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FROM THE EDITOR

Protecting biodiversity at the regional scale: using science to inform policy

Horizons Regional Council is currently in the middle of Hearings on the Proposed One Plan (POP). This has seen some considerable work go into developing policy for the protection of biodiversity on private land at a regional scale. The result has been a substantial shift away from use of schedules of known ecologically significant sites towards an approach which identifies significant, ecologically defined habitat types. Protection is provided to scheduled habitat types by regulatory methods (rules), and to scheduled and non-scheduled habitat types by non-regulatory methods (funding for management). This approach was made possible by the improvement of spatial databases and predictive models, and analysis undertaken by Landcare Research Hamilton (funded by the Envirolink Fund).

In the past biodiversity protection on private land within the Manawatu-Wanganui Region (the Region) was the jurisdiction of the territorial local authorities (TLAs). The Region covers seven territorial local authorities in full and a further three in part, all of which approached biodiversity protection with varied approaches, scope and commitment. This had resulted in some considerable regional disparities in biodiversity protection and management. What was consistent across the TLAs was under-resourcing, lack of priority, and a continued observed decline in biodiversity within the Region.

With the 2004 amendments to the Resource Management Act came an increased mandate for regional councils to undertake biodiversity protection. With this legislative ability behind us, and in response to biodiversity protection being one of the 'Big Four' issues for the Region, the Manawatu-Wanganui Regional Council (Horizons), in consultation with the TLAs, took on the lead role for biodiversity protection on private land within the Region.

The Big Four

The ability to deliver on promises is restricted by resources, and it was an underlying philosophy of the One Plan to be honest about where effort will be focused and what we would not be doing. This resulted in the identification of the 'Big Four'—land, water quality, water quantity and biodiversity. During a regional-wide road show in 2005, our community confirmed these were the issues important to them.

Fleur Maseyk
Horizons Regional Council
Private Bag 11025
Palmerston North
Phone: 06 952 2903
E-mail: newsletter@nzes.org

INSIDE:

Therefore, the drafting of the second generation regional policy statement and regional plans (the One Plan), saw biodiversity provisions in Horizons' plans for the first time. Sticking to our knitting, we left specific species management to the Department of Conservation, historic trees and locally important sites to the TLAs, and took a clear stand to focus on specified 'habitat types'.

The Proposed One Plan's (POP) overall strategy for biodiversity is two-tiered:
a) **halting the decline** *rare*, *threatened* or *at-risk* habitat types will be given a high level of protection, through rules, from activities likely to cause any further loss or modification, and
b) **active management** *rare*, *threatened* or *at-risk* habitat types will be proactively managed through collaboration with landowners for work such as pest control and fencing, and provision of economic incentives such as grants and rates relief.

Therefore, a crucial component of the POP development was the identification, ecological definition and classification of habitat types within the Region. The national spatial datasets and predictive models; Land Environments of New Zealand (LENZ), Land Cover Database 2 (LCDB2), and the Predicted Potential Natural Vegetation of New Zealand, along with the national framework for identifying originally rare ecosystems were utilised to identify habitat types present within the region. Expert opinion and observational data, especially in relation to uncharacteristic habitat types, was incorporated into the analysis and used to identify habitat types not detected by the predictive models. In this manner, a total of 32 habitat types (16 forest, eight wetland, six rare, one tussockland and one riparian margin) were listed in the schedule.

Habitat types were then classified (*rare, threatened* or *at-risk*) based on proportional analysis of previous and current extent, and expert knowledge on distribution, decline and vulnerability. The policy response was then targeted according to habitat classification and degree of vulnerability to continued degradation and decline due to human activity. Size and condition thresholds were incorporated by way of a list of criteria at the back-end of the schedule. Once identified as a listed habitat type, assessment against these criteria determine whether areas (sites) of habitat will be captured by, or excluded from, rules in the plan.

This approach has been a significant step away from listing only known, assessed sites, and has allowed for targeted policy that is responsive to need, with strong regulation to protect biodiversity pattern and ambitious non-regulatory methods to protect biodiversity processes.

To date, response from landowners has not always been welcoming, bringing to the fore the age-old property rights debate, distrust of imposed regulation, and a strong sense that self-regulation by the 'guardians of the land' is the best approach. Reflecting on a past of essentially self-regulation with corresponding trends of decline in biodiversity on private land, we did not agree. However, considerable community consultation and expert caucusing was undertaken throughout the entire process and did greatly improve the final framework.

It is no means a flawless or complete policy, and areas for improvement include incorporating regionally important habitat types not yet captured by the POP (e.g. scrub, shrubland and early stage secondary vegetation). Unlisted habitat types are not afforded protection under the biodiversity provisions of the One Plan, but might fall under another rule (e.g. rules targeted at land protection or water quality). Further challenges lie in improving our regional monitoring and reporting on current state, trends and policy effectiveness.

The development of the science behind the policy was presented at INTECOL in Brisbane 2009 with assistance from an NZES grant to attend.

The Proposed One Plan is still progressing through Hearings. The biodiversity component has been heard and a provisional determination has been released, indicating that this approach, with some minor changes, has been accepted by the Hearing Panel. However, a formal decision will not be released until the entire Plan has been heard.

INTECOL 2009

A closer look at research presented at INTECOL

Where will the species go and how will they get there?

Neil Mitchell
School of Environment, The University of Auckland

Neil Mitchell gave an oral presentation in the Plant Distributions session at INTECOL entitled 'Where will species go?' In this thought provoking piece he expands on those ideas.

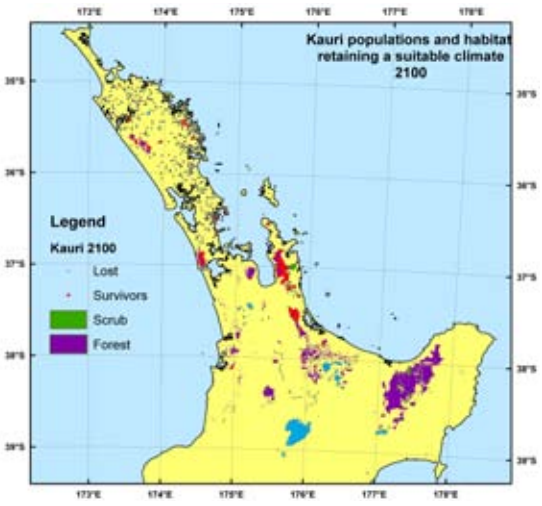
I posed this question as the title of my paper because there has been such a focus on modeling species distributions and the fine tuning of modelling techniques. The resultant fundamental conservation questions do not seem to be being addressed. Even at INTECOL, there were a huge number of papers that showed, surprise, surprise, that if climate changes, so species optimal geographic distribution is likely to change. Almost no-one was then asking the difficult question about what we actually need to do to ensure species can either reach these new localities or assist their survival *in situ*. Unless we address these questions it will be the only way to avoid an even worse extinction event than we appear to be heading for.

