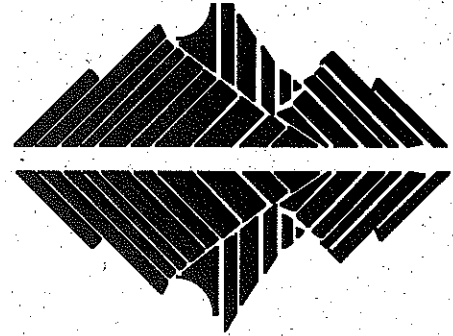


Ecological Society Newsletter



No. 76, February 1995

Published by the New Zealand Ecological Society (Inc.),
P.O. Box 25-178, Christchurch

1995 CONFERENCE

Please note that this year's conference is to be held in July. See inside for more details.

OVERSEAS MEMBERS: PAYMENT OF SUBS

The Ecological Society has a number of members outside New Zealand and many of you pay by bank drafts in New Zealand dollars. These bank drafts are very convenient at the New Zealand end, but it has come to my attention that the transaction costs in purchasing the bank drafts overseas may be very high in relation to the value of the payment. Therefore it is worthwhile to point out that we are able to easily and cheaply process personal cheques in almost any major overseas currency. If this is more convenient for you, simply work out the equivalent of the NZ\$ amount in your local currency and send us a cheque for that amount. No roubles or Mexican pesetas though, please!

Dave Kelly, Councillor.

HINEWAI RESERVE FUNDRAISING DEBATE

Wednesday 26 April 1995

Christchurch Arts Centre in the Hurst Seager Room
[cnr Rolleston Ave & Hereford St]

7.30pm

\$10.00 entrance charge; proceeds to Hinewai Reserve.

Supper provided.

**TOPIC: GORSE IS A GOOD ONE
VERSUS GORSE IS A BAD ONE**

Debaters include: Jim Hopkins & David Round.

Organised by the Canterbury Branch of the
Royal Forest and Bird Protection Society.

QUESTIONNAIRE

In the November 1994 Newsletter (No.75), the President indicated that members would be sent a questionnaire regarding the various options for the future of the *New Zealand Journal of Ecology*. The questionnaire is included in this Newsletter and it is hoped that many members will complete it and return it to

**The Secretary, New Zealand Ecological Society,
P O Box 25-178, CHRISTCHURCH,
by 31 March 1995.**

FROM THE AWARDS CONVENOR

Best 1994 Conference Paper by a Student

There was a strong student presence and participation at Hokitika, with students presenting 17 of the 33 papers presented. Student papers were generally of a very high standard, though there was a tendency for there to be too much information, in too small a type size, too faintly printed, on overhead transparencies.

The 1994 Award for the Best Student Paper, a certificate, a cheque, and a free 1995 subscription, went to David Forsyth, Lincoln University, for "Recreational thar hunters and thar in Carneys Creek: the riddle solved?"

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Questionnaire	Tear out centre spread

Two second prizes, each of a free 1995 subscription, went to Isabel Castro, Massey University, for "Are we understanding the extent of bird pollination of New Zealand forest plants?", and Catherine Foster, Massey University, for "Heather demography in Tongariro National Park."

New Zealand Ecological Society Awards 1995

The New Zealand Ecological Society Award

This award is conferred to recognise excellence and outstanding achievement in the study and application of ecological science. The award consists of an inscribed certificate and the sum of \$150.

The award will be made to the person(s) who have published the best original research into the ecology of New Zealand and its dependencies (including the Ross Dependency) in the previous two calendar years, or the person(s) who have made the most outstanding contribution to applied ecology, particularly conservation and management, in New Zealand and its dependencies over the same period. Recipients of the award may be asked to give a presentation on their work at the Society's next annual conference.

Nominations should include a statement of support, with reference to any relevant publications. They should be forwarded to the Awards Convenor no later than **26 May 1995**.

Student Travel Grants

Travel grants are awarded annually to encourage student participation at the Society's annual conference. All bona-fide students currently enrolled at a secondary or tertiary educational institute are eligible. Membership of the Society is not required.

