusual, complicated and apparently geared to the erratic availability of nutritious foods such as fruits and seeds. Birds on Little Barrier Island have been provided with domestic equivalents of such food in an attempt to encourage more frequent successful breeding attempts.

It is almost impossible to observe kakapo in the field, so to investigate food utilisation the method of faecal cuticle analysis was adopted. Although accurate quantification of data is difficult, some useful results are being obtained. In particular, it has become apparent that kakapo are not totally reliant on supplementary food. They seem to select a wide range of wild foods such as totara, dracophyllum, astelia, gahnia and white rata. In most instances leaves are taken, though samples containing pollen cones of totara and kahikatie have been found. An intriguing discovery is the considerable use of kauri leaf material as chick food.

At present, data are being condensed into a more manageable form, and early results are providing useful guidelines on areas such as the apparent disproportionate use of abaxial and adaxial leaf surfaces. Although comparisons between proportions of different species will have to be considered cautiously, it will certainly be possible to observe seasonal fluctuations, locality variation and possible sexual differences in the use of food types.

Steve Trewick

School of Biological Sciences, Victoria University

SOME ASPECTS OF THE ECOLOGY OF *PHYLLOCLADUS ALPINUS* (MOUNTAIN TOATOA, CELERY PINE) IN NEW ZEALAND

Phyllocladus alpinus grows in a range of plant communities from tussock grasslands to forest. In the North Island the species can be found in almost all mountain ranges, from 530 to 1500 m altitude. In the South Island, east of the main divide *P. alpinus* occupies an altitudinal range of 450–1500 m, but west of the main divide it is abundant at low altitudes (0–300 m) on poor soils, becoming less common with increasing altitude. It is thought that the species may have different ecotypes, and there may be different subspecies within *P. alpinus*.

P. alpinus is a cold-tolerant plant, with a greater freezing tolerance than *Nothofagus* taxa. Therefore, the species is able to establish in areas with frost levels too harsh for *Nothofagus*. This could mean that *P. alpinus* will be able to replace tussock grasslands in certain parts of the country, especially those resulting from human interference.

The three main aims of my PhD study are:

- To describe and quantify the communities in

which *P. alpinus* is found at present and to compare the ecology of the species in tussock grassland, tussock shrubland and forest.

- To describe and quantify the regeneration ecology of the species. To determine whether the species shows different demographic structures in response to different environmental conditions. To determine what are the factors that favour establishment.
- To initiate studies to determine whether or not ecotypes are present.

Loes Reitsma
School of Biological Sciences, Victoria University

GORSE AND THE ESTABLISHMENT OF NATIVE TREE SEEDLINGS

A preliminary proposal for a PhD study was outlined with the aim of receiving feedback and new ideas. Some of the recent literature on succession, gorse communities and environmental preferences of early successional native tree species was discussed.

While there is evidence that some gorse communities are replaced by native tree species the mechanisms and reasons for exceptions are not clear. Field work will be carried out to identify microsites occupied by native seedlings under gorse. Seedlings of a range of species will be transplanted out into a range of environments under gorse. This will be followed up in the laboratory with work on the light requirements, photosynthesis and growth rates of gorse and native seedlings. Seed trap, seed burial, and germination work will also be carried out.

Megan Ogle
Botany Department, Otago University

SPECIATION IN NEW ZEALAND GECKOS

Considerable evidence exists that the common gecko *Hoplodactylus maculatus* is actually a species complex; at some sites two morphologically distinct forms are sympatric or adjacent and there is circumstantial evidence from captive animals that some populations are reproductively isolated. Morphological variation among populations is so complex that an independent technique was needed to investigate relationships among populations from different localities. Allozyme variation has been used to investigate differentiation within this complex and to search for evidence of reproductive isolation between groups of populations. Analysis has indicated that at least seven species exist within

this complex. Most are found in the South Island; many combinations can be found sympatrically at least one site, but one group of three species replaces each other parapatrically. However, these meet along extensive boundary zones with no evidence of hybridization with one possible exception. Two species reach the North Island; one of these is widespread there, the other found only on a small stretch of coast west of Wellington.

