

NEW ZEALAND
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Newsletter

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Inside

Ecotones: Ecology from around NZ.....	3
New journal Rethinking Ecology – Unfurling new ideas.....	11
News from Waikato District Council	12
NZES award winners	14
Conference reports – ERA2016	16
Past Kauri Seed Scholars	23
News from council.....	24
News from across the ditch	24
Noticeboard and upcoming conferences	25
List of Office holders.....	32

From the Editor

Kia ora koutou,

I'm thrilled to welcome Angela Simpson as our new Newsletter Editor! Please join me in making her feel welcome by sharing stories for the newsletter. We've put this edition together as a team but future editions will be all Angela. Thank you for taking up the challenge Angela and I hope you enjoy it as much as I have! – Cate Macinnis-Ng

Hello everyone,

I am very excited to have a go at helping the New Zealand Ecology Society as the newsletter editor. I always enjoy hearing updates of the interesting research and projects that are going on around the country. There is such a range of issues and topics that we face in ecology in New Zealand. We can all benefit from sharing and learning from each other's challenges and successes. I hope that this newsletter can continue to be an excellent forum for voicing ideas and sharing some of the projects that members are undertaking. I am very fortunate and thankful for Cate's advice to help me get started.

So, a little bit about me... I am working as an ecologist at Wildland Consultants, based in Rotorua. I finished my Masters at Waikato University about a year and a half ago. My thesis project involved researching the functional traits of native New Zealand trees and their relationships with soil and climate. Our paper is listed below in Ecotones. I love to be out exploring and learning new things.

We really hope you enjoy this bumper issue of the newsletter! There are some neat accounts from our very successful recent ERA2016 conference in Hamilton. Be sure to read the notice about how you can help with understanding mast flowering in rata. Something to look out for over summer if you're out and about, or even if your indoors and looking at holiday photos from a previous summer.

Happy new year!

Angela Simpson

Illustrate Ecology



Canopy ecosystems – a wealth of biodiversity. Photo: Cate Macinnis-Ng

Our largest living tree, Tane Mahuta, supports 46 different species of epiphytes in its branches.

Ecotones – new ecological research

Bruce Burns

A selection of recently published research on or relevant to New Zealand ecology (except that published in the New Zealand Journal of Ecology or 'in press')

1. *Does avian malaria contribute to native bird declines?*

In Hawaii, avian malaria (*Plasmodium* spp.) has been identified as a major factor in declines of native birds and, because of higher mosquito densities and therefore transmission rates at low elevations, the distributions of some native species are restricted to higher elevations. Although avian malaria is known from New Zealand birds, it is unclear what impact it has had and continues to have on native bird populations. Declines of native birds have almost invariably been attributed to predation by introduced mammals or competition with non-natives, but could avian malaria also be playing a significant role? Niebuhr et al. (2016) have recently studied the incidence of avian malaria in birds along an elevational gradient at Nelson Lakes National Park. They found higher malaria infection rates at lower elevations there, consistent with records of greater native bird declines at these elevations. They also found that a higher proportion of non-native birds were infected than native birds, particularly *Turdus* spp. (blackbirds and songthrushes), and suggested that these species may act as long term reservoirs of the disease. The greater proportion of infected non-native birds sampled could indicate either higher transmission rates to non-native birds, or higher virulence of the disease amongst native birds. These results indicate that recovery of native bird populations may require management of disease as well as management of invasive predators and competitors.

Niebuhr, C.N., Poulin, R., Tompkins, D.M. 2016. Is avian malaria playing a role in native bird declines in New Zealand? Testing hypotheses along an elevational gradient. PLoS ONE, 11 (11), art. no. e0165918.

2. *Caught in the headlights! Monitoring wildlife populations using roadkill*

The characteristics of roadkill has been much studied overseas but not in New Zealand, regardless of the high potential impact that roads may have on wildlife populations here as much as overseas. This may be because roadkill here is apparently largely made up of pest species (e.g. possums, rabbits) and not more highly valued indigenous wildlife. This does, however, raise the question as to whether roadkill has any useful impacts on populations of invasive species. With this in mind, Richard Sadleir conducted a survey of roadkill of a 63km section of road that he drove regularly between Lower Hutt and Te Horo on the Kapiti Coast over a period of 6 years (2009-2014) (Sadleir and Linklater 2016). Roadkill on this road was dominated by hedgehogs, possums, and rabbits. Comparing carcass densities of these species with previous studies suggests that hedgehog and rabbit populations had possibly recovered from previous lower levels consistent with past epidemics, but possum populations were generally lower, suggesting that widespread pest control for this species was being

successful. Also, roadkill had a distinct seasonal trend, highest in summer, reflecting seasonal differences in dispersal and breeding. Finally, this study found that kill-rate increased with traffic volume, suggesting that busy roads might be useful barriers for possible management to reduce/eradicate populations. This study highlights that useful opportunities probably await in reading New Zealand roadkill patterns.

Sadleir, R.M.F.S., Linklater, W.L. 2016. Annual and seasonal patterns in wildlife road-kill and their relationship with traffic density. *New Zealand Journal of Zoology* 43: 275-291.

3. Pesticides in NZ honey bees affects forager recall

Pollination is one of the critical ecosystem services provided by biodiversity that directly impacts on human welfare. However, there is a growing body of evidence that some pesticides released into the environment can negatively affect pollinator behaviour. Urlacher et al (2016) have recently studied the occurrence and impact of one such pesticide, chlorpyrifos on honey bees in Otago. Chlorpyrifos is an organophosphate pesticide used widely to protect food crops from insects and mites. It is moderately persistent in the environment once applied, but also volatilises and disperses from the site of application, resulting in it being detected almost ubiquitously at low concentrations. Urlacher et al (2016) detected it in honeybees at 17% of sites sampled in Otago, including one distant from any agricultural activity. When the learning performance of bees was tested in the lab after consuming sublethal doses of chlorpyrifos, they had a lower ability to recall and transfer olfactory memory of positive experiences. That is, foragers returning to the hive would not pass on information about rewarding sites, so foraging efficiency of such affected hives would be decreased. Clearly these subtle effects of pesticides could help partly explain the current pollination crisis affecting our rural ecosystems.

Urlacher, E., Monchanin, C., Rivière, C., Richard, F.-J., Lombardi, C., Michelsen-Heath, S., Hageman, K.J., Mercer, A.R. 2016. Measurements of Chlorpyrifos levels in forager bees and comparison with levels that disrupt honey bee odor-mediated learning under laboratory conditions. *Journal of Chemical Ecology* 42: 127-138.

4. A first look at New Zealand parasitoid wasp communities.

Parasitoid wasps (Hymenoptera) are highly species rich and biologically diverse amongst insect groups, yet almost nothing is known about them within New Zealand's native ecosystems. Parasitoids follow a rather gruesome life history whereby larvae are located on or within the bodies of other arthropods, and develop by consuming their host, eventually killing them. They therefore represent a high trophic level and might be useful indicator taxa of ecosystem degradation or changes. To start to fill the information gap on New Zealand parasitoid communities, Kendall and Ward (2016) undertook a novel study of such communities within the Waitakere Ranges near Auckland, and related these communities to habitat variables. They found 136 parasitoid morphospecies in

their samples, from 19 subfamilies of the Braconidae and Ichneumonidae. Abundance, diversity and composition of parasitoids were strongly influenced by vegetation type, plant diversity, the mean size of coarse woody debris pieces, and season. A key difference detected was that kauri forest supported a highly distinctive parasitoid community compared to other forest types in the Waitakeres. This again highlights the wide ranging biodiversity implications of loss of kauri forest to kauri dieback. As well, the diversity of parasitoids found in this study reflects the complexity of host-parasitoid relationships within these ecosystems which we also know little to nothing about.

Kendall, L.K., Ward, D.F. 2016. Habitat determinants of the taxonomic and functional diversity of parasitoid wasps. *Biodiversity and Conservation* 25: 1955-1972.