Students should apply in writing to the Conference Organiser **at least one week before the start of the conference**, and should include a statement of support from an appropriate staff member. The number of grants is limited. Priority is given to those presenting papers at the main conference and those who have farthest to travel. Grants are collected from the Conference Organiser during the conference.

Student Award for Best Conference Paper

The Society makes an annual award to the student who is judged to have presented the best oral paper at the Society's annual conference. The award comprises one year's free membership of the society, a book token or cheque for a sum equal to one year's full membership subscription, and a certificate.

All papers (including joint papers) presented solely by students at the main conference are eligible for consideration. Note that this Award does not consider papers presented at the student session of the conference. **No formal statement of entry is required.**

Fran Kell, Awards Convenor

ANNUAL CONFERENCE AT MASSEY UNIVERSITY

Please note that this year's conference is to be held in July.

Planning for this year's conference at Massey is now well under way. The organising group is Clare Veltman, Murray Potter and Russell Death - each is a staff member in the Department of Ecology on the campus. As announced in the last newsletter, the conference will be in July this year. A student session will be held on **Sunday 9 July**. Contributed papers and a symposium will be held from **Monday 10 July to Wednesday 12 July**. Field trips will be offered for **Thursday 13 July**.

The symposium title is **Competition, predation and disease as agents of decline in the New Zealand biota**. Invitations have gone out to prospective speakers but if you have not received an invitation and have a paper to offer on this subject, please indicate on the form below.

If you are considering attending the conference, you should fill out the form below and send it to the organisers before 31 March. The information will help with planning and organisation - it is not a registration form or a binding commitment to attend.

NZ Ecological Society Annual Conference - Statement of Interest

NAME

ADDRESS

I am interested in attending the Annual Conference and will/will not (strike out one alternative) offer a paper:

TENTATIVE PAPER TITLE:

I will/will not (strike out one alternative) need accommodation.

I would prefer (tick one option)

1. the Halls of Residence
2. a motel in the city (no shuttle service provided)
3. a billet if possible

I am/am not (strike out one alternative) interested in taking a field trip.

I would most likely opt for (tick one option)

1. Kaimanawa wild horse range, Army Training Area
2. Kapiti Island
3. Other (make a suggestion)

Return completed form before 31 March to Clare Veltman, Department of Ecology, Massey University, Private Bag 11-222, Palmerston North.

SUBMISSIONS UPDATE

It has been a busy time for submissions, with 3 major submissions having been prepared since the end of last year and three further in preparation. The Society has lodged submissions on the Government's (through the Ministry for the Environment) **Environment 2010 Strategy** (prepared by Fran Kell and Morgan Williams), the Department of Conservation's **Visitor Strategy Discussion Document** (coordinated by Judith Roper-Lindsay) and on an application to the Ministry of Agriculture and Fisheries to **harvest seaweed** from southern Banks Peninsula. Short summaries of the first two submissions are below; the third was a brief letter prepared by Council, stressing the requirements for sustainable management and monitoring.

Submissions are at present being prepared on the **Fisheries Bill** (being drafted by Vicky Froude and Chris Richmond), the Conservation Authority's **Maori Cultural Use Discussion Document**, and MAF's Discussion Document on **Future Control of Five Important Weeds** (Development of National Pest Management Strategies). Regarding the Cultural Use Discussion Document, I am aware that there is a good deal of interest and probably some quite divergent views among Society members, so I am at present working on a suitable process for developing our submission. The deadline for submissions has been extended to March 31: **if any members reading this wish to contribute to the submission and have not been invited to do so, please contact me immediately.**

Regarding Conservancy **Conservation Management Strategies**, Council has decided not to take any initiative to make submissions on individual CMS. However, groups of members in some regions may wish to make submissions on their conservancy's CMS, with minimal interference from me or the Christchurch hierarchy. But please let me know if you intend to do this.