Kevin Gaston in his plenary address made a compelling plea for us to turn our attention to the survival of common and dominant species. As he pointed out, these species very often define the core characteristics of our ecosystems. Loss of these species will wreak such fundamental changes that we cannot have any idea what system may emerge. I am not sure I heard anyone make reference to what he was saying. Which brings me to my abstract.

> Research generally shows that as climates change, species distribution patterns change. As climates warm, models usually show that species optimal ranges will tend to move in a polewards and upwards direction. For lowland species, this presents a considerable problem. Human modification of lowland landscapes with farming, forestry and urban developments has dramatically reduced the availability of habitat. This study presents the results of an analysis of the availability of habitat under warming climate scenarios, for a currently common, physiognomically dominant, iconic New Zealand tree: the kauri (*Agathis australis*). There is an evident mismatch between where optimal climate zones will occur and the availability of habitat for the species to migrate across the landscape. The question is posed as to how can we ensure the long term survival, even of common species, in these highly modified landscapes. The problem is not just biological, often there are regulatory, jurisdictional, cultural and economic barriers that need to be addressed. Urgency is beginning to be needed to try and resolve how we can ensure the long term survival of many of our species.

Tane Mahuta.
Photo: Department of Conservation

My results suggest that given the most likely scenario for climate change, almost no localities where kauri occurs today will remain suitable by 2100. A few areas do stand out as remaining suitable; Waipoua Forest, the Waitakere and Hunua Ranges, and areas of the Coromandel inland from Thames. These are all areas where there is sufficient altitudinal range, that suitable climates will remain in the vicinity of



Map shows possible climate shifts by 2100 and how it relates to the present day distribution of kauri. Red identifies extant populations that will retain a suitable climate, purple and green illustrates where there might be habitat that has a suitable climate. The mismatch between 2100 and the present is very evident.

extant populations. Fortunately all these areas are in some form of protection. Otherwise the most suitable areas move south and east towards the Ureweras. How does a species such as this with a rather limited dispersal ability move, at speed, across our current, human-dominated landscapes? I would suggest they are unable to move without our assistance. Even if we assist them, are other species going to be moving out? The scale of the potential problem is enormous and we need to be developing long term strategic plans. Nowhere do these issues appear to be being addressed, certainly not in any obvious forum.

Perhaps as John Ogden pointed out: changing climates may simply be the latest strong selective pressure that our species will have to face. Most extant species have evolved through all the previous environmental filters (although *Nothofagus brassii* should stand as a warning to us), perhaps they will be resilient enough. Anyone offering to wait and see?

Invertebrates, cattle and leaf litter – research from inside a forest fragment.

Jess Costall expands on aspects of her PhD research that she presented at INTECOL. This research was conducted as part of a collaborative project examining how various management techniques affect the ecology of native forest fragments in production landscapes, involving 47 forest fragments in the Waikato region. The preliminary results regarding invertebrate communities from the larger study have been published (Didham et al. 2009).

At INTECOL 2009 I gave an oral presentation entitled "Changes to invertebrate communities and leaf litter breakdown rates following livestock exclusion from forest fragments". This presentation included the preliminary results from one of the field studies I have been conducting as part of my PhD research. I am grateful to the financial assistance provided by the New Zealand Ecological Society, which allowed me to attend this conference.

Much of New Zealand's remaining lowland native forest exists as small, isolated patches within agricultural landscapes. These fragments face high levels of disturbance, particularly unfenced fragments with livestock access. Livestock impacts include defoliation, trampling, defecation and urination, which alter the vegetation, soil structure and nutrient status, and subsequently food supply, shelter, and microclimate for forest floor invertebrates. Although the recovery of plant communities following livestock exclusion has been documented, we have little understanding of how forest floor invertebrate communities and the ecological processes they contribute to, respond following livestock exclusion.

This study examined leaf litter colonisation and breakdown rates at ten privately-owned forest fragments from the Te Miro district, south-east of Hamilton, New Zealand. These ten fragments had fencing dates ranging from 1960 to the present. Coarse mesh litter bags were used to measure leaf-litter breakdown rates at the edges and cores of fragments. Invertebrates were also extracted from the litter bags.

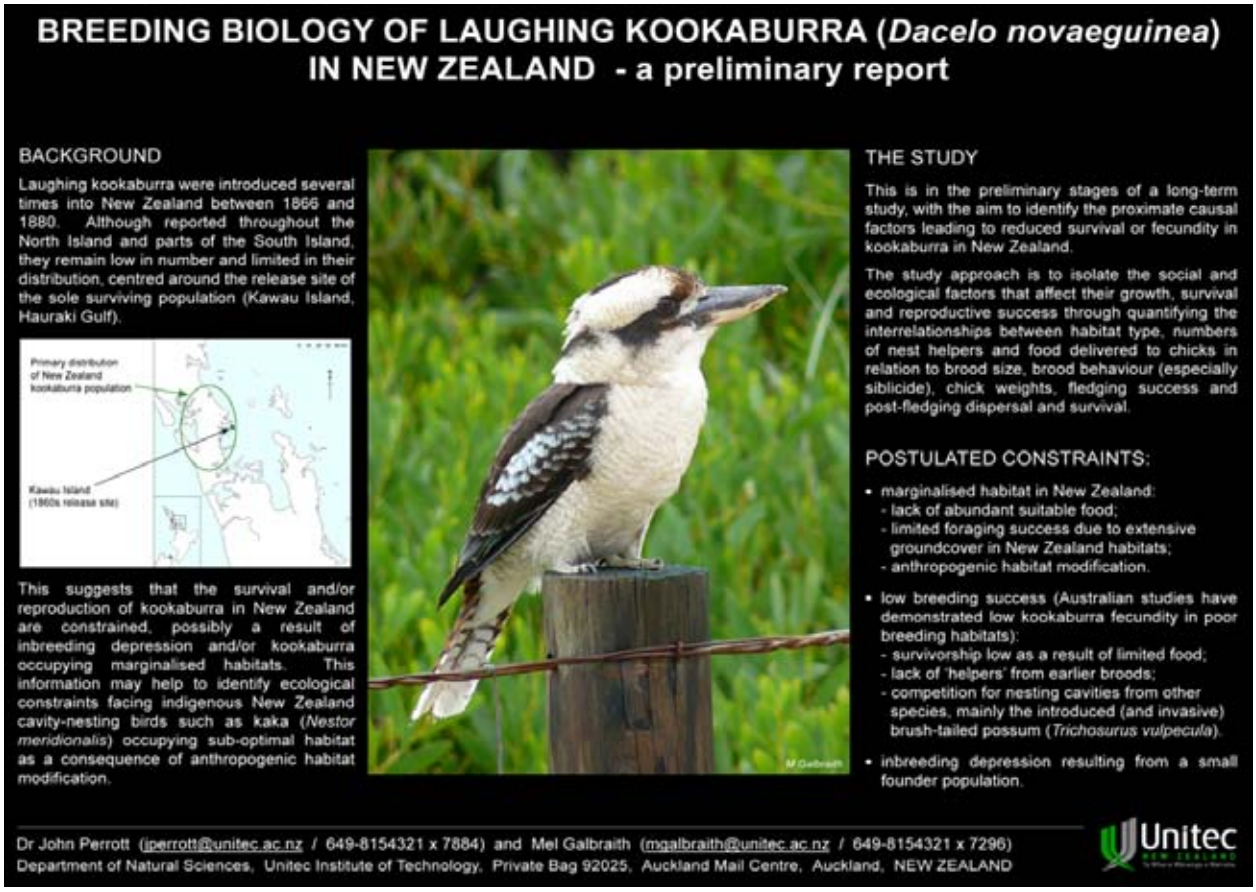
Leaf litter breakdown rates were significantly faster at fragment cores than at fragment edges. Tawa leaf litter breakdown rates at the fragment edge increased with time since fencing.