5. *Epibionts on epibionts on epibionts...*

Habitat-forming species are those that provide new habitat that is utilised by other species, represented by forest trees that support epiphytes or marine benthic organisms that support seaweeds. Sometimes first-order habitat formers can support other habitat formers which themselves provide habitat for another set of species, forming a habitat cascade. Such habitat cascades have the potential to strongly amplify ecosystem biodiversity, so may be important relationships. Thomsen et al (2016) describe an amazing habitat cascade from the Avon-Heathcote Estuary that includes six levels of organism attached to hosts. The basal organism of this chain was the bivalve *Austrovenus stutchburyi*, which provided attachment surfaces for green seaweeds (*Ulva* spp.). This green seaweed was then habitat for trochid snails which themselves provided attachment surfaces for further species on their shells, and so on. The study went on to test the relative importance of each of these species within the habitat cascade, concluding that the seaweeds and the trochid snail were crucial in regulating the cascade structure, more so than other species. Other such habitat cascades probably occur within a range of different ecosystems where attachment is a characteristic. Understanding how these habitat cascades form and their behaviour would be beneficial to managing high biodiversity ecosystems.

Thomsen, M.S., Hildebrand, T., South, P.M., Foster, T., Siciliano, A., Oldach, E., Schiel, D.R. 2016. A sixth-level habitat cascade increases biodiversity in an intertidal estuary. *Ecology and Evolution* 6: 8291-8303.

Other recent publications on New Zealand ecology (since July 1st).

Apologies if I have missed your publication in my search. If I have, please send a citation to b.burns@auckland.ac.nz so I can include it in the next Ecotones:

Anderson, O.F., Guinotte, J.M., Rowden, A.A., Tracey, D.M., Mackay, K.A., Clark, M.R. 2016. Habitat suitability models for predicting the occurrence of vulnerable marine ecosystems in the seas around New Zealand. *Deep-Sea Research Part I: Oceanographic Research Papers*, 115: 265-292.

- Avila, G.A., Withers, T.M., Holwell, G.I. 2016. Retrospective risk assessment reveals likelihood of potential non-target attack and parasitism by *Cotesia urabae* (Hymenoptera: Braconidae): A comparison between laboratory and field-cage testing results. *Biological Control* 103: 108-118.
- Baillie, B.R. 2016. Herbicide concentrations in waterways following aerial application in a steep-land planted forest in New Zealand. *New Zealand Journal of Forestry Science* 46: art. no. 16.
- Barber, I.G., Maxwell, J.J., Petchey, F. 2016. A radiocarbon investigation of Mōri forest use on Rēkohu (Chatham Island), southwestern Polynesia. *Journal of Archaeological Science: Reports* 10: 96-109.
- Bellingham, P.J., Kardol, P., Bonner, K.I., Buxton, R.P., Morse, C.W., Wardle, D.A., MacDougall, A. 2016. Browsing by an invasive herbivore promotes development of plant and soil communities during primary succession. *Journal of Ecology* 104: 1505-1517.
- Bogisch, M., Cree, A., Monks, J.M. 2016. Short-term success of a translocation of Otago skinks (*Oligosoma otagense*) to Orokonui Ecosanctuary. *New Zealand Journal of Zoology* 43: 211-220.
- Boyer, S., Kim, Y.-N., Bowie, M.H., Lefort, M.-C., Dickinson, N.M. 2016. Response of endemic and exotic earthworm communities to ecological restoration. *Restoration Ecology* 24: 717-721.
- Brandt, A.J., Tanentzap, A.J., Leopold, D.R., Heenan, P.B., Fukami, T., Lee, W.G., Edwards, D. 2016. Precipitation alters the strength of evolutionary priority effects in forest community assembly of pteridophytes and angiosperms. *Journal of Ecology* 104: 1673-1681.
- Brockerhoff, E.G., Chinellato, F., Faccoli, M., Kimberley, M., Pawson, S.M. 2017. Effects of elevation and aspect on the flight activity of two alien pine bark beetles (Coleoptera: Curculionidae, Scolytinae) in recently-harvested pine forests. *Forest Ecology and Management* 384: 132-136.
- Brummer, T.J., Byrom, A.E., Sullivan, J.J., Hulme, P.E. 2016. A quantitative framework to derive robust characterization of hydrological gradients. *River Research and Applications* 32: 1517-1529.
- Buckley, E.E.C.B., Hilton, M.J., Konlechner, T.M., Lord, J.M. 2016. Downwind sedimentation and habitat development following *Ammophila arenaria* removal and dune erosion, Mason Bay, New Zealand. *Journal of Coastal Research* 1 (75): 268-272.
- Buckley, R.C., Morrison, C., Castley, J.G. 2016. Net effects of ecotourism on threatened species survival. *PLoS ONE* 11 (2): art. no. e0147988.
- Burns, K.C. 2016. Spinescence in the New Zealand flora: parallels with Australia. *New Zealand Journal of Botany* 54: 273-289.

- Carpenter, J.K., Monks, J.M., O'Donnell, C.F.J. 2016. Developing indices of relative abundance for monitoring cave and ground wētā (Orthoptera) in southern beech forest, New Zealand. *New Zealand Journal of Zoology* 43: 149-162.
- Chapple, D.G., Kneegtmans, J., Kikillus, H., Van Winkel, D. 2016. Biosecurity of exotic reptiles and amphibians in New Zealand: Building upon Tony Whitaker's legacy. *Journal of the Royal Society of New Zealand* 46: 66-84.
- Clarkson, B.D., Kirby, C.L. 2016. Ecological restoration in urban environments in New Zealand. *Ecological Management and Restoration* 17: 180-190.
- Cohen, J.E., Lai, J., Coomes, D.A., Allen, R.B. 2016. Taylor's law and related allometric power laws in New Zealand mountain beech forests: the roles of space, time and environment. *Oikos* 125: 1342-1357.
- Cowan, P. 2016. Characteristics and behaviour of brushtail possums initially moving into a depopulated area. *New Zealand Journal of Zoology* 43: 223-233.
- Derville, S., Constantine, R., Baker, C.S., Oremus, M., Torres, L.G. 2016. Environmental correlates of nearshore habitat distribution by the Critically Endangered Maui dolphin. *Marine Ecology Progress Series* 551: 261-275.
- Easton, L.J., Dickinson, K.J.M., Whigham, P.A., Bishop, P.J. 2016. Habitat suitability and requirements for a threatened New Zealand amphibian. *Journal of Wildlife Management* 80: 916-923.
- Elliott, G., Kemp, J. 2016. Large-scale pest control in New Zealand beech forests. *Ecological Management and Restoration* 17: 200-209.
- Godoy, D.A., Smith, A.N.H., Limpus, C., Stockin, K.A. 2016. The spatio-temporal distribution and population structure of green turtles (*Chelonia mydas*) in New Zealand. *New Zealand Journal of Marine and Freshwater Research* 50: 549-565.
- Gundale, M.J., Almeida, J.P., Wallander, H., Wardle, D.A., Kardol, P., Nilsson, M.-C., Fajardo, A., Pauchard, A., Peltzer, D.A., Ruotsalainen, S., Mason, B., Rosenstock, N., Austin, A. 2016. Differences in endophyte communities of introduced trees depend on the phylogenetic relatedness of the receiving forest. *Journal of Ecology*, 104: 1219-1232.
- Harris, S.A., Shears, N.T., Radford, C.A., Reynolds, J. 2016. Ecoacoustic indices as proxies for biodiversity on temperate reefs. *Methods in Ecology and Evolution* 7: 713-724.
- Harrod, M., Keown, A.J., Farnworth, M.J. 2016. Use and perception of collars for companion cats in New Zealand. *New Zealand Veterinary Journal* 64: 121-124.
- Hawke, D.J., Gamlen-Greene, R., Harding, J.S., Leishman, D. 2017. Minimal ecosystem uptake of selenium from Westland petrels, a forest-breeding seabird. *Science of the Total Environment* 574: 148-154.