**Paul Blaschke, Office of the Parliamentary Commissioner for the Environment,
PO Box 12 041, Wellington.**

Submission on Environment 2010 Strategy

The Society congratulated the Minister and his Ministry for their initiative in producing a starting point for an agenda of environmental management priorities for New Zealand. The submission discussed: principles for integration of environment and economy (need to have high environmental standards and for environmental strategy to be on equal footing to economic strategy), the need for monitoring of environmental impacts (both national and local), and the importance of environmental education and research. It also argued that maintenance of biodiversity must be one of, if not the key plank in the environment strategy.

The Society suggested that priorities for Imple-

mentation of the Strategy would be maintenance of a strong R&D base, environmental education of the current and future generations, and a focus on environmental monitoring.

Submission on Visitor Strategy Discussion Document

The Society suggested ways in which ecological principles should be developed in the document. The status of the document is confusing as it is entitled "Discussion Document" but is also referred to as the "Draft Strategy". The submission commented on a number of points:

- the lack of detail or specificity provided;
- the need to include other areas of conservation value (outside areas managed by DOC);
- that visitors have a range of variable effects on ecosystems and species which can be managed in a range of ways;
- it is important to distinguish between ecological and socio-economic effects;
- the draft strategy should have more scientific ecological content;
- the provision of visitor services should allow the natural processes of visited ecosystems to proceed within natural limits;
- the strategy should be more of a Departmental document with higher prominence given to the ecological values for which it is a management tool.

The points about which more detail is needed include:

- places of ecological importance;
- the things which make those places significant;
- potential adverse effects of people on those values;
- the range of options for managing these effects;
- gaps in understanding or knowledge of ecological factors related to visitors;
- places where there might be an ecological concern but we lack information;
- a process within the Department for ensuring that ecological science is related to conservation management and a way of ensuring that where there is insufficient knowledge a precautionary approach is taken.

The submission noted that the general perception that the social carrying capacity of an area will be exceeded before the ecological carrying capacity is reached has not been proven for New Zealand plants, animals and ecosystems, and that the true costs of increasing numbers of people have not been fully realised or accounted for by Government.

In places affected by visitors funding is needed for ecological research, monitoring effects and using appropriate management alternatives to mitigate adverse effects.

A SELECTION OF ABSTRACTS FROM NZ ECOLOGICAL SOCIETY CONFERENCE, HOKITIKA, 1994

Possum control in forests using 1080 in bait stations.

Malcolm Thomas

Manaaki Whenua - Landcare Research Ltd
Possum control using baits containing 1080 fed from bait stations (possum feeders) was investigated as a safer and possibly more acceptable method of using 1080 poison in an area where access was good. The results indicated that possum populations could be reduced to similar levels to those achieved with aerial application provided the possums were fed non-toxic cereal baits beforehand. If cheaper prefeeds such as maize and barley were used, less 1080 baits were eaten. Comparisons with aerial application showed that the amount of 1080 used was reduced by over 90% and costs were similar. Costs would increase when terrain became steeper, forests more dense, and access more limited.

Towards A Better Understanding Of Wasp Population Dynamics

Dave Leathwick and Peter Godfrey,
AgResearch, Flock House Agricultural Centre,
Private Bag 1900, Bulls.

The within-nest population dynamics of social wasps is complex and difficult to study. The likely impact of current, or potential new, biological control agents of wasps is thus even more difficult to ascertain. A simulation model is being developed for the within nest dynamics of *Vespula* spp. in New Zealand in order to increase understanding of population changes and the likely impact of control options.

This paper outlines the basic structure and key parameters of the model. Within nest dynamics is largely controlled by four variables; the rate at which the queen lays eggs; the proportion of eggs producing workers, drones and queens; the rate at which workers build cells and the development rates of the various juvenile/caste stages. The results of field and laboratory studies aimed at defining these parameters is presented.

Goat Diet And Vegetation Impacts In Isolated Hill Scenic Reserve, Marlborough

C. Hamish Cochrane and Dave Kelly
Plant and Microbial Sciences, University of Canterbury, Private Bag, Christchurch 1, New Zealand.