Many invertebrate groups showed a strong response to fencing date. The abundance of Collembola, Isopoda, Diptera larvae, Coleoptera adults, Nematoda and Pseudoscorpionida increased significantly with time since fencing. Many of these groups did not show any appreciable increase till 10 years+ following fencing. In contrast, the abundance of Araneae decreased with time since fencing. These results highlight the long-term recovery of invertebrate communities following livestock exclusion.

Didham R.K, Barker G.M, Costall J.A, Denmead L.H, Floyd C.G, Watts C.H. 2009. The interactive effects of livestock exclusion and mammalian pest control on the restoration of invertebrate communities in small forest remnants. *New Zealand Journal of Zoology 36: 135-163*.

Bringing INTECOL to you: Featuring presentations of NZES Grant receipients

MEL GALBRAITH: MGALBRAITH@UNITEC.AC.NZ



ANNIKA KORSTEN: ACKORSTEN@GMAIL.COM (ORAL PRESENTATION)

Avian herbivore–plant interactions - switches and conservation management

A. Korsten[1], *J.B. Wilson*[1], *W.G. Lee*[2].

Positive feedback switches, such as those between a plant community and herbivores can lead, to alternative stable states and to resistance to biotic change. Herbivores may be regarded as keystone species by facilitating the maintenance of certain ecosystems. For example, by enhancing the total nutrient input herbivores can promote vegetation comprising more palatable plant species, which in turn will be favored by the grazers. This can lead to boundaries between distinct communities that are spatially sharp and resistant to environmental change. Wetland ecosystems in pre-settlement New Zealand were dominated by avian herbivores. Due to the massive extinctions since human settlement, these ecosystems are now occupied by livestock or domestic waterfowl. The present study aimed to understand the role of feral geese in local turf communities in a lacustrine environment in the R.W. Sinclair Wetlands, Otago, New Zealand. Concurrently, abiotic factors including water table, soil nutrient analysis and faeces deposition were obtained to elucidate the causes of the vegetation patterns in this wetland system. Herbivory appeared to increase the proportional dominance of native plant species and the cessation of grazing did not affect the species composition. Two plant communities could be distinguished on the basis of phosphorus levels, distance from the nearest water source and faeces deposition. Results from Waihola suggest that naturalised geese may maintain native plant species and have a beneficial role, perhaps restoring a herbivore function lost with the extinction of native geese.

CHRIS BYCROFT: CHRIS@WILDLANDS.CO.NZ (ORAL PRESENTATION)

Ecological assessment and sustainable management of geothermal vegetation in the taupo volcanic zone, new zealand

C. Bycroft[1], *S. Beadel*[1], *W. Shaw*[1], *R. BawdenN*[1]

Geothermal vegetation—influenced by surface expressions of heat from the Earth's interior—is naturally rare in New Zealand, and internationally. Most geothermal vegetation in New Zealand occurs in the central North Island, in the Taupo Volcanic Zone (TVZ). The varied nature of

1 Wildland Consultants Ltd, P.O. Box 7137, Te Ngae, Rotorua 3042, New Zealand.

geothermal manifestations, due to varying combinations of temperature, chemistry, hydrology, and localised protection from frosts, produces rare and unusual habitats for plants. These include habitats for threatened and naturally rare plant species, as well as species occurring outside 'normal' latitudinal and altitudinal ranges. Between 2003 and 2009 we classified and mapped the extent of all known areas of geothermally-influenced terrestrial vegetation and emergent wetland vegetation in the TVZ. Populations of threatened species and threats to ecological values were also recorded at each site. Only c.869 ha of geothermal vegetation and habitat (excluding open water habitat) remains in the TVZ, including c.48 ha of geothermally-influenced emergent wetland vegetation. Prostrate kanuka-dominant vegetation, of which *c.*363 ha remains (although much is in a degraded condition), is significant as prostrate kanuka is restricted to geothermal sites in New Zealand. Geothermal vegetation has been significantly reduced and is still threatened by exploitation for energy production (thermal and hydro-electricity, heating, and industrial uses), as well as land use changes such as mining, farming, forestry, urban development, tourism, fire, and pest plant invasion. Invasion of pest plants, particularly wild introduced conifers and other woody plants, is now a major threat at many sites. Many remaining examples of geothermal vegetation are small and degraded, but are nevertheless ecologically significant. The varied nature of geothermal vegetation, one of the most threatened ecosystems in New Zealand, has important implications for management including retention of existing areas and the maintenance and enhancement of ecological values. All remaining sites warrant protection and management evaluation on a case-by-case basis.

DEBRA WOTTON: DEBRAWOTTON@YAHOO.CO.NZ (ORAL PRESENTATION)

How important is pigeon seed dispersal for recruitment in large-seeded New Zealand trees?