Henwood, W., Moewaka Barnes, H., Brockbank, T., Gregory, W., Hooper, K., McCreanor, T. 2016. Ko Tāngonge Te Wai: indigenous and technical data come together in restoration efforts. *EcoHealth* in press.

Hitchmough, R.A., Adams, L.K., Reardon, J.T., Monks, J.M. 2016. Current challenges and future directions in lizard conservation in New Zealand. *Journal of the Royal Society of New Zealand* 46: 29-39.

James, K., Shears, N.T. 2016. Population ecology of the invasive kelp *Undaria pinnatifida* towards the upper extreme of its temperature range. *Marine Biology* 163: art. no. 225.

Jellyman, P.G., Harding, J.S. 2016. Disentangling the stream community impacts of *Didymosphenia geminata*: How are higher trophic levels affected? *Biological Invasions* 18: 3419-3435.

Kitzberger, T., Perry, G.L.W., Paritsis, J., Gowda, J.H., Tepley, A.J., Holz, A., Veblen, T.T. 2016. Fire-vegetation feedbacks and alternative states: common mechanisms of temperate forest vulnerability to fire in southern South America and New Zealand. *New Zealand Journal of Botany* 54: 247-272.

Lusk, C.H., Jimenez-Castillo, M., Aragón, R., Easdale, T.A., Poorter, L., Hinojosa, L.F., Mason, N.W.H. 2016. Testing for functional convergence of temperate rainforest tree assemblages in Chile and New Zealand. *New Zealand Journal of Botany* 54: 175-203.

Lusk, C.H., McGlone, M.S., Overton, J.M. 2016. Climate predicts the proportion of divaricate plant species in New Zealand arborescent assemblages. *Journal of Biogeography* 43: 1881-1892.

MacLeod, C.J., Green, P., Tompkins, D.M., Benge, J., Moller, H. 2016. Optimising survey effort to monitor environmental variables: A case study using New Zealand kiwifruit orchards. *Journal of Environmental Management* 183: 13-21.

McKergow, L.A., Matheson, F.E., Quinn, J.M. 2016. Riparian management: A restoration tool for New Zealand streams. *Ecological Management and Restoration* 17: 218-227

McNab, B.K. 2016. Analysis of factors that influence energy expenditure in honeyeaters (Meliphagidae). *New Zealand Journal of Zoology* 43: 179-190. \

Morales, N.S., Perry, G.L.W., Burns, B.R. 2016. Fencing is not enough to reinstate regeneration: Evidence from a large fruited canopy tree *Beilschmiedia tawa*. *Forest Ecology and Management* 376: 36-44.

Morgan-Richards, M., Hinlo, A.R., Smuts-Kennedy, C., Innes, J., Ji, W., Barry, M., Brunton, D., Hitchmough, R.A. 2016. Identification of a rare gecko from North Island New Zealand, and genetic assessment of its probable origin: a novel mainland conservation priority? *Journal of Herpetology* 50: 77-86.

- Nboyine, J.A., Boyer, S., Saville, D., Smith, M.J., Wratten, S.D. 2016. Ground wētā in vines of the Awatere Valley, Marlborough: biology, density and distribution. *New Zealand Journal of Zoology* 43: 336-350.
- Nelson-Tunley, M., Morgan-Richards, M., Trewick, S.A. 2016. Genetic diversity and gene flow in a rare New Zealand skink despite fragmented habitat in a volcanic landscape. *Biological Journal of the Linnean Society* 119: 37-51.
- Panfylova, J., Bemelmans, E., Devine, C., Frost, P., Armstrong, D. 2016. Post-release effects on reintroduced populations of hihi. *Journal of Wildlife Management* 80: 970-977.
- Paris, D., Nicholls, A.O., Hall, A., Harvey, A., Massaro, M. 2016. Female-biased dispersal in a spatially restricted endemic island bird. *Behavioral Ecology and Sociobiology* 70: 2061-2069.
- Peltzer, D.A., Wardle, D.A. 2016. Soil fertility effects on tree seedling performance are light-dependent: evidence from a long-term soil chronosequence. *Oikos* 125: 1121-1133.
- Romijn, R.L., Hartley, S. 2016. Trends in lizard translocations in New Zealand between 1988 and 2013. *New Zealand Journal of Zoology* 43: 191-210.
- Schwing, R., Jocteur, E., Wein, A., Noë, R., Massen, J.J.M. 2016. Kea cooperate better with sharing affiliates. *Animal Cognition* 19: 1093-1102.
- Shelby, N., Duncan, R.P., van der Putten, W.H., McGinn, K.J., Weser, C., Hulme, P.E., Austin, A. 2016. Plant mutualisms with rhizosphere microbiota in introduced versus native ranges. *Journal of Ecology* 104: 1259-1270.
- Shrestha, M., Lunau, K., Dorin, A., Schulze, B., Bischoff, M., Burd, M., Dyer, A.G., Rennenberg, H. 2016. Floral colours in a world without birds and bees: the plants of Macquarie Island. *Plant Biology* 18: 842-850.
- Simpson, A.H., Richardson, S.J., Laughlin, D.C. 2016. Soil-climate interactions explain variation in foliar, stem, root and reproductive traits across temperate forests. *Global Ecology and Biogeography* 25: 964-978.
- Smith, A.N.H., Anderson, M.J. 2016. Marine reserves indirectly affect fine-scale habitat associations, but not overall densities, of small benthic fishes. *Ecology and Evolution* 6: 6648-6661.
- Soley, F.G., McGinley, R.H., Collins, S.R., Taylor, P.W. 2016. Natural history observations and predatory behaviour of a long-legged jumping spider, *Megaloastia mainae* (Araneae: Salticidae). *New Zealand Journal of Zoology* 43: 65-83.
- Stokes, D.J., Bulmer, R.H., Lundquist, C.J. 2016. Addressing the mismatch between restoration objectives and monitoring needs to support mangrove management. *Ocean and Coastal Management* 134: 69-78.

- Sullivan, J.J., Molles, L.E. 2016. Biodiversity monitoring by community-based restoration groups in New Zealand. *Ecological Management and Restoration* 17: 210-217.
- Sweetapple, P.J., Nugent, G., Whitford, J., Latham, M.C., Pekelharing, K. 2016. Long-term response of temperate canopy trees to removal of browsing from an invasive arboreal herbivore in New Zealand. *Austral Ecology* 41: 538-548.
- Tepley, A.J., Veblen, T.T., Perry, G.L.W., Stewart, G.H., Naficy, C.E. 2016. Positive feedbacks to fire-driven deforestation following human colonization of the South Island of New Zealand. *Ecosystems* 19: 1325-1344.
- Thomas, D.B., Ksepka, D.T. 2016. The Glen Murray fossil penguin from the North Island of New Zealand extends the geographic range of *Kairuku*. *Journal of the Royal Society of New Zealand* 46: 200-213.
- Unelius, C.R., Suckling, D.M., Brown, R.L., Jósvali, J.K., El-Sayed, A.M. 2016. Combining odours isolated from phylogenetically diverse sources yields a better lure for yellow jackets. *Pest Management Science* 72: 760-769.
- Veblen, T.T., González, M.E., Stewart, G.H., Kitzberger, T., Brunet, J. 2016. Tectonic ecology of the temperate forests of South America and New Zealand. *New Zealand Journal of Botany* 54: 223-246.
- Wallace, P. 2016. Managing human disturbance of wildlife in coastal areas. *New Zealand Geographer* 72: 133-143.
- Waters, J.M., Burridge, C.P. 2016. Fine-scale habitat preferences influence within-river population connectivity: A case-study using two sympatric New Zealand *Galaxias* fish species. *Freshwater Biology* 61: 51-56.
- Watts, C., Thornburrow, D., Cave, V. 2016. Responses of invertebrates to herbicide in *Salix cinerea* invaded wetlands: Restoration implications. *Ecological Management and Restoration* 17: 243-249.
- Waugh, S.M., Patrick, S.C., Filippi, D.P., Taylor, G.A., Arnould, J.P.Y. 2016. Overlap between flesh-footed shearwater *Puffinus carneipes* foraging areas and commercial fisheries in New Zealand waters. *Marine Ecology Progress Series* 551: 249-260.
- Weissert, L.F., Salmond, J.A., Schwendenmann, L. 2016. Variability of soil organic carbon stocks and soil CO₂ efflux across urban land use and soil cover types. *Geoderma* 271: 80-90.
- Wiser, S.K., Chiarucci, A. 2016. Achievements and challenges in the integration, reuse and synthesis of vegetation plot data. *Journal of Vegetation Science* 27: 868-879.