Isolated Hill Scenic Reserve in Marlborough contains a wide range of native vegetation types and

a number of rare plants at threat from introduced herbivores, principally goats, pigs, red deer and possums. Goat control in this reserve has been a high priority for DOC. We measured goat diet and reassessed vegetation plots set up in 1985, including three exclosures, to determine trends in vegetation change. The results show that significant damage to vegetation is continuing at current animal densities. The implications for future vegetation composition in the reserve, and for management of this and similar reserves, are discussed in light of these findings.

What Do North Island Weka Eat At Rakauora And When?

Gary Bramley

Department of Ecology, Massey University

The number of North Island weka (*Gallirallus australis greyii*) on the mainland has declined to c. 1-3% of its pre-1980 level. There is no evidence of a recovery.

Weka productivity could be limited by food availability, lack of suitable habitat, a male biased sex ratio, and predation. Knowing what food weka eat on a seasonal basis would allow conservation managers to predict potential food shortfalls.

I measured the availability of invertebrates using pitfall traps, sweep nets and litter samples. I also collected faecal pellets (n=86) and gizzards (n=13) from which I calculated the minimum number of invertebrates eaten per sample. Fifteen invertebrate groups were recognisable from these samples. During winter and spring weka ate less invertebrate material and more plant matter. In summer and autumn this was reversed and the weka also ate more fruit. For each group the percentage of all invertebrates available in the habitat was compared with the percentage of individuals found in the faeces using a Friedman rank test. I expected that weka would be generalist feeders using all foods in proportion to their seasonal availability, but this hypothesis was rejected ($s=5.67$, $p=0.341$) with weka preferring worms, scarabaeid and carabid beetles.

If food availability is limiting the survival and breeding of weka, low weights and non-breeding should be associated with seasons of food shortage. This prediction was not supported by the data.

Kiwi Call Survey - A Measure Of Population Density, Is This Technique Out Of Date ?

J Miles

Department of Ecology, Massey University

Kiwi call surveys are a standard method for estimating kiwi population density. The aims of this study were to estimate population density of kiwi in

the Tongariro National Park and in the Forest Park, to look at the biological aspects of calling behaviour, and to determine the accuracy of call surveys as a density measure. Being territorial, kiwi respond to other kiwi calls. This behaviour is exploited in call surveys by broadcasting recorded calls. Broadcasting calls combined with radio tracking of captured birds provide methods of determining the density of kiwi in an area. The density of kiwi in the Forest Park was found to be 4 birds per km², while in the National Park it was only 1 kiwi per 1 km². Call rates (calls/hour) showed a seasonal pattern with the highest calling rate occurring during the breeding season from June to November. Call rates showed a bimodal pattern within nights. The first peak occurred in the first 2-3 hours of darkness, and was predominantly made up of male calls. The second peak occurred in the last 2-3 hours of darkness. During this period males and females called about equally. The overall calling ratio in the Forest Park population was 3:1 (male:female). However this ratio changed over the breeding season to 2:1. There was a significant difference in call rates between nights. Temperature and rain were found to explain 43% of this variation. To hear most of the surveyed population call, three consecutive nights of listening were needed. Traditionally, survey teams listen for the first hour of darkness and then broadcast calls in the second hour. By alternating this, and testing responses to both broadcasted male and female calls, it was found that broadcasted female calls solicit a more even response with regard to sex ratio. There were no significant differences in call rates between nights, if broadcasting calls in the first or second hour, but there were significant differences within a night. Analysis of the biological and behavioural aspects of kiwi calling suggest ways to improve kiwi survey techniques.

Survival Of Juvenile Takahe In Fiordland.

Jane Maxwell and Ian Jamieson

Department of Zoology, University of Otago.

Captive rearing for release back into the wild is often seen as a useful wildlife management tool. Its use in endangered species management can increase recruitment by bypassing the early, high-risk, stage in an individual's life history. In evaluating the benefits of captive rearing to conservation, it is important to monitor the survival rate of animals after release, to be sure that they have the skills necessary for survival in the wild.