D. M. Wotton[1], *D. Kelly*[1]

1 School of Biological Sciences, University of Canterbury, Christchurch, New Zealand

A number of large frugivorous birds went extinct after humans arrived in New Zealand. Large-seeded trees with fruits >15 mm diameter now depend largely on the kereru (New Zealand pigeon, *Hemiphaga novaeseelandiae*) for seed dispersal. Kererū numbers have declined in recent years, but the effect of this decline on the regeneration of large-seeded trees has not been quantified. We compared recruitment with and without kererū for two large-seeded tree species: taraire (*Beilschmiedia tarairi*, Lauraceae) and karaka (*Corynocarpus laevigatus*, Corynocarpaceae).

Kererū preferred taraire fruits to karaka (25.3% of 1,876 feeding observations on taraire and 0.6% on karaka), even though both plants were common. Seeds collected beneath fruiting adults with unmanipulated kereru densities supported this preference, with 36% of taraire fruits but only 11% of karaka having been ingested by kereru. Where kereru are relatively abundant, we estimate they consumed 80% of the taraire fruit crop and 50% of the karaka crop.

Despite seed retention times of up to 5.5 hours, kererū ingestion did not reduce viability. Radio-tracking data show that kereru are highly sedentary, remaining in the same tree for up to five hours. Nevertheless, our mechanistic seed dispersal model estimates that kereru disperse 87% of consumed large seeds away from the parent. This is consistent with studies on the percentage of taraire seeds deposited beneath adult conspecifics.

We compared the fate of experimentally "dispersed" and "undispersed" seeds of both species over two years in the field. We recorded seed predation, germination, and seedling survival for seeds under conspecific adults ("parents") versus 20 m away, whole fruits versus cleaned seeds, and seeds at high versus low densities. The "undispersed" treatment decreased survival after two years by 80% for taraire and 53% for karaka. Hence, dispersal failure would markedly reduce the regeneration of these two large-seeded New Zealand species.

KERRY BORKIN: KBOR003@AUCKLANDUNI.AC.NZ (ORAL PRESENTATION)

New Zealand long-tailed bats use plantation forest differently from indigenous forest: implications for management

K. Borkin[1], *S. Parsons*[1]

1 School of Biological Sciences, University of Auckland, Auckland, New Zealand

New Zealand's endemic *Chalinolobus tuberculatus* (long-tailed bat; Vespertilionidae) is vulnerable to extinction in the short-term, and some populations may become extinct within 50 years without management. They were considered to use only indigenous forests until 1976 when the first long-tailed bat roost was located in an exotic *Pinus radiata* plantation; as a tree bats were roosting in was felled. Thirty years later the first long-tailed bats were captured for an in-depth investigation of their use of this forest type. Characteristics of their home ranges and roosts in plantation forests appear to differ from those in other habitat types. Preliminary analyses show smaller home ranges than in indigenous forests, suggesting either high quality habitat or fewer individuals. The rate at which bats passed sites (pass rate per hour) in plantation

forest was 30 times lower than those found in a previous study in native beech forest, and average colony size was also lower in plantation forest. A higher proportion of roosts chosen are dead making them more ephemeral than roosts in native forest, and these roosts are re-used at a higher rate than in other habitats. Roosts are lost naturally due to treefall and in forest operations at a far higher rate than in native forest or rural areas elsewhere in New Zealand. Roosts may, therefore, be limiting populations in plantation forest. We suggest that long-tailed bat populations in plantation forests can be protected by retaining potential roost trees during harvest operations, and continuing predator control.

RUSSELL DEATH: R.G.DEATH@MASSEY.AC.NZ (ORAL PRESENTATION)

Modelling stream invertebrates and their habitat using Bayesian Belief Networks

R. Death[1], *R. Buxton*[1], *M. Joy*[1]

1 Institute of Natural Resources-Ecology, Massey University, Palmerston North, New Zealand.

The development of reliable modelling techniques to predict freshwater species is important as many become increasingly scarce. A number of modelling techniques have been proposed for predicting populations of freshwater fish and invertebrates based on variables that describe the habitat and surrounding environment. Bayesian Belief Networks (BBNs) are an established modelling technique within the Artificial Intelligence (AI) community and are proposed as an alternative to neural networks and other methods commonly used in this domain. In BBNs variables are represented by nodes. Arcs connect related variables according to their causal links allowing evidence or data to propagate through the network in a fashion determined by the causal structure. BBNs have an advantage over some other modelling methodologies in that the model produced is bi-directional allowing the user to interrogate the model from cause to effect and vice versa. BBNs easily allow for models constructed using a mixture of expert knowledge and data dependent methods, are tolerant in conditions of incomplete data and can be applied to small datasets. This paper describes how data on New Zealand stream invertebrate populations and habitats in the lower North Island were used to construct a BBN model. The model was tested using an independent data set and the quality of the results was assessed using the area under the receiver operating characteristic curve (AUC).

MONICA AWASTHY: MONICA.AWASTHY@VUW.AC.NZ (ORAL PRESENTATION)

Social conflict impacts post-release movements and patch-use by rehabilitated New Zealand pigeon (kererū)

M. Awasthy[1], *W. Linklater*[1]

1 Centre for Biodiversity and Restoration Ecology, School of Biological Sciences, Victoria University of Wellington, Wellington, New Zealand

Every year large amounts of time, effort and money are invested in rehabilitating injured wildlife, but is only successful if they return to the wild and survive to reproduce. Survival and reproduction, however, require that they integrate behaviourally and socially with resident conspecifics but research has focused on post-release habitat-use and short-term survival rates. There are significant gaps in our understanding of post-release behaviour and sociality for most species. Kererū (*Hemiphaga novaeseelandiae;* New Zealand pigeon) are large forest-dwelling, fruit eating pigeons that were once in nationwide decline but have become abundant in some of New Zealand's urban landscapes where they are frequently injured, recovered, and rehabilitated. Rehabilitated kererū being released in apparently favourable habitat patches may face harassment and competition with wild birds which causes them to abandon release sites, settle further away in potentially less suitable habitat and therefore perhaps lower post-release survival and reproductive rates. To test whether post-release movements and patch-use were affected by social conflict between rehabilitated and wild kererū, we measured the social interactions, flight distances, and settlement times of reintroduced kererū in two variably urbanized landscapes with different forest patch structure. Kererū released in a highly fragmented, dense residential area of Wellington City, New Zealand, were compared with those released in a nearby mixed agriculture-forest rural landscape. We found that regardless of the distribution and availability of forest patches, rehabilitated kererū that engaged in frequent agonistic interactions with wild kererū took longer to settle, moved greater distances and fed less. We suggest that although landscape structure and patch-use is important to kererū movements, social conflict plays an early and critical role in determining their spatial and temporal settlement patterns. This research demonstrates the importance of integrating behavioural ecology in wildlife conservation and management programs, particularly in urban areas.