Wright, J.T., Gribben, P.E., Latzel, S. 2016. Native ecosystem engineer facilitates recruitment of invasive crab and native invertebrates. *Biological Invasions* 18: 3163-3173.

Yao, R.T., Harrison, D.R., Velarde, S.J., Barry, L.E. 2016. Validation and enhancement of a spatial economic tool for assessing ecosystem services provided by planted forests. *Forest Policy and Economics* 72: 122-131.

New journal *Rethinking Ecology* – Unfurling new ideas

Stephane Boyer

The New Zealand-based peer-reviewed journal [Rethinking Ecology](#) is inviting authors to submit their innovative and bold ideas in all areas of ecology. In a time when the number and complexity of global ecological challenges we face is increasing, [Rethinking Ecology](#) aims to be an incubator for novel ideas and a catalyst for new thinking.

In most ecology journals, perspective and opinion papers are commissioned and/or reserved to well established and highly regarded scientists. [Rethinking Ecology](#) recognizes that 'novel ideas do not arise from direct invitations, are not the exclusive privilege of already renowned scientists' ([Boyer et al. 2016](#)). We want to provide a platform for forward thinking and publication of novel ideas that is opened to all contributors. The journal puts every author on an equal footing and offers a double blind review system to avoid any bias and 'enable authors to publish their best ideas and perspectives, regardless of their seniority, their publication track record, their gender, or their country of origin' ([Boyer et al. 2016](#)).



With the three founding editors based in New Zealand (Stephane Boyer, Marie-Caroline Lefort and Linton Winder), the koru was an obvious choice for the logo of the journal. It represents 'the beginning of life for a new idea' but also its 'metaphorical unfurling as it reaches out to the scientific community' ([Boyer et al. 2016](#)).

Another unique feature of the journal is the implementation of a percentage-based author contribution index that establishes the true contribution of each co-author on every paper. Authors are asked to provide percentage scores for each co-author at the submission stage. These percentages are used to calculate a contribution index, both of which are published as part of the paper.

Because *Rethinking Ecology* is fully open access, it relies on author publication charges (APC). The fees to publish a paper are set at 650 euros and they include a donation of 100 euros to support research in developing countries. Through this unique approach the journal aims at leading the way to a more sustainable publishing model.

Rethinking Ecology is published by [Pensoft](#) and powered by the publishing platform [ARPHA](#) (Authoring, Reviewing, Publishing, Hosting and Archiving).

Boyer, S., Lefort, M.C. and Winder, L., 2016. Rethinking Ecology–Challenging Current Thinking in Ecological Research. *Rethinking Ecology* 1: 1–8.

News from Waikato District Council

Ben Wolf, Ecological Planner

The ecological enhancement work of the Waikato District Council has featured well in this year's environmental awards season.

The Rotokauri Ecological Enhancement project was a finalist in the Society for Ecological Restoration Australasia (SERA) awards for excellence in ecological restoration practice, in the category for projects greater than 50 ha in size. Please see poster attached for further information about this project. The winners and other finalists for the 2016 SERA awards for excellence in ecological restoration are listed here: <http://www.ser.org/news/319240/page/PrivacyPolicy>

And even better, Waikato District Council won the 2016 Local Authority Award for protecting native plant life, awarded by the New Zealand Plant Conservation Network (NZPCN).

This is thanks to the combined effort of all those championing the ecological enhancement initiatives in the district, especially the protection and promotion of native species.

Keep planting those natives, fighting those pests and using eco-sourced plants where you can!

Here is an excerpt from the newsletter of the New Zealand Plant Conservation Network outlining some of the reasons that Waikato District Council won the award:

With a strong portfolio of environmental initiatives, collaboration and support, Waikato District Council continues to make a positive difference to the environment and native species. It continues to work closely with local communities on a wide variety of projects, from restoring native dune systems to improving or re-creating native habitat around lakes and wetlands, river margins and forests. The council has also worked with Ecosourced Waikato on several projects, including the production of planting guides, an environmental

education programme with local schools, including a riverbank planting programme, and the development of "Plant Me Instead" booklets that aim to reduce weeds in the district. The council also works closely with local nurseries to ensure quality eco-sourced plants are used in all revegetation projects.


The other NZPCN award winners for 2016 are listed here:

http://nzpcn.org.nz/page.aspx?nzpcn_awards_2016

Project: Rotokauri Ecological Enhancement 2015–2020


Local authority: Waikato District Council

Project planner: Ben Wolf, Ecologist



Site information: Rotokauri is one of the larger of the 30+ lakes in the Waikato District and has a significant presence in the landscape. The Rotokauri reserve covers an area of approximately 75 hectares with the lake taking in storm water from Hamilton City and Waikato District catchments including the Te Rapa and Zoo drains.

Project overview: Core actions of this ecological enhancement programme include pest fish control, mammalian pest control, native species planting and plant pest control, providing habitat for native flora and fauna, improvements to water quality as well as working with local stakeholders to improve the mauri of the waterways in the area.




Protection: The whole reserve is stock proof fenced and no vehicles or motorised boats are allowed in the reserve or lake except for official works to develop and enhance the reserve.




Costs: The 5 year programme is expected to be delivered for under \$870,000. Funding has been sourced to achieve the work programme that add value to, enhance and accelerate environmental objectives in line with the vision and strategy for the Waikato and Waipā rivers. An application was made to the Waikato River Authority which offered a grant of around \$400,000; which has allowed the project to proceed within the 5 year timeframe.

Thanks: This project is only possible due to the input and support of a variety of like minded stakeholders, many of whom are mentioned above. Thank you!



Project design: The ecological enhancement of Rotokauri is based on a number of management and independent research programmes with lessons learnt from over 20 years of site based activities aiming to restore native habitats at the reserve.



Stakeholders: Rotokauri reserve ownership is shared across two LGAs, with the majority of the reserve in the Waikato District Council and a portion in the Hamilton City Council area. The lake committee included stakeholders from these councils as well as iwi, Fish and Game, the Regional Council and local resident stakeholders. Local firm Kessels Ecology provided an independent review and recommendations.



New Zealand Ecological Society award winners

Congratulations to our award and travel fund winners! Further information about the awards is available on our website <http://newzealandecology.org/awards-grants>. Thanks to awards coordinator, Debra Wotton for compiling the citations on our three major award winners.

- **Peter Bellingham (Landcare Research) - Te Tohu Taiao award for Ecological Excellence**

Peter received the Te Tohu Taiao award for sustained excellence in both ecological research and its application to conservation, policy and management. Peter has been a long-time global leader in forging a deeper understanding of forest dynamics. He is perhaps best known for his work on the effects of disturbances in driving forest dynamics. His classic paper on resprouting of woody plants as a key life history strategy has been cited more than 500 times. His other contributions to ecology include the roles of woody plants and their herbivores in succession; the ecological consequences of invasions (particularly by rodents on seabird-dominated island ecosystems); and development of monitoring systems for terrestrial biodiversity. He has also promoted ecological restoration throughout New Zealand, but particularly on its offshore islands. His strengths span ecosystem, community, and physiological ecology and he is equally comfortable working with plants, animals, or soils. Intellectually, Peter is fearless in tackling big, conceptual issues, yet is grounded in an intimate understanding of detailed species interactions. This makes him a cautious but successful synthesizer. Peter has a deep understanding of ecological principles, an exhaustive knowledge of the world's flora, is generous in facilitating research, and provides honest and critical editing skills.