All other extant *Hoplodactylus* species have also been investigated, but sampled less intensively. Apart from *Hoplodactylus granulatus*, which also appears to be a complex of cryptic species, allozyme variation within the other recognised species is similar to, or less than, that within each of the newly identified *H. maculatus* complex species.

There is little variation within the genus *Nautinus* – the whole genus contains less genetic variability than most *Hoplodactylus* species. This confirms the close relationship of *Nautinus* species to each other previously demonstrated by the production of fertile hybrids in captivity. However, abrupt parapatric boundaries between some morphologically distinct species in nature indicate that there are barriers to gene flow. Parallel situations exist within some *H. maculatus* complex species; use of a more sensitive data set, such as DNA analysis, may indicate that these require further subdivision.

Rod Hitchmough
School of Biological Sciences, Victoria University

PROPOSED ECOLOGICAL STUDY OF THE LIZARD FAUNA FOUND IN THE DUNELANDS OF KAITORETE SPIT, CHRISTCHURCH

South of Christchurch city is Kaitorete Spit, a narrow strip of land running east-west for 28 km, bordered on one side by the Canterbury Bight and on the other side by Lake Ellesmere. The narrow strip of duneland that runs the length of the spit is home to four species of lizards: one gecko (*Hoplodactylus maculatus*), and three skinks (*Leiopisma lineocellatum*, *L. maccani*, *L. nigriplantare polychroma*). By running an on-going live trapping programme over two summers I hope to get an idea of how these four species divide resources and habitat in what appears to be a relatively homogeneous environment. Data gathered will be used to analyse interaction between the four species along spatial, dietary and temporal gradients.

Alastair Freeman
Entomology Department, Lincoln University

PUBLISHING SCIENCE IN NEW ZEALAND

On 19 November 1991, the Royal Society of New Zealand held a one-day workshop in Wellington on science publishing. The Royal Society has recently taken over the former DSIR Publishing (which now goes by the name of SIR Publishing). The morning general session was concerned with publishing journals and began with a lively talk by Rod Bielecki, scientific editor of the NZ Journal of Crop and Horticultural Science. He took as his theme the need for journals to define their niche in the world scientific journal market and to concentrate on a particular area in which they led the world. By defining a niche and specialising in a few well-defined areas the journal not only is easier to market internationally, but also attracts authors with world-wide reputations. His own journal specialises in physiology of horticultural crops, especially kiwifruit and apples; also minor crop species, especially sub-tropical fruits and Pacific species.

The other thing Rod Bielecki emphasised was that the publishing of science is a totally integral part of scientific research, part of the intellectual process of science – converting data to knowledge. The usual ratio of research to writing is 2:1 in terms of time. FORST must recognise this and realise that the actual cost of printing is very small relative to the total cost of publishing.

In terms of marketing a journal internationally, the title is important, and journals, like ours, with the name "The New Zealand Journal of ...", often appeal only to their local audience. Perhaps this does not matter in the case of ecology, which, after all is often describing a specific geographic location, albeit developing general theory about certain ecological processes.

Should "The New Zealand Journal of Ecology" develop as its niche area aspects of conservation biology including rare species ecology, invasion ecology and ecological restoration? Dr Laurie Martinelli, Chief Scientific Editor for the CSIRO-based journals of scientific research, spoke from an international perspective. There are now 14 CSIRO journals and because sales within Australia are showing no growth, they are having to become international to make the journals pay. Dr Martinelli defined the problems facing journal publishers in the international scene as follows:

- Competition (e.g. more than 4469 scientific journals published internationally).
- Library budgets (have to persuade libraries to

"change to our 'brand'").

- Perceptions (e.g. Australian and New Zealand scientists think it is more prestigious to publish in overseas journals).
- Our journals are small.
- There are no near markets.
- The world is a big place – it is expensive and takes a long time to send our journals to the US and Europe.
- Marketing is difficult and expensive.