Messages from INTECOL

The following press release was generated from the messages coming through many presentations at INTECOL and largely written by NZES ecologists (Frances Forsyth, Colin Meurk, Shona Myers and Wren Green). The article was released to the Australian media on the 21 August 2009.

1300 International Scientists Call for Urgent Ecological Action

A world-wide collapse of habitats, species extinctions, the spread of pests and diseases, and serious threats to even the most common plants and animals—that's the picture almost 1000 presentations at the world's largest gathering of ecologists provided of the state of the global environment.

Over 1300 scientists from 60 countries met this week in Brisbane at the 10th International Congress of Ecology (INTECOL) providing hard scientific evidence of the impacts of climate change on the world's ecosystems.

"Business as usual will cause global loss of biodiversity and nature's services, human starvation, fire, flooding and landslides; and ultimately the impoverishment of humankind," says INTECOL co-chair, Dr Craig James from CSIRO.

"The evidence emerging from the INTECOL Congress demonstrates that strong action at Copenhagen will be needed to avoid the disastrous ecological, social and economic consequences of business-as-usual."

The ecologists at INTECOL believe that most species in most places will not be able to adapt. And impoverished regions such as Africa are likely to be the hardest hit.

Recent winner of the Sherman Eureka Prize for environmental research, Professor Hugh Possingham from the University of Queensland agrees: "Loss of species diversity will impact for millions of years, not just hundreds of years like many environmental problems."

But despite the grim overall message of the Congress, many ecologists believe action now by applying new knowledge including Indigenous knowledge and greater connections between scientists, policy makers, managers and the community can reduce the impacts of climate change.

Dr Barry Traill, the Director of the Wild Australia Program with the global PEW Environment Group says: "The good news is we do have the knowledge to reverse this crisis to keep and bring back some of the most special creatures on earth."

He speaks from recent experience working with the Australian Wildlife Conservancy on the Piccanniny Plains of Cape York in northern Australia where they have managed to bring back small mammal populations by reducing grazing and removing feral populations of horses and cattle.

"The world economy relies on a healthy, functioning environment to provide the basic elements of a decent quality of life, such as clean air and water," Dr James says.

"The threat is not just of climate change *per se* but a lack of informed policy and action by the world's governments. The world community needs to dramatically reduce its ecological footprint and work together constructively to address the precipitous decline of ecosystems and natural resources.

"Climate change negotiators, conservation managers, decision makers and political leaders have a social, political and environmental mandate to agree to emissions targets that achieve the greenhouse gas reductions that the IPPC has calculated as necessary to avoid irreversible impacts on climate, biodiversity and society."

Extinctions are happening right now on our watch, the good news is that we now do know the solutions and we can do something about it.

RECENT PUBLICATIONS BY NEW ZEALAND ECOLOGISTS

Compiled by Bruce Burns

Katipo persist in Manawatu-Wanganui coastal dunes

A recent survey of the endangered and endemic katipo spider (*Latrodectus katipo*) at seven sites on the Manawatu-Wanganui coastline has found more spiders than in previous studies. Jess Costall and Russell Death found 239 katipo along 4.7 km of coastline including a high proportion of juveniles at five sites suggesting good recruitment. However, the two most-northern sites had no juveniles, which questions the viability of populations at these sites. Most katipo were found on driftwood although dune vegetation was also important, and there was substantial overlap between habitats occupied by katipo and a related introduced South African spider which suggests competition may be occurring.

Costall, J.A., Death, R.G. 2009. Population structure and habitat use by the spider *Latrodectus katipo* along the Manawatu-Wanganui coastline. *New Zealand Journal of Zoology 36*: 407-415.

What are the 100 most important global conservation questions?

This question was recently answered by a large team of senior representatives of the world's major conservation organisations, professional scientific societies, and universities. Participants were previously canvassed for their contributions and these were then reduced to 100 most important questions through group processes at a two-day workshop in Cambridge, United Kingdom in September 2008. Here is a taste of just 12 of these questions in no particular order:

a. Do critical thresholds exist at which the loss of species diversity, or the loss of particular species, disrupts ecosystem functions and services, and how can these thresholds be predicted?
b. Which elements of biodiversity in which locations are most vulnerable to climate change, including extreme events?
c. How might nanotechnology have positive or negative impacts on biodiversity conservation?
d. What is the management cost per hectare required to manage protected areas effectively, and how does this vary with management category, geography, and threat?
e. What, and where, are the significant opportunities for large-scale ecosystem restoration that benefits biodiversity and human well-being?
f. What are the contributions of urban nature reserves and other green amenity spaces, such as golf courses, to biodiversity conservation, and how can these be enhanced?
g. How will ocean acidification affect marine biodiversity and ecosystem function, and what measures could mitigate these effects?
h. Which aquatic species and communities are most vulnerable to human impacts, and how would their degradation affect the provision of ecosystem services?
i. What are the likely risks, costs, and benefits of reintroducing and translocating species as a response to climate change?
j. How effective are the different strategies devised to integrate scientific knowledge into conservation policy and practice?
k. What are the impacts of increasing human dissociation from nature on the conservation of biodiversity?
l. What are the conservation impacts of corporate social responsibility regimes that are biodiversity oriented?

Sutherland, W.J and 43 others 2009. One hundred questions of importance to the conservation of global conservation biodiversity. *Conservation Biology 23*: 557-567.

Plants really are taller in the tropics

The results of a major analysis of plant height across the globe have just been released by a team led by Angela Moles of the University of New South Wales, Sydney. How tall a plant grows is a major determinant of a plant species' ability to compete for light and is therefore a major factor in plant ecological strategy. Angela and her team analysed a huge dataset on maximum heights plants attain that covered 222 locations across the world. Tropical plants (0 - 15° latitude) were on average about 30 times taller than plants from temperate latitudes (>45° latitude) and there was a striking drop in height at the edge of the tropics suggesting a switch in plant strategy between temperate and tropical zones. The best correlation with environmental variables was with precipitation in the wettest month.

