

NEW ZEALAND ECOLOGICAL SOCIETY

Newsletter

No. 165, October 2018

Published by the New Zealand Ecological Society (Inc.),
P.O. Box 5075, Papanui, Christchurch 8542

Inside

Illustrate Ecology	2
Ecotones: New ecological research	2
News from NZES council	5
NZES 2018 Conference update	5
Notice of 2018 Annual General Meeting for NZ Ecological Society.....	5
Summary of Draft Strategic Aims of NZ Ecological Society... ..	6
Final print edition of New Zealand Journal of Ecology... ..	6
News from across the ditch	7
Ecological Impact Assessment Guidelines for New Zealand 2nd Edition.....	7
Publications in current issue of NZ Journal of Ecology... ..	9
Other recent publications on New Zealand ecology	11
Noticeboard and upcoming conferences	16

From the Editor

Kia ora koutou

Welcome to the October 2018 newsletter. We are all looking forward to the upcoming NZ Ecological Society conference in Wellington in November. In this issue of the newsletter, we have included an agenda for the AGM which will be held during the conference. We hope to see you there and look forward to hearing your ideas and suggestions. Thank you to all the contributors to this newsletter. I hope you enjoy reading the newsletter.

Ngā mihi
Angela Simpson

Illustrate Ecology



Photo by: Daria Erastova

Daria Erastova is a PhD student at the University of Auckland. Her research project is about how sugar-water feeding might affect behaviour and welfare of visiting birds. The study will be held at private volunteer gardens in Auckland and Dunedin urban areas with a focus on model nectar-eating species (such as tui, bellbird, silvereye). To participate in the study or learn more about it, please visit <https://sugarfeederproject.wixsite.com/sugarfeeder>. To fill in the survey about sugar-water feeding practices in New Zealand, please visit <https://sugarfeederproject.wixsite.com/sugarfeeder/survey>

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). The list of other publications on New Zealand ecology can be found towards the end of the newsletter.

1. *Where have all the godwits gone?*

The East Asian-Australasian flyway represents one of the great migratory routes in the world with shorebirds migrating annually between breeding sites in the Arctic and non-breeding sites in Asia and Australasia. Key staging sites occur in the Yellow Sea region on movement north, prior to breeding. In New Zealand, the most common migrant using this route is the bar-tailed godwit/kūaka *Limosa lapponica*, which can be found in most harbours and

estuaries in summer (e.g., <https://www.miranda-shorebird.org.nz/>). Of great concern for this fascinating species is that repeated censuses indicate annual population declines of around 2%. Understanding the drivers of such change is difficult because causative factors may occur at any of several sites along the migratory route. Murray et al. (2018) have recently analysed the contributions of possible environmental and anthropogenic factors to this decline along the full migratory pathway for two subspecies of kōaka, including the *baueri* subspecies that predominantly occurs in New Zealand. They conclude that extensive loss of tidal flat habitats at the migratory staging sites around the Yellow Sea probably plays a central role in the long-term declines, with less effect attributable to climatic drivers on variation in abundance. As difficult as implementation may be, actions that reduce the impacts of threats in the Yellow Sea on shorebird populations should be a conservation priority.

Murray NJ, Marra PP, Fuller RA, Clemens RS, Dhanjal-Adams K, Gosbell KB, Hassell CJ, Iwamura T, Melville D, Minton CDT, Riegen AC, Rogers DI, Woehler EJ, Studds CE 2018. The large-scale drivers of population declines in a long-distance migratory shorebird. *Ecography* 41: 867-876.

2. *Benefits of rat-free cities in New Zealand*

Rats (mostly Norway and ship rats) have long been common commensal species in human cities including in New Zealand, where they are generally regarded as pests because of their impacts on the environment, buildings, and human health. The advent of plans for a predator-free New Zealand, with rats as major targets, has unexpectedly resonated within urban communities, with several projects underway in urban centres as initiation foci from which incremental advances in pest-free status could be made (e.g., www.pfw.org.nz www.songbird.org.nz). Although few would question that eradicating rats from New Zealand cities would be beneficial, ecology teaches us that such broad assumptions can be misleading. Therefore, the analysis by Wilson et al. (2018) of likely benefits and costs of such outcomes is highly useful. They suggest that benefits of rat eradication in cities would include reduced risks of transmitting existing and future potential zoonotic diseases to humans, reduced risk to food supplies, reduced damage to buildings, reduced risk of fires associated with rat damage, and increased psychological benefits of increased wildlife. Costs of such actions, however, might include those associated with increased mouse populations (if these were not also targeted), an increase in zoonotic diseases spread by birds, e.g. salmonellosis spread by sparrows, and an increase in damage to trees by native birds, e.g. kākā. The greatest value, however, of this study, is probably in pointing out the uncertainties we currently have with the environmental, social, and economic values of such initiatives, and the potential for ongoing research needed to clarify these uncertainties.