- **Chris Green (Department of Conservation) – Ecology in Action**

Chris has shown outstanding and sustained application of ecological knowledge to conservation management. One of Chris's greatest contributions was the eradication of Argentine ants from Tiritiri Matangi Island. When Chris embarked on the Argentine ant eradication programme in 2001, ant eradication was considered impossible. Chris not only designed a bait station to keep non-target invertebrates from accessing the bait, he also trialled bait station spacing and developed a detection technique to find all remaining ant nests. Fifteen years later, Tiritiri Matangi was declared free from Argentine ants. His efforts to identify the problem, control, monitor and eventually eradicate Argentine ants on Tiritiri Matangi are little short of miraculous and testament to his dedication to the conservation of New Zealand's wildlife and wild places. This award also recognises Chris's pioneering work on monitoring, captive breeding and translocation of wetapunga. Chris initiated a captive breeding and release programme with Butterfly Creek and Auckland Zoo, which was seminal in the development of the now much-expanded recovery programme for the species. Both examples will undoubtedly become classic cases of the transfer of ecological

knowledge, through the hands of a skilled practitioner, to achieve a highly desirable restoration outcome.

- **Shona Myers (Myers Ecology) - Honorary Life Membership**

Shona is recognised for her enormous contribution to the Society, including 13 years continuous service on council and effective governance of the society. She is hardworking, dedicated and responsive and has often clarified the correct process for the council to take. Her elected roles include five and a half years as Secretary and two and a half years as President. She has coordinated and written numerous submissions on behalf of the society. In the last few years, Council has co-opted Shona as a representative of INTECOL, an important global initiative to which Shona was elected President in 2013. Shona has been unwavering in her support for the NZES and has been instrumental in running the society for over a decade. Shona is only the second female to be awarded Honorary Life Membership of NZES.

- **Janet Wilmshurst (Landcare Research) – Outstanding Publication on New Zealand Ecology**

for Wilmshurst JM, Moar NT, Wood JR, Bellingham PJ, Findlater AM, Robinson JJ and Stone C 2013. Use of pollen and ancient DNA as conservation baselines for offshore islands in New Zealand. *Conservation Biology* 28(1): 202-212.

- **Rachael Buxton (Otago University) – Best Publication by a New Researcher**

for Buxton, R., Taylor, G., Jones, C. Lyver, P.O., Moller, H. Cree, A. and Towns, D. (2016) Spatio-temporal changes in density and distribution of burrow-nesting seabird colonies after rat eradication. *New Zealand Journal of Ecology* 40(1): 88-99.

Student conference awards

Outstanding Student Conference Paper awards

Ellen Irwin, Victoria University; Josie Galbraith, University of Auckland; Timothy Staples, University of Queensland; Eduardo Burmeister, University of Canterbury; Bridgette Farnsworth, University of Waikato

Outstanding Student Poster awards

Akane Tsujita, Kyoto University; Craig Simpkins, University of Auckland

Student Travel Grant recipients

Vanessa Mander, Nyree Fea, Nirosha Priyadarshani, Katie Collins, Victor Anton, Brandon Goeller, Aishwarya Muralidhar, Kelly Whitau, Eduardo Burmeister

Kauri Seed Scholars

Beth Pearsall-Peters, University of Waikato; Kate Monteath, Lincoln University; Tynan Burkhardt, University of Auckland; Karne Robertson, Bay of Plenty Polytechnic; Sarah Busbridge, Auckland University of Technology; Mikey Watson, Unitec

ERA2016 Conference reports

This year we asked travel award recipients and kauri seed scholars to share some stories of their experience at our annual NZES conference. This years conference was a joint event with the Society for Ecological Restoration Australasia (SERA) held in Hamilton from 19 – 23 November 2016. The name of the conference was Ecology & Restoration, Australasia (ERA2016, #ERA2016conf) and the overall theme was “Restoring resilience across all environments”.

Reports from travel award recipients

Katie Collins and Brandon Goeller, University of Canterbury



Attending the NZES meeting in Hamilton this year provided us with many great opportunities to share our research on agricultural stream restoration. It was a special treat for us to present our PhD research in the CAREX project (Canterbury Waterway Rehabilitation Experiment) in a single session with our supervisors Angus McIntosh and Catherine Febria. We were delighted with the warm reception of both our scientific ideas and the open-source nature of how we disseminate our learnings. Furthermore, our team was inspired by the concluding plenary talk by Ass. Prof. Jacqueline Beggs, who highlighted the challenges of the involvement of women and families in science. We were blessed to include Cat's young family in our University of Canterbury delegation at the conference, and we enjoyed taking breaks from the conference to play with the girls on the playground, with children and adults who are still children at heart. We would like to extend a hearty thanks to the conference organisation team, as well as to the NZES for supplying us with student travel grants.



5 Things ERA2016 Taught a Conference Newbie

Aishwarya (Ash) Muralidhar, University of Otago

An anxious international student, the sole delegate from her university, arriving alone to give her first presentation at her very first conference, ERA2016. If I had nothing to fear but fear itself, then I rightfully dreaded my situation as fear's ultimate manifestation. But I couldn't have chosen a better conference to make my scientific debut at: ERA2016 surprised me with its energy, warmth, and eclectic mix of people and themes. Here are five things I learned as a conference newbie:

1. Going alone isn't so bad...

I often eyed other student lab groups with envy, missing the security and pleasures of familiar company. But going solo freed up time and space to follow my own interests, and motivated me to approach and engage new people. Which is when I realised that, far more than analysing the inflow of new information, it was more rewarding to...

2. Study the people

ERA2016 played host to passionate researchers, institutes, government agencies, entrepreneurs, consultants, non-governmental organisations, and the public. But the people who inspired me the most were independent, self-made ecologists—they personified patience, ageless wisdom, aged experience, and selfless dedication to their chosen lands (or waters). As one of them wisely told me, "People search the world for a place to fall in love with. I made my own".

3. Keynote speakers are...human

At most events, I'd usually regard keynote speakers with a distant reverence, as one would regard a god of their domain. Which is why I still can't explain how I found myself in conversation with the formidable Sir Alan Watson Featherstone or managing friendly chatter with the amiable Laura Molles and the awe-inspiring Margaret "CanopyMeg" Lowman. I resolved, since then, to have no shame in approaching keynote speakers, though I did stop myself from asking Kingsley Dixon if he could rap the "Wildflowers" video he featured in his keynote address.

4. Playing truant can be rewarding

Being buffeted by a flood of information is never easy, and Day 2 made me reluctantly exit the premises for some fresh air. What I conceptualised as a languid stroll around the Claudelands Bush (otherwise known as Jubilee Park) quickly progressed into an engaging personalised eco-tour with Hamilton City Council's Gerard Kelly. Learning of the challenges of managing a rare lowland kahikatea forest patch from someone in the frontlines was an exceptional experience, one I didn't expect from a classic student bunk.

5. Personalise the big picture

Two years ago, I chose to study in New Zealand to gain a drastically new perspective of conservation practices. In my eyes, ERA2016 reflected the almost-utopian synchrony of policy-private-public enterprise that its hosts displayed towards conservation. Its attendees only reinforced those ideals and inspired me to widen my career horizons beyond research into community engagement, consulting, management, economics, and politics. I'm grateful to the NZES for deeming me worthy of their Student Travel Grant and making ERA2016 the place for an international student to create a conservation tapestry of New Zealand and discover her own threads within it.