Moles, A. T. and 8 others 2009. Global patterns in plant height. *Journal of Ecology 97(5)*: 923–932.

ECOLOGY AND ECOLOGISTS IN THE NEWS

Compiled by Fleur Maseyk

The Spirit of Enderby. *Laura can be seen waving from the deck. Photo: Heritage Expeditions.*

NZES's newest council member to visit the Subantartic Islands

Laura Young is heading off on a trip of a life-time to the remote and isolated Subantartic Campbell, Auckland and Snares Islands after receiving a scholarship from the Enderby Trust. Laura's essay explaining her interest in the wildlife, botany and New Zealand history of the Subantartic Islands put her in front of other applicants and won her a seat on the *Spirit of Enderby*.

The Enderby Trust provides opportunities for 18–30 year olds to experience the New Zealand biogeographical region through it's association with Heritage Expeditions. (heritage expeditions)

Riccarton Bush and Willowbank Wildlife Reserve work together to boost kiwi numbers

The Press 28-Sep-09

A Haast tokoeka chick has hatched at the Willowbank Wildlife Reserve, the first kiwi of the season at the Christchurch breeding facility.

"If these chicks were born in the wild and not protected by large-scale predator control, more than 90 per cent of them would die," said the Department of Conservation (DOC) programme manager for the Haast tokoeka project, Gareth Hopkins.

In July, two juvenile kiwis were transferred from Willowbank to a predator-free enclosure at Riccarton Bush, which is being used as a kiwi "crèche".

The golden bandicoot makes a comeback

Sydney Morning Herald 19-Oct-09

Australia has the worst mammal extinction record in the world, with 22 mammals becoming extinct in the last 200 years, but the golden bandicoot is bucking the trend. The tiny marsupial was last seen on the mainland in the early 1950s and by 1980 was presumed to be extinct in the Northern Territory. But hair from the mammal was detected in some dog droppings in 1994, leading a team of researchers to discover the region's last remaining population on Marchinbar Island.

New Zealand quail remains extinct

TVNZ 29-Oct-09

Quail on Auckland's Tiritiri Matangi Island are not remnants of a New Zealand species extinct for more than 100 years, a Massey university researcher has discovered. The birds were suspected of being survivors of the New Zealand quail, but they were actually genetically identical to Australian brown quail, PhD researcher Mark Seabrook-Davison from the Institute of Natural Sciences at Albany said.

More funding to tackle kauri killer

guide2 29-Oct-09

The recently identified disease, kauri dieback or kauri rot (*Phytophthora taxon agathis*), is attacking the trees in the upper North Island and Great Barrier Island. The dieback is specific to kauri and is killing trees and seedlings of all ages.

Biosecurity Minister David Carter said the funding would bring to $9.8m money going into a five year programme aimed at containing the soil-borne disease.

"This disease is a serious biosecurity threat to kauri, a species that we as New Zealanders are duty-bound to protect," Mr Carter said.

NZ scientists seek blue sheep as part of Nepal leopard study

nznewsuk 6-Nov-09

New Zealand scientists hope to improve the survival odds of the endangered snow leopard by studying its main prey in the Himalayas, the bharal, or blue sheep. A Nepali PhD student at Massey University, Achyut Aryal, and his professor (David Raubenheimer) are tramping through the Annapurna Conservation Area—at the start of the northern hemisphere winter—carrying out the groundwork for using satellite tracking to study the sheep.

Their initial study of the animals' movements, grazing habits and population structure within a limited range will pave the way for the next phase of the study using global positioning satellite (GPS) transmitters. The transmitters will allow researchers to track on computer screens in New Zealand the movements of ten sheep in different herds for two years continuously across the high-altitude region.

Associate Professor Dianne Brunton, co-supervisor of the study, said detailed information on population estimates and distribution for blue sheep and snow leopards was vital for conservation management. Dr Brunton hoped New Zealand school pupils would become involved in the study next year by observing the movement of satellite-tracked animals on classroom computers.

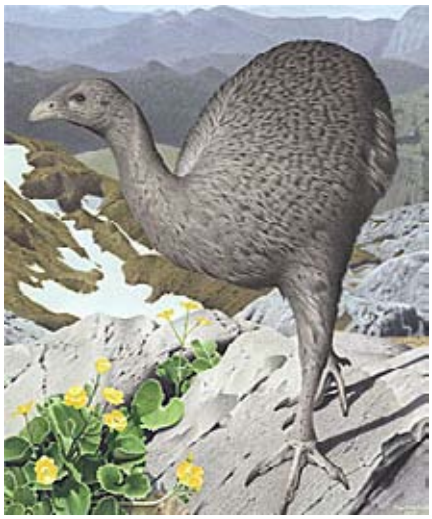


Photo: Te Papa (stuff.co.nz)

Road workers uncover moa bones near Taupo

Stuff 6-Nov-09

Road workers have uncovered what could be the bones of a family of moa while building a highway near Taupo. The workers found more than 40 bones in total, which they carefully extracted, packed up and sent to Auckland University, Taupo District Council infrastructure and parks manager Ted Anderson said. "It is in a way a little unexpected, but we had spent a lot of time putting the procedures in place in anticipation of finding something," he told NZPA

Greenhouse gas reduction overrated – NZIER

3news 3-Nov-09

New Zealand is too focused on reducing greenhouse gases and meeting climate change obligations, according to a new study. New Zealand's environmental priorities were "not well targeted", the New Zealand Institute of Economic Research (NZIER) said. A change in focus could improve environmental and economic outcomes. Improving urban air quality and protecting biodiversity and ecosystems should be the highest priority, NZIER said.

Meeting international climate change obligations and working to achieve an international agreement were also important, but reducing greenhouse gases was not, NZIER said. "Actually reducing greenhouse gas emissions is a low priority for New Zealand".

Environment Commissioner and Greens criticise NZIER report

guide2 3-Nov-09

Environment Commissioner Dr Jan Wright says. said the NZIER report was fundamentally flawed, muddled and superficial and she "couldn't agree less" that climate change should be low priority.

"Climate change is the biggest environmental challenge of our time. I am shocked and disappointed to see a report suggesting otherwise."

The Green Party has also criticised the report, saying it fails to join the dots when looking at environment challenges. Green co-leader Dr Russel Norman said suggesting air quality and biodiversity should be a priorities ignored that climate change was the biggest long-term risk to biodiversity and reducing emissions improved air quality.