Wilson N, McIntyre M, Blaschke P, Muellner P, Mansoor OD, Baker MG 2018. Potential public health benefits from eradicating rats in New Zealand cities and a tentative research agenda. *Journal of the Royal Society of New Zealand* 48: 280-290.

3. *The value of leftovers: Pictures of New Zealand's past from bone fragments*

Bones within fossil deposits, e.g. in caves, and archaeological middens have provided us with enthralling insights into New Zealand's past fauna prior to and shortly after human arrival. Analyses of bones present, however, have previously set aside fragments which can't be readily attributed to particular taxa based on morphology. Seersholm et al. (2018) have now taken these leftovers from museum collections and subjected them to Bulk Bone Metabarcoding to examine the ancient DNA present. They looked at >5000 fragments from 38 subfossil deposits; about half of which were palaeontological and half archaeological midden deposits. Their results identified the presence of at least 110 different animal species and provides important new evidence of past distributions, abundances and, in the case of middens, data on prehistoric use. They detected new species previously unidentified in early

Māori diets, e.g. *Gnathopis* sp. a marine eel, and show that the diversity of whales and seals used by early Māori was much wider than previously recognised. At least 54 different bird species were represented in the samples, including 13 extinct species. Genetic diversity within particular species was also studied; kakapo DNA was found at seven of the sites spread among ten different haplotypes. Only two of these haplotypes are known in modern and historic populations. More widespread distribution of the leiopelmatid frogs than previously thought was also indicated. This captivating study is another demonstration of my mother's golden rule; never throw out the leftovers.

Seersholm FV, Cole TL, Grealy A, Rawlence NJ, Greig K, Knapp M, Stat M, Hansen AJ, Easton LJ, Shepherd L, Tennyson AJD, Scofield RP, Walter R, Bunce M 2018. Subsistence practices, past biodiversity, and anthropogenic impacts revealed by New Zealand-wide ancient DNA survey. *PNAS* 115: 7771-7776.

4. *Step changes in urban forests associated with property redevelopment*

Urban forests are known to provide many environmental, economic and social benefits to residents (e.g., <https://www.portlandoregon.gov/bes/68201>), but nevertheless urban forest cover is generally declining. As cities are agglomerations of small, numerous land ownerships, such declines represent myriad landowner decisions focussed on the costs of trees to those individuals rather than their individual or social benefits. Guo et al. (2018) have studied recent urban tree removal in Christchurch and linked it strongly to short periods of property redevelopment. Much of this recent redevelopment has been occurring following the 2011 Christchurch earthquake. Guo et al. (2018) followed 450 residential properties over five years; those that were redeveloped (321 properties) had 44% of their initial trees removed whereas those that were not redeveloped (129 properties) lost only 14% of their initial trees. As well, trees were more likely to be removed if they were close to buildings or driveways, and on properties of smaller area. Understanding that tree removal often occurs during the relatively short time frames of property redevelopment suggests that policies to conserve urban forests could focus on this phase to increase protection of the urban forest, or at least ensure that replanting of trees occurs following such redevelopments.

Guo T, Morgenroth J, Conway T 2018. Redeveloping the urban forest: The effect of redevelopment and property-scale variables on tree removal and retention. *Urban Forestry and Urban Greening* 35: 192-201.

5. *Seagrass recolonization amplifies biodiversity and ecosystem services*

Seagrass species (*Zostera* spp.) are recognised worldwide as foundation species of near-shore ecosystems, with extensive seagrass beds stabilising coastal sediments, controlling nutrient and carbon cycling, and creating complex habitats for associated biodiversity. Despite this importance, seagrass beds have been in decline worldwide (110 km² yr⁻¹ lost globally since 1980) and in New Zealand. In the Waitemata Harbour, seagrass meadows declined to around 60 ha in the 1990s but have more recently expanded, a welcome but unexplained change. Lundquist et al. (2018) have taken advantage of such a recolonization event in the Waitemata to compare biodiversity and ecosystem changes before and after seagrass. Colonization by seagrass was associated with an increase from 32 to 46 benthic animal species per sediment core, and an almost five-fold increase in individuals per core. As well, sediment, mud, and organic content of the sediments were higher with seagrass than without, reflecting the function of seagrass in stabilisation. This study reinforces the importance of seagrass in amplifying and supporting marine biodiversity in our harbours, and it is uplifting to hear of such seemingly natural recolonization occurring. A greater understanding of what factors have led to this recolonization would be particularly useful.

Lundquist CJ, Jones TC, Parkes SM, Bulmer RH 2018. Changes in benthic community structure and sediment characteristics after natural recolonisation of the seagrass *Zostera muelleri*. Scientific Reports 8 (1): art. no. 13250.