Vanessa Mander, Lincoln University

*Vanessa Mander has recently completed her Master of Science in Conservation and Ecology at Lincoln University. Her thesis looked at how a translocation affected the behaviour of great spotted kiwi (*Apteryx haastii*) in the Nina Valley (Lewis Pass S.I.). She is currently helping to monitor the tui population on Banks Peninsula in Canterbury for the Banks Peninsula Conservation Trust.*

It's amazing how much you don't know that you don't know. Attending conferences like the ERA 2016 does put into perspective the diverse range of fields' ecologists and conservationists reside in. As a relative newbie to ecology and having only just finished my Masters thesis, I found many talks and posters that have come to shape my vision for what I feel my future holds. This conference has widened my constricted view on what I assumed I was interested in, and I know now that maybe, I'm not bound to pursue only one narrow field.

Highlights include meeting other postgraduates and discussing their approaches to work and how they balance this with having a life (or maybe it has become their life). In addition to this, it is exciting to meet some of the people that have written influential papers within your field; the celebrities for the nerds like me. I absolutely recommend that all post-grads either present a talk or poster at the main conference as I found this has increased my exposure among some unexpected circles, and even created an itch in me that now needs to be scratched.

I was impressed by the passion and enthusiasm of my fellow travel award winners and the buzz created by this hunger is quite catching. I look forward to following their careers as they show such potential. Thank you to the NZES for this amazing opportunity to showcase my work and to my tireless and amazing supervisors, Dr Laura Molles and Dr James Ross. To conclude I would like to share a couple of quotes that seemed applicable to both my career to date and my view of science:

I have no special talent, I'm only passionately curious – Albert Einstein

AND

It seems to me that the natural world is the greatest source of excitement; the greatest source of visual beauty; the greatest source of intellectual interest. It is

the greatest source of so much in life that makes life worth living – David Attenborough.

I'm with Attenborough.



Vanessa in the field

Nyree Fea, Victoria University of Wellington

I have been immersed in the world of ecological research in NZ for twenty years, having worked for various organisations performing back-country fieldwork (and I mean literally immersed...they do not call it rainforest for nothing!) and now studying towards a PhD at Victoria University of Wellington. So, it is a wonderful experience attending a NZES conference and catching up with the people I have worked with, the managers I have worked for, or the eminent scientists whose papers I have gratefully read.

This year's conference had one particular highlight for me. Throughout the years working in NZ ecology I have battled with an ever-present, troubling undercurrent that flows from constantly trapping invasive mammals in field studies. Yes, these mammals are causing terrible damage to our native ecosystems however I always thought we could do better with the way we capture them. At the conference, I spoke with Al Bramley from ZIP (Zero Invasive Predators) and was greatly relieved to hear they are focussed on developing less harmful live-capture techniques for possums at the same time as improving field-effort efficacy.

Ecological restoration is heavily reliant on invasive mammal suppression (and now eradication) throughout Australasia and I believe we should always remind ourselves that this necessarily means killing millions of animals. And we should also remind ourselves that these animals deserve fair treatment and that they are not evil. They are just resilient and adaptable...much like those bipedal invasive mammals! So, thank-you to the NZES for supporting my attendance at

this conference and encouraging this sharing of knowledge and forging of diverse partnerships within the field of ecology.

Nirosha Priyadarshani, Massey University

I'm a PhD researcher working on (automated) passive acoustic monitoring of birds and currently I'm completing up my research successfully (<http://avianz.massey.ac.nz/>). ERA2016 was indeed an exciting event that provided the opportunity to meet the experts in the field and inspired my awareness about future directions of conservation. Particularly, I enjoyed the talks about pest control and species management which convinced me the need of more convenient, less-invasive, cost-effective, and consistent ways of assessing the progress of predator control efforts and species management over time (for large-scale projects) to achieve predator-free NZ by 2050. I believe that passive acoustic monitoring aided with automated screening of recordings can make a positive impact on conservation because not only the birds but also the predators make noise which means we can track them with field recorders.



Reflections from 2016 Kauri Seed scholars

James Ranstead

Having just finished my second year of an undergraduate BSc, majoring in Conservation and Ecology, I am new to the professional world, and upon receiving the Kauri Seed Scholarship, I was hugely grateful, yet also a little confused as to what exactly might occur at this conference.

With presentations from academics and consultants, all the way to community groups and the Department of Conservation, I walked away from the conference with knowledge of what role each party has, and with a better understanding of which avenues future ecologists can take, and how to get there. Bringing together all of these parties is very important and during breaks I noticed there

was a constant hum of talking; networking, knowledge sharing and catching up with old friends. Those in the research sphere are making great gains, as are the grassroots projects carried out by community groups, and so it is great to bring all of these parties together to build relationships and learn from one another.

The talks themselves were also extremely varied, and covered a wide range of specialties, allowing me to better find where my interests lie, and to see where the thought process is heading towards the future. For example, I found myself at many pest mammal talks, and was hugely inspired by the fact that predator free 2050 is being taken seriously, and many of the problems are being addressed.

This conference was a level playing field, where students such as myself could easily approach and chat to professors and those high up in companies (positions students such as ourselves aspire to reach later on in life), an invaluable experience that has so far been hard to find elsewhere.

It is the role of ecologists to study and mitigate the effects of biodiversity degradation, and it is easy to fall into despair over how much negativity that is occurring. This conference gave me a renewed inspiration on how much conservation work is going on in Aotearoa, and how many gains are truly being made. Speaking to the Auwahi forest restoration project team from Hawaii made me realise how lucky we are in New Zealand, and that the battles we face are made far easier by a society with a higher value of conservation in comparison.

Four straight days (including the Waikato University student day) of serious ecology was an enriching experience, though I was glad to see at the dinner that even professionals can let their hair down for a while and have a good time that band was fantastic!

Finally, I would like to thank the Kauri Seed Scholar decision makers, the team of scholars I had the pleasure of meeting and getting to know, the vast array of professionals who took the time and effort to talk with me and the other scholars, and the incredible Lincoln University ecology staff who put in the extra effort for us students.

Heres to the next conference in the Hunter Valley!

Sarah Busbridge

Thanks to the Kauri Seeds Scholar Programme I had the chance to attend ERA 2016. It was my first conference so I wasn't too sure what to expect, but starting off with student day at the University of Waikato was a great way to meet other students and get some tips on how to make the most of it.

I had an amazing time over the four days. The diverse range of presentations has definitely broadened my ecological knowledge. It was so inspiring to hear about the numerous projects being undertaken both in New Zealand and

elsewhere, and some of the positive results – a reminder of why I wanted to study conservation biology in the first place. I found the urban symposium especially interesting – looking at how urban environments affect native wildlife, and how we can apply ecological knowledge to areas outside the conservation estate to attract more native biodiversity and provide valuable ecosystem services. Myself and a few others even managed to stumble upon a free tour of the remnant kahikatea forest nearby (Jubilee Park) from a local arborist involved in its restoration.

I think attending as an undergraduate student has been really beneficial, especially talking to post-graduate students about their experiences and getting some helpful suggestions to keep in mind during my future studies.

Tynan Burkhardt

I was fortunate enough to receive an opportunity to attend the 2016 ERA conference in Hamilton, thanks to the Kauri Seed Scholar programme. As it was my first conference, I was both nervous and excited to meet such a number of senior scientists, students, and conservationists from around the globe. I found that although I myself am very junior, in terms of academic qualification, I shared common values with most other scientists, such as kaitiakitanga and a passion for the intricacies of the natural world. This made it easy to relate and talk to people, and I am glad to say I made new friends and acquaintances as a consequence. I felt spoilt for choice in that there were so many interesting looking talks scheduled, and perhaps the most difficult part of the conference was deciding which ones I would most like to attend. Going into the conference, I was looking for an area of ecology in which I could see myself working on in my upcoming postgraduate studies. I enjoyed all of the talks in the weed ecology session, in particular, Jane McAlpine's talk on woody weeds and which ones may have more persistent effects on native ecosystems. Having done a second major in statistics, I was also inspired by Clayson Howell's talk on modelling beech seed-fall, as it provided me with a very real example of how statistics can be applied to environmental management. Overall, the conference made me feel inspired, especially by the keynote speakers Margaret Lowman, Alan Featherstone and Saul Cunningham, and helped me reassure my passion for ecology and its' importance to society.