This three year study compared young captive-reared and released (C.R.R.) takahe with wild-reared takahe in Fiordland, using radio-tagged birds. The results indicate that C.R.R. birds survive at least as well as wild birds. Survival of wild-reared takahe

prior to the release of their captive counterparts was poor over two winters marked by particularly cold temperatures, which made the benefits of captive rearing more pronounced. There are differences in the movements and habitat selection of the two groups, but these did not have a detrimental effect on the survival rate of C.R.R. birds.

Although there was no difference in the survival rate of C.R.R. females versus males, 10/11 surviving females compared to only 3/10 males have paired since their release. This unexpected result suggests that there may be a shortage of females in the wild population.

Host Specificity In New Zealand Loranthaceae

David A. Norton¹ & Peter J. de Lange²

¹ School of Forestry, University of Canterbury, Christchurch

² Science & Research Division, Department of Conservation, Auckland

The New Zealand Loranthaceae comprises five extant species and one presumed extinct species (*Trilepidea adamsii*), all endemic to the New Zealand botanical region. Three of the extant species (*Alepis flavida*, *Peraxilla colensoi*, *Peraxilla tetrapetala*) show high host specificity, predominantly parasitising *Nothofagus* species. In contrast the other two extant species (*Ileostylus micranthus* and *Tupeia antarctica*) show low host specificity, with *Ileostylus* for example having been recorded parasitising 68 indigenous and 39 introduced host species. However, both these species do show higher host specificity locally. This paper quantifies the degree of host specificity in these species and discusses the evolutionary basis for host specificity in the New Zealand Loranthaceae.

Bird-Plant Coadaptations In New Zealand Loranthaceae Mistletoes

Jenny J. Ladley and Dave Kelly

Plant and Microbial Sciences, University of Canterbury, Private Bag, Christchurch 1, New Zealand.

Birds are important for both pollination and dispersal of endemic mistletoes in New Zealand. Experimental and observational data from the northern South Island show that tui and bellbirds are closely involved in the reproduction of *Peraxilla tetrapetala*, *P. colensoi* and *Alepis flavida*. The relationships are more closely evolved in *Peraxilla* than *Alepis*, and display some bizarre and fascinating details which are unlike anything previously reported in Australasia. The results show that maintenance of bird numbers may be more important for mistletoe conservation than was previously realised.

Are We Underestimating The Extent Of Bird Pollination Of New Zealand Forest Plants?

Isabel Castro and Alastair Robertson
Department of Ecology, Massey University,
Palmerston North

Most New Zealand flowers conform with entomophily being small in size, light in colours and scented. New Zealand flowers are often considered unspecialised. Pollination of forest flowers by birds has been described for a range of species whose flowers conform with ornithophily: large, red or yellow and unscented. On Little Barrier Island and Kapiti Island all three species of New Zealand honeyeaters have been described feeding on flowers whose pollination is currently assumed to be by insects or the pollination system is unknown (labeled here as "entomophilous"). The intensity of feeding (number of flowers visited) suggests that the birds are obtaining large rewards in the form of nectar. Nectar is expensive to produce and the quantity is related to the type of pollinators the plant has evolved to attract. We measured the nectar production of three ornithophilous flowers and three "entomophilous" flowers. We suggest that because (a) the nectar produced by "entomophilous" flowers provides sufficient calories to sustain the energetic requirements of birds, and (b) these plants flower in the cooler months when insect activity is reduced, birds might be playing an important pollination role not previously considered. If this is the case, forest regeneration in the North Island mainland could be hampered by the loss of one of the species of honeyeater and the drastic reduction in the abundance of the other two species.

Fleshy-Fruited Weeds And Native Species In The Diet Of Native And Introduced Birds

P.A. Williams and B.J. Karl
Manaaki Whenua Landcare Research New Zealand
Ltd, Nelson, New Zealand

Woody weeds with bird dispersed fruit comprise the single largest group of weeds in New Zealand forest and scrub reserves. The process and impact of weed invasion in three forest remnants at various distances from towns was studied near Nelson. The diets of native and introduced birds was examined from droppings collected from 600 mist netted birds. A high proportion of the native bell birds, and tui, and the introduced black birds, thrushes, and wax eyes had eaten fruit.