Extinction crisis continues apace

iucn 3-Nov-09

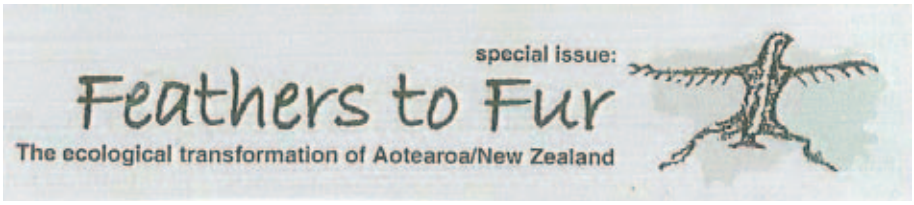
The latest update of the IUCN Red List of Threatened Species shows that 17,291 species out of the 47,677 assessed species are threatened with extinction.

The results reveal 21 percent of all known mammals, 30 percent of all known amphibians, 12 percent of all known birds, and 28 percent of reptiles, 37 percent of freshwater fishes, 70 percent of plants, 35 percent of invertebrates assessed so far are under threat.

NOTICEBOARD

Feathers to Fur journal issue
Kauri Fund

FEATHERS TO FUR JOURNAL ISSUE IMMINENT



Dave Kelly, University of Canterbury
Guest co-editor, Feather to Fur issue, New Zealand Journal of Ecology.

About the time you get this newsletter, you should get in the mail the first issue of *New Zealand Journal of Ecology* for 2010, the special issue "Feathers to Fur" coming from the 2007 conference of the same name.

This issue aims to review the current status of New Zealand ecology, updating the 1989 "Moas, Mammals and Climate" issue (volume 12 supplement) which has been very useful but is now dated.

You will notice several things about the new issue. The first is a new page size (A4) and associated layout. The new page size is cheaper and also works better when PDFs are printed locally. We hope to stick with this for the foreseeable future. The second thing to notice is the thickness, about double a normal issue at c 215 pages. This is mainly because as a review issue, the papers have a lot of detail (obscure references, large tables, etc). Luckily the issue was paid for by sponsorship from the Department of Conservation and Landcare Research, so your 2010 sub will buy you twice as much journal as usual.

Some stats may impress. The issue has 14 papers, the longest of which is 29 pages long. The whole issue totals about 160,000 words (143,000 in text and the rest in references). About 1600 papers are cited in the reference lists, with the most in a single paper being 280 references. The biggest table spreads across nearly three pages. Whew.

If you haven't already got your hard copy, you can at least check the online PDFs (ten of the 14 are already online as I write this in early November). If you want another hard copy of the issue, we have printed extra so contact me or the Secretariat to enquire about the cost of these which has not yet been set.

Finally two points. Firstly many journals now live or die by their impact factors. If you like any of the papers in this issue, email a copy of a PDF to people you think might like to cite it. Cite it yourself! Doing so will increase the journal impact factor and thus benefit the Society.

And last of all, I'd like to thank my co-editors of this special issue, Jenny Ladley and Jon Sullivan. The size and complexity of this issue has made it a huge task,

which has just about driven us all crazy. Our technical editing was handled with grace and aplomb by Jenny Steven, so many thanks to her too. If anyone wants to know where you should have a semicolon rather than a comma, and what order the multi-author papers by one lead author should be in, just ask us, but let us finish sobbing first. It has all given me a huge appreciation of the work done by the normal journal team: scientific editor (recently Peter Bellingham, now KC Burns) and technical editors (Anne Austin and Christine Bezar). And, of course, thanks to the conference organising team from 2007 and the sponsors. All that is left is for you to enjoy the reading over summer.

DONATE NOW! KAURI FUND FOR ECOLOGICAL SCIENCE

We invite you to help grow the science of ecology in New Zealand by contributing to the NZES Kauri Fund. This fund was established in 2001 to provide resources for initiatives that assist the development of ecology and ecologists in New Zealand. As the Fund grows, it will play an increasingly critical role in advancing the Society's goals and fund exciting new initiatives for New Zealand ecology.

Please consider a contribution, whether $10, $20 or $50, to the Kauri Fund now or at the time you renew your subscription.

You can make your contribution to the Kauri Fund in two ways:

Send a cheque made out to the "NZES Kauri Fund" to the New Zealand Ecological Society, P.O. Box 25 178, Christchurch 8144.

Use internet banking, to credit your donation to New Zealand Ecological Society, bank account 06 0729 0465881 00, identifying the payment as "Kauri Fund".

UPCOMING MEETINGS

Island Invasives: Eradication and Management Conference

8 – 12 February 2010 Tamaki Campus University of Auckland

The Centre for Biodiversity and Biosecurity (University of Auckland & Landcare Research), in collaboration with the IUCN/SSC Invasive Species Specialist Group is hosting the conference.

Themes include:

- Ecological outcomes of eradications.
- Social and economic dimensions of eradications.
- Managing reinvasion risks.
- Eradicating multiple pest species.
- New techniques and approaches.

Registration is now open

Online registration: www.cbb.org.nz/conferences.asp

For more information please contact:
Dick Veitch, Manager, Island Invasives Conference
P: +64 9 298 5775 E: dveitch@kiwilink.co.nz

National Wetlands Symposium 2010

Wednesday, 3 March 2010: Pre-Symposium Fieldtrip "Introduction to the Bay of Plenty Wetlands"
Thursday, 4 & Friday, 5 March 2010: Symposium
Venue: Novotel Lakeside, Rotorua, New Zealand

Earlybird Registrations open 1 June 2009

Online registration: www.wetlandtrust.org.nz

For more information please contact:
National Wetlands Symposium 2010, c/– The Organiser
P: +64 7 343 1732; E: theorganiser@RotoruaNZ.com

NEWS FROM YOUR COUNCIL

A warm welcome to new members

New members as confirmed by Council on 13 November 2009:

Katherine Akers	Stuart Bennett
Hazel Broadbent	Katherine De Silva
Melanie Dixon	Shannon Dundas
Samantha Hill	Amber McEwan
Ingrid Stirnemann	Nancy Willems

There have been no **resignations** since the last report.

Membership report

NZES membership remains healthy and vibrant, with a current membership of 632. Membership is made up of:

Membership Type	Number of members
Full	393
Joint	52
Overseas (Full)	17
Overseas (unwaged)	11
Unwaged	142
Honary / life member	9
Newsletter only	8
Total	**632**

NZES LISTSERVER

Dave Kelly
Dave.Kelly@canterbury.ac.nz

RULES FOR THE NZES LISTSERVER

This listserver is for "issues of general interest" to NZ ecologists (conferences, jobs, etc).