Beth Pearsall

Women in science at the top of the trees

The eighth continent

Ethiopia with no trees

Save for those protected by god.

Trees for life.

All you have to do is follow your passion
You will know where the frost pockets are
And where to pick mushrooms in every season.
The bees are not all dying.
Diversify the margins
Novel ecosystems are where it's at.
Let's work together.
Kaitiakitanga
Te reo Maori.
Do you know your whakapapa?
Cast your nets wide
Experiment.
And remember
Love has a tangible effect.

Past Kauri Seed Scholars

The Kauri Seed Scholar programme was established in 2010 to give promising undergraduate students the opportunity to attend the annual conference, network and learn more about ecological research happening across the country. A total of 48 scholarships have been awarded across the six years of the scheme. We are tracking down past recipients to find out where they are now. If you were a scholar, please get in touch with NZES Councillor Tim Curran (Timothy.Curran@lincoln.ac.nz) and let us know how you are doing.

An update from Roz Kennedy...

I won a KS Scholarship when I was in Year 2 of my Applied Science degree at Unitec in Auckland, so I could attend the Christchurch conference in 2015.

It was an amazing experience - the breadth and depth of speakers got me thinking about so many things I could diversify into, once I finished my degree and entered the workforce. As the days went by, I became keenly aware of the quantity of students who would also be needing jobs, and the small number of jobs that were actually available. I wandered the poster session on my first evening, chatting to presenters from nervous students right through to professors. I saw amusing, personable presentations, and in-depth presentations on scientific research which took place over years. These people were all so passionate!

I came home incredibly inspired, and I was dead keen to go to more conferences and pick people's brains, just to figure out what I wanted to do. I was now on the path to try and be a frontrunner for one of the precious jobs available to students upon graduation. This year I applied for and won a student scholarship to attend the Environmental Defense Society's Wild Places conferences. I also won a Tressa Thomas study grant for older women students aiming for their degree under difficult circumstances. I knew I needed a point of difference plus a crucial network with teaching staff, so I trained to take tutorial classes for L5 Biology students and squashed them in between classes, part-time work and co-parenting. The feedback was so positive on my classes that I was then asked to be an evening lecturer's assistant for a Level 3 Biology paper. At the very end of this year, I was approached to do a presentation to over 50 Biology teachers at Unitec's Biology in Context day. I was so nervous - my first big presentation and it was in The Big Lecture Theatre, but it went off without a hitch, and a few of the teachers came up to talk to me about my research afterwards - I couldn't believe it! My stable of lecturers taking an interest and giving me multiple opportunities to increase my communications skillset had started to bear drupes (botanical pun there).

Where I am now: it was at the EDS Conference where I had felt a bit lonely and initially knew no one, that I began chatting to a gentleman who told me I seemed full of energy and a "people person". The word "entrepreneur" came up and he asked if I had ever considered working for myself. Suddenly I realised *it was entirely possible* based on what I had heard from half a dozen speakers at the conference. I had skills and talents from 20 years in the workforce, I had a passion for ecology and New Zealand, and I could now combine them and potentially look at starting my own business. The seed had been planted. Now in my final 6 months of my degree majoring in Biodiversity, I have the bones of a business idea and have been building a network of contacts to assist me with putting a formal business plan together. It may take a couple of years, but everyone who knows me soon figures out that I am a pretty determined individual...

News from NZES council

At the AGM in Hamilton, Cate Macinnis-Ng was elected vice president and Angela Simpson was appointed newsletter editor. Other roles remain unchanged.

News from across the ditch

We at the New Zealand Ecological Society were deeply saddened to hear of the sudden death of Austral Ecology Editor, Professor Michael Bull. Sending our condolences to his family, friends, and colleagues.

Save the date! In 2017, we will be having the 6th joint meeting of the New Zealand and Australian Ecological Societies in the Hunter Valley, New South Wales. Conference details <http://esa2017.org.au/> 26 November – 1 December 2017.

Noticeboard and upcoming conferences

The 12th International Congress of Ecology (INTECOL 2017 Beijing)

will be held in Beijing, China, August 21-25, 2017. As the host of the congress, the Ecological Society of China (ESC) warmly welcomes ecologists, environmental policy makers, and practitioners to join this Congress from all over the globe.

The theme of the congress is "Ecology and Civilization in a changing World," which will focus on harmonious and sustainable development among people, nature, and society in the context of global change.

Thematic topics of the congress:

- Ecosystem services and management
- Global climate change and ecosystem adaptation
- Urbanization and regional environmental change
- Biogeochemical cycling and ecosystem health
- Ecological degradation and ecosystem restoration
- Environmental stress and biodiversity conservation
- Industrial ecology and green economy
- Molecular ecology and evolution
- Landscape pattern, process and sustainability
- Ecohydrology and watershed management
- Paleoecology, ecological dynamics and environmental assessment
- Agroecology, sustainable agriculture and rural development

For more information about the 12th INTECOL International Congress of Ecology, please visit the website: www.intecol2017.org.

FRESHWATER MANAGEMENT & INFRASTRUCTURE FORUM 2017

21 & 22 February, 2017 | Te Papa Tongarewa Wellington

Managing waterways for the long term benefit of New Zealand's communities and industry

The Freshwater Management and Infrastructure Forum facilitates all the right discussions around water management; including the different plans and techniques, the difficult aspects and future directions.

Experts will be presenting from law firms Buddle Findlay and Kensington Swan, The Land and Water Forum, key councils and more.

Key agenda topics include:

- Empowering your decision making with water science
- The direction of water management – a view from the Land and Water Forum
- User experiences and plans for freshwater- hear from the agriculture, energy and local government sector
- Collaboration between iwi and local government
- Political panel on how governmental representatives are working towards effective water management
- An update on freshwater case law
- Improving results from irrigation
- Efficient water storage infrastructure
- The funders view of infrastructure funding

Separately bookable workshops include:

- Water Science for non-technical professionals: if you are a non-technical professional wanting knowledge on water science and decision making with scientific evidence. Facilitated by Dr Clint Rissmann, Director, Land and Water Sciences Ltd
- A guide to the freshwater consenting process: A practical guide to freshwater consenting. Facilitator Matt Conway is Partner at Simpson Grierson and specialises in resource management and environmental law.

See conferenz.co.nz/freshwater for the agenda. Super Saver closes 9 December.

Seeking information about flowering patterns in northern and southern rātā

We are looking for photos, records, memories or written notes that can help us reconstruct the summers when southern and northern rātā flowered heavily.

Northern and southern rātā are two of our most spectacular flowering tree species. In some years, the flowering is much more intense than others but, surprisingly, we don't know what causes these intermittent bumper years (mast years)?

A mast year or masting event is when most individuals of a species flower intensely at the same time, then hardly flower at all in other years. The intense, brilliant red of rātā flowers ensures its masting is distinctive and jaw-droppingly beautiful.

In other mast flowering trees, such as beech species, a mast year is generally preceded by a specific temperature pattern across seasons and years. It might be a particularly warm summer the year before, or

a big difference in temperature between the two previous years. Researchers in New Zealand and overseas debate whether the plants respond directly to this or whether the effect is more indirect – the temperatures might cause a spike in resources (e.g. through activating soil microbes) that enable the plants to flower. The answer is probably a mixture of several factors. Identifying how those factors work together could help us predict mast flowering for many species.