Bird diets varied greatly depending on fruit availability as determined by the sites and seasons. The diet of bell birds was the least variable and they were heavily reliant on Halls totara (*Podocarpus hallii*) and *Coprosma robusta* at all sites and ate very little weed fruit. The few tui caught also relied on

native fruit, although no birds feeding high in masting kahikatea trees were caught. Black birds, thrushes, and wax eyes all ate many of the same native fruits as the native birds, but their diet included a much higher proportion of weed fruits, especially himalayan honeysuckle (*Leycesteria formosa*), barberry (*Berberis glaucocarpa*), hawthorn (*Crataegus monogyna*), Chinese privet (*Ligustrum sinense*) and the herbaceous black nightshade (*Solanum nigra*): Starlings were caught only when they fed on elderberry (*Sambucus nigra*) but they also regularly ate kahikatea.

The weed species tended to extend the seasonal availability of fruit into early winter, an affect that was most marked in the remnant closest to a town. This phenomena may exacerbate the weed seed rain into remnants, for the few seeds recorded of species not present in the remnants were mostly weeds from adjacent gardens.

The bird dispersed weeds included in this study are mostly species of early secondary vegetation and forest margins. Despite their sometimes large fruit crops, they appears to offer little overall benefit to native birds. Where they pre-empt sites that have the possibility of being occupied by native species, these weeds create an inferior habitat for native birds.

Biological Control Of Broom With Insects

Pauline Syrett
Landcare Research Ltd

The process of introduction of specialised broom-feeding insects from Europe for biological control is described. Identification of increased costs associated with importing new species is leading to increased emphasis on assessing potential impact of introductions. At the same time, the severe limitations in our ability to successfully predict the likelihood of establishment and effective control by introduced species are recognised. The roles of three specialised broom-feeding insects already present in New Zealand are described, as well as those of three currently being studied in the UK, and of one that has proved unsuitable for introduction. The twigmining moth *Leucoptera spartifoliella* is widely established in New Zealand and significantly damages broom here. A stem-mining weevil, *Pirapion immune*, is unsuitable for release because tests showed it could utilise *Sophora microphylla* (kowhai) as an alternative host. The compatibility of biological control with other weed control methods is discussed.

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Education Working Group

position vacant

This Newsletter was produced by Mary McEwen and Jeremy Rolfe.

Contributions for the newsletter – news, views, letters, cartoons, etc. – are welcomed. If possible, please send articles for the newsletter both on disk and in hard copy. Disk can be any size; MS Word, Word Perfect or ASCII file text, formatted for Macintosh or MS-DOS. Please do not use complex formatting; capital letters, italics, bold, and hard returns only, no spacing between paragraphs. Send disk and hard copy to:

Mary McEwen
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The deadline for the next issue is 30 April 1995.

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

THIS ISSUE IS PRINTED ON 100% RECYCLED PAPER

NEW ZEALAND
PERMIT NO. 4407
POSTAGE PAID
WELLINGTON



New Zealand Ecological Society (Inc.)
P.O. Box 25-178
CHRISTCHURCH

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Membership of the society is open to any person interested in ecology and includes botanists, zoologists, teachers, students, soil scientists, conservation managers, amateurs and professionals.

Types of Membership and Subscription Rates (1994/95)

Full (receive journal and newsletter) \$65 per annum

Unwaged (with journal) \$25 per annum

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Unwaged membership is available only on application to Council for full-time students, retired persons etc. Unwaged members may receive the journal but must specifically request it.

Joint \$65 per annum

Joint members get one copy of the journal and newsletter to one address.

School \$12 per annum

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There are also Institutional Rates for libraries, government departments etc.

Overseas members may send personal cheques for their local equivalent of the NZ\$ amount at current exchange rates, for most major overseas currencies.

For more details on membership please write to:

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