He also came up with ways of coping with these problems:

- A lot of the competition is dreadful (and is seldom read or cited by established researchers).
- Libraries are still buying journals and are inclined to cut out the very expensive journals first; they can be persuaded to change to our good quality, reasonably priced journals if they are well marketed
- Perceptions can be changed – especially in younger scientists/authors.
- Being small can be seen as a plus – e.g. we often have personal contact with overseas colleagues (publishing is a human business).
- We may have no near markets, but we also have no close competitors either.
- Our journals have been published for long enough to be known to overseas readers.
- Marketing is less difficult than it used to be – there are professional companies who can assist journals in marketing.

So the future is not entirely bleak for good quality, reasonably priced scientific journals. The buzz phrase is "a flight to quality"!

In the evening I attended the workshop on the marketing of journal subscriptions led by the Royal Society's Brian Balshaw, who set the scene with the dilemma "You broaden your topic base to increase the potential readership and yet this loss of focus leads to a decline in subscriptions". This seemed to me to be saying much the same thing as Rod Bielecki, but with a totally different emphasis – instead of broadening the topic base, it is better to define a niche and go for the 'niche market'. We were told, however, by John Breithaupt, (a senior representative of Allen Press, an American journal publishing and marketing company) that internationally there is a move away from specialisation. It seems you need to analyse your client base to discover why people do subscribe, and this can help define why others don't.

A useful workshop, attended by about 100 people from all over the country.

Mary McEwen.

Office Holders of the New Zealand Ecological Society 1991/92

John Parkes

President

Forest Research Institute
PO Box 31-011
Christchurch
phone (03) 351 7099; fax (03) 351 7091

Graham Hickling

Councillor, Awards

Forest Research Institute
PO Box 31-011
Christchurch
phone (03) 351 7099; fax (03) 351 7091

Judith Roper-Lindsay

Past-President

PO Box 13-651
Christchurch
phone (03) 799 119; fax (03) 657 539

Morgan Williams

Vice-President

MAF Tech
Canterbury Agricultural Centre
PO Box 24
Lincoln
phone (03) 325 3011; fax (03) 325 2946

Colin O'Donnell

Councillor

Department of Conservation
Private Bag
Christchurch 1
phone (03) 799 758; fax (03) 713 770

Mary MacIntyre

Convenor Education Sub-Committee

School of Biological Sciences
Victoria University
PO Box 600
Wellington
phone (04) 472 1000; fax (04) 471 2070

Caroline Mason

Secretary

Landcorp Ltd
Private Bag
Christchurch
phone (03) 799 787; fax (03) 798 440

Murray Potter

Councillor, Membership directory

FOSTS Councillor
Department of Botany and Zoology
Massey University
Private Bag, Palmerston North
phone (06) 356 9099; fax (06) 350 5623

Colin Burrows

Conference 1991/92

Botany Department
University of Canterbury
Private Bag
Christchurch 1
phone (03) 677 001; fax (03) 642 999

Graham Nugent

Treasurer

Forest Research Institute
PO Box 31-011
Christchurch
phone (03) 351 7099; fax (03) 351 7091

Mary McEwan

Councillor, Newsletter

12 Tisdall Street
Karori, Wellington
phone (04) 476 6163; fax (04) 499 1926

Paul Blaschke

Convenor Sustainability Working Group

DSIR Land Resources
Private Bag
Lower Hutt
phone (04) 567 3119; fax (04) 567 3114

Jill Rapson

Journal Editor

Department of Botany & Zoology
Massey University
Private Bag, Palmerston North
phone (06) 356 9099; fax (06) 350 5623

The Newsletter was produced by Kim Pritchard, with the support of DSIR Land Resources. Duncan Cunningham organised the mailing out.

Contributions for the newsletter – news, views, letters, cartoons, etc. – are welcomed. If possible, please send articles for the newsletter on disk – any size, IBM or Macintosh; MS Word or plain ASCII file texts are best but we can also manage Word Perfect. Send your disk and hard copy to:

Kim Pritchard
DSIR Land Resources
Private Bag
Lower Hutt
ph (04) 5673 119; fax (04) 5673 114

The deadline for the March issue of the newsletter is 28 February 1991.

Unless indicated otherwise, the views expressed in this Newsletter are not necessarily those of the New Zealand Ecological Society or its Council.