We have good data on mast seeding in beeches and podocarps, and flowering data from several species of snow tussock, largely due to the predator irruptions that follow such events. While we have almost no information on northern or southern rātā, we do know that southern rātā masting is often out of phase with



Photo: southern rātā, Otira, January 2001, Peter Bellingham.

other masting species. Moreover, some individuals flower in 'off' years, even right through winter.

Why are we interested in rātā?

Flowering is important for two reasons:

First, rātā is a critical source of nectar for many of our forest birds. Kākā, in particular, feed on the flowers and an abundance of nectar may increase their chances of breeding successfully. In late winter and early spring, kākā also peel back the bark on southern rātā trees to feed on the sap. In the months preceding flowering, there may be something in the sap that prompts kākā to breed. If this is so and we were able to predict rātā flowering, we could plan predator control operations around flowering years to protect the breeding birds.

Second, rātā makes wonderful honey. If we could predict rātā flowering from climate data, beekeepers could plan ahead and take advantage of a mast year.

This year we will start measuring southern rātā flowering in Westland and Canterbury, but it may take many years of data to detect a pattern. However, old tramping and fieldwork photographs and historical accounts could help us piece together a flowering chronology in less time. We need lots of photographs and records of flowering. And we need your help.

We ask EcolSoc members to share their records with us. We need photographs, notebook records and observations.

Photographs





We're interested in all photos of southern or northern rātā forest from anywhere in New Zealand as long as you can provide a date and a location. Dates and places can be a bit rough, e.g. Summer 1987, somewhere near Nelson.

We need images where rātā *isn't* flowering as much as images of it flowering because the 'off' years are a vital part of our analysis. Although mast flowering usually happens over summer, we are interested in photos from throughout the year as this will allow us to firmly pinpoint the flowering window.

The most useful photographs are those where we can see lots of trees – close ups of single flowers or trees are still helpful as corroborating evidence, but we are most interested in where there are lots of trees in flower all at the same time.

Sometimes people take a photo of a single tree because it was the only one flowering, and this sort of information is often recollected when looking at your photos. Notes like these from memory can be useful.

The examples below illustrate what we're looking for and what we can say with each type of image.

	Definitely mast flowering	<p>We can see lots of southern rātā trees, and we can confidently say that many of them are flowering heavily. Perfect.</p> <p>Photo: Southern rātā, Otira Valley, Feb 2010. Rowan Buxton.</p>
	Definitely not mast flowering	<p>We can see lots of trees and we can confidently say that none of them are flowering intensely. Perfect.</p> <p>Photo: Northern rātā, Kohaihai. Dec 2007. Janet Wilmshurst.</p>
	A few trees are definitely flowering intensely	<p>We can see quite a few trees, and we can see that a few are flowering intensely.</p> <p>A few more images from that year would be ideal to confirm that flowering was widespread rather than localised to these few trees.</p> <p>Photo: Southern rātā, Otira, Summer 1990/1991. Rowan Buxton.</p>
	At least one tree is flowering intensely	<p>We can see part of a tree is flowering heavily. We can't see if other trees are also flowering.</p> <p>More images would be needed to confirm that flowering was widespread rather than localised to this tree.</p> <p>Photo: Southern rātā, Franz Josef, Jan 2015. Rowan Buxton.</p>

Notes and Observations

Another source of information is written notes or records. Do you have any records of northern or southern rātā flowering that you would be willing to share with us? These might be botanical outings, trip reports for tramping clubs, or any number of others that can be pinpointed to a year and a place. We've found many examples in Botanical Society newsletters but there will be many other, unpublished records that we would love to hear about.

How can you help?

You can email us (Sarah Richardson: RichardsonS@LandcareResearch.co.nz or Rowan Buxton: BuxtonR@LandcareResearch.co.nz), or ring us (03 321 9788 for Sarah and 03 321 9627 for Rowan) or send us material in the post (Landcare Research, PO Box 69040, Lincoln 7640). We'll scan and return all originals if you ask us to and you provide a return address.

NatureWatch NZ online

Alternatively, you could upload your observations to Nature Watch: <http://naturewatch.org.nz/>. Nature Watch is a web-based platform for sharing biodiversity observations. It's very flexible so you can upload an observation with or without photographs, add a location and date, and annotate your observation with notes. Observations can be viewed by anybody. They contribute to large scale plant distribution databases such as GBIF (<http://www.gbif.org/>) and they are permanently stored, so they make an enduring contribution to our understanding of New Zealand's flora. To give you some idea, here's an example of a southern rātā photo that we loaded recently: <http://naturewatch.org.nz/observations/3615952>

What are we going to do with the information?

We will score flowering for each photo or observation and store these in a data file. When we've finished our analysis, we will upload this file to a data archive called Datastore so that others can use it in the future. We will acknowledge all contributions.

Do you have ideas about what causes masting in rātā?

Peter Wardle suggested that southern rātā flowers heavily the year after a dry summer, particularly when there's an absence of drought or unseasonal cold in the early part of the summer in the flowering year. We can test this suggestion but we'd be keen to hear of other patterns that you've observed that we could test. For example, we are emerging from a very mild winter (no complaints) and already people are suggesting that warm winters will promote widespread flowering by rātā. If you have observed a pattern between weather and rātā flowering, we will test it alongside the two ideas described above.

Data analysis

We will analyse the data to try and determine whether there's a climate signal that precedes flowering. If we are successful, we will try to publish the work, and of course, we'll be back here with the results.

Thank you for your help.

Sarah Richardson, Rowan Buxton

Landcare Research, Lincoln

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Office Holders of the New Zealand Ecological Society 2016/2017

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

Secretariat (society office – Susan Sheppard)

NZ Ecological Society Secretariat
PO Box 5075
Papanui
CHRISTCHURCH 8542
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

Clayson Howell
Department of Conservation
PO Box 10-420
WELLINGTON

P: 64 4 471 3113
M: 64 21 973 181
E: President@newzealandecology.org

Immediate Past President

Chris Bycroft
Wildland Consultants
PO Box 7137
Te Ngae
ROTORUA 3042

E: Chris.Bycroft@wildlands.co.nz

Vice President

Cate Macinnis-Ng
School of Biological Sciences
University of Auckland
Private Bag 92019
AUCKLAND

P: 64 9 923 2343
E: c.macinnis-ng@auckland.ac.nz
T: @LoraxCate

Secretary

Sandra Anderson
The University of Auckland
Private Bag 92019
AUCKLAND

P: 64 9 373 7999
E: sh.anderson@auckland.ac.nz

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Chris Bycroft
Wildland Consultants
PO Box 7137
Te Ngae
ROTORUA 3042

E: Chris.Bycroft@wildlands.co.nz

Councillors (4)

Tim Curran
PO Box 85084
Lincoln University
Lincoln 7647
Canterbury, New Zealand
E: Timothy.Curran@lincoln.ac.nz
T: @TimCurran8

Fleur Maseyk
The Catalyst Group
PO Box 362
PALMERSTON NORTH 4440
P: 06 358 6300
E: fleur@thecatalystgroup.co.nz

Jamie Wood

Landcare Research
PO Box 69040
LINCOLN 7640

P: 64 3 321 9653
E: woodj@landcareresearch.co.nz
T: @larusnz

Debra Wotton

Moa's Ark Research
14 Tui Road
Raumati Beach
PARAPARAUMU 5032

E: debra.wotton@moasark.co.nz

Journal scientific editors

George Perry
School of Environment
University of Auckland
Private Bag 92019
AUCKLAND
E: Editor@newzealandecology.org

Newsletter editor

Angela Simpson
Wildland Consultants
PO Box 7137
Te Ngae
ROTORUA 3042

E: Newsletter@newzealandecology.org

Webmaster

E: Webmaster@newzealandecology.org