The list has three key guidelines:

1. Only messages of genuine general interest. No ads for things being sold (this does not include job ads which are OK) and no fringe interests. If in doubt check with me first.
2. If you want to reply to a posting, the default is for you to reply only to the sender. Do not reply to the whole list unless you are sure your point will be of "general interest", which most replies are not. Please check what "To" field you have set before pressing "Send". Remember this listserver is primarily for announcements, not discussions.
3. No attachments—put your message in plain text, with if necessary a link to a pdf on a web page.

HOW TO SUBSCRIBE

To subscribe to this server, e-mail a message to the automatic Mailserv processor at:nzecosoc-request@it.canterbury.ac.nz following text in the body of the e-mail:

SUBSCRIBE NZECOSOC
END

To unsubscribe from the listserv, send this message to the same address above:

UNSUBSCRIBE NZECOSOC

Once subscribed, you will receive instructions on how to send messages, unsubscribe etc. PLEASE READ INSTRUCTIONS AND FOLLOW THEM.

TO SEND A MESSAGE

To send a message to everybody on the list, use the address, nzecosoc@it.canterbury.ac.nz. Only people subscribed to the list are able to post to it. If you are not on the list and don't want to subscribe, but want a message, send it to me (Dave.Kelly@canterbury.ac.nz) to forward on.

IF YOU CHANGE YOUR E-MAIL ADDRESS

If you change your e-mail address, you have to unsubscribe from the old one, and subscribe from the new address. The easiest way to unsubscribe your old email address is to send a message while you are logged on at the old address; if the old e-mail address is dead you will not be able to unsubscribe it because the system sees you as someone else. In that case e-mail me and I can do it for you.

Office Holders of the New Zealand Ecological Society 2009/2010

(Effective from18 August 2009)

In the first instance, please send postal or e-mail correspondence to:

Secretariat (society office – Susan Sheppard)
NZ Ecological Society Secretariat
PO Box 25 178
CHRISTCHURCH 8144
Physical Address:
46 Genesis Drive
Edendale, RD 1
CHRISTCHURCH 7671
P: 64 3 318 1056
F: 64 3 318 1061
E: nzecosoc@paradise.net.nz
W: www.nzes.org.nz

President
Bruce Burns
School of Biological Sciences
University of Auckland
Private Bag 92019
AUCKLAND
P: 09 373 7599 ex 83135
E: b.burns@auckland.ac.nz

Vice President
Mel Galbraith
School of Natural Sciences
Unitec New Zealand
Private Bag 92025,
Carrington Road, Mt Albert
AUCKLAND
P: 64 9 815 4321 ex 7296
M: 025-6948139
E: mgalbraith@unitec.ac.nz

Secretary
Ruth Guthrie
686 Takaka Valley Highway
Urewhenua
R D 1
TAKAKA
M: 027 248 5944
E: secretary@nzes.org.nz

Treasurer
Clayson Howell
Department of Conservation
PO Box 10-420,
WELLINGTON
P: 64 4 471 3113
M: 021 973 181
E: chowell@doc.govt.nz

Councillors (5)
Shona Myers (past-president)
Auckland Regional Council
Private Bag 92012
AUCKLAND
P: 64 9 366 2000 ex 8233
F: 64 9 366 2155
M: 021 708042
E: shona.myers@arc.govt.nz

John Sawyer
Department of Conservation
PO Box 5086,
WELLINGTON
P: 64 4 472 5821
F: 64 4 499 0077
M: 021 058 3894
E: jsawyer@doc.govt.nz

Chris Bycroft
Wildland Consultants
PO Box 7137
Te Ngae,
ROTORUA 3042
P: 64 7 343 9017
E: chris@wildlands.co.nz

Isabel Castro
Ecology Group
Institute of Natural Resources
Massey University
Private Bag 11-222
PALMERSTON NORTH
P: 64 6 356 9099 ex 7530
E: i.c.castro@massey.ac.nz

Laura Young
School of Biological Sciences
University of Canterbury
Private Bag 4800
CHRISTCHURCH
P: 03 364 2987 ex 7048
M: 021 668 084
E: laura.young@pg.canterbury.ac.nz

Journal scientific editor
K.C. Burns
Victoria University of Wellington
School of Biological Sciences
PO Box 600
Wellington 6140
P: 64 4 463 6873
E: Kevin.Burns@vuw.ac.nz

Journal technical editors
Anne Austin
Landcare Research
Private Bag 11052
Manawatu Mail Centre
PALMERSTON NORTH 4442
E: techeditor@nzes.org.nz
E: austina@landcareresearch.co.nz

with assistance from:
Christine Bezar
Landcare Research
PO Box 69
LINCOLN 7640

Newsletter editor
Fleur Maseyk
Horizons Regional Council
Private Bag 11025
Manawatu Mail Centre
PALMERSTON NORTH
P: 64 6 952 2903
M: 021 2277 188
E: newsletter@nzes.org.nz

Webmaster
Jon Sullivan
Ecology
Lincoln University
PO Box 84
LINCOLN 7640,
P: 64 3 325 2811
F: 64 3 325 3844
E: sullivaj@lincoln.ac.nz
E: webmaster@nzes.org.nz

This Newsletter was produced by Fleur Maseyk and Jeremy Rolfe.

Contributions for the newsletter—news, views, letters, cartoons, etc.—are welcomed. Please e-mail to editors (newsletter@nzes.org.nz) with document attached (Word formatted for Windows) or post. If posting, if possible, please send articles for the newsletter both on disk and in hard copy. Please do not use complex formatting; capital letters, italics, bold, and hard returns only, no spacing between paragraphs. Send disk and hard copy to:

Fleur Maseyk
Horizons Regional Council
P.O. Box 11025, Manawatu Mail Centre, Palmerston North

Next deadline for the newsletter is Friday 5 February 2010.

MEMBERSHIP

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 (2009)

Full (receive journal and newsletter) .$75* per annum

Unwaged (with journal).....$45* per annum
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.....$75* per annum
Joint members get one copy of the journal and newsletter to one address.

Overseas Full.....$95* per annum

Overseas Unwaged.....$65* per annum

School.....$12 per annum

Educational institutions may receive the newsletter at the cost of production to stay in touch with Society activities. By application to Council.

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:

NZ Ecological Society
PO Box 25 178
Christchurch
NEW ZEALAND

or e-mail: info@nzes.org.nz

* There is a $10 rebate for members who renew before Feb 15 each year, and for new members