News from NZES council

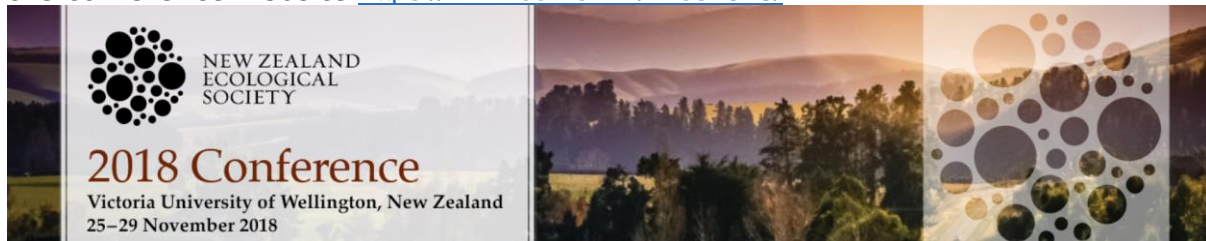
Kia ora koutou!

Plans are coming together for our annual conference in Wellington. We hope to see many of you there. I'll be sharing news from council in a presentation on Tuesday morning but if you can't make it, slides will be available on our website after the event.

Ngā mihi nui,
Cate Macinnis-Ng (President)

NZES 2018 Conference update

The 2018 conference will take place in Wellington from 26th to 29th November, at Victoria University of Wellington. Sunday 25th will be a student day. Conference talks will occur from Monday to Wednesday, and on Thursday 29th there will be a selection of field trips to local and regional sites of ecological interest. We anticipate symposia on urban ecology, animal behaviour, and cultural perspectives. Key speakers include Graeme Elliott, Richelle Kahui-McConnell, and Dr Andrea Byrom. The conference programme is now available online. Early bird registrations close on 26 October. For more information visit the conference website <https://www.confer.nz/nzes2018/>



Notice of 2018 Annual General Meeting for NZ Ecological Society

The New Zealand Ecological Society will hold its 65th AGM on Tuesday 27th November at 12 pm at Victoria University of Wellington (Room TBA). Please send apologies to NZES Secretary Kiri Wallace kiri.wallace@waikato.ac.nz

Agenda

- 1) Welcome and apologies
- 2) President's report
- 3) Election of office bearers

All councillors (Martin Bader, Bruce Burns, Simon Moore, Rachel Nepia) have just completed the first of a two-year term so there no council positions vacant

- 4) Election of one Kauri Fund Trustee
- 5) Treasurer's report

- 6) Membership report
- 7) Journal report
- 8) Webmaster report
- 9) Newsletter report
- 10) Tabling of Summary of Strategic Aims (see below)
- 11) Any other business

Summary of Draft Strategic Aims of NZ Ecological Society

Membership benefits

- 1: Identify and improve benefits of membership
- 2: Support long-term ecological research

Engagement and Communication

- 3: Maintain regular and relevant communication with members
- 4: Encourage the participation of undergraduate and school students in ecology
- 5: Promote ecological science
- 6: Improve policy engagement to enhance uptake & application of ecological principles
- 7: Engage with other relevant societies, networks and ecologists

Governance

- 8: Capture the history of the Society including critical moments and key players
- 9: Continue to develop and maintain good financial governance of the Society
- 10: Continue to maintain and improve running of Council
- 11: Maintain external awareness of the Society
- 12: Maintain and grow the membership of the Society
- 13: Maintain a searchable and informative membership database

Sustainability

- 14: Exemplify principles of sustainability

Equity and Diversity

- 15: Promote and support equity and diversity within the Society

Final print edition of New Zealand Journal of Ecology

After Volume 42.2, there will no longer be a hard copy of the New Zealand Journal of Ecology. Reasons for the change to an online-only publication are provided in a foreword to Volume 42.2 ([Foreword reproduced below to the final print edition of New Zealand Journal of Ecology](#)) and reproduced below:

“This issue of the *New Zealand Journal of Ecology* is the last to appear in print and online. From the next issue - the first of 2019, 43 (1) - the journal will be moving to online-only publication. The face of scientific publication is changing rapidly, and many journals in publishing houses big and small are moving to end

print production. The society council strongly believe that the journal plays a crucial role in publishing high-quality research focused on New Zealand's ecology and ecosystems. Since 1953 the *Proceedings of the New Zealand Ecological Society* and then the *New Zealand Journal of Ecology* have published 24 and 42 volumes, respectively, comprising well over 1000 scientific contributions. However, while The *NZ Journal of Ecology* remains (proudly) self-published, the costs associated with the production of the journal are a significant component of the society's budget. Thus, after careful consideration the society's Council has made the decision to move to online-only publication, reflecting both the costs associated with print production and the way we believe most readers access the journal. Although the journal will no longer be printed as hard-copy there will be no other changes, and we look forward to continuing to publish innovative and interesting ecological science in the years to come."

The membership page of the website no longer has a link to an option of receiving a hard copy of the journal. If you have already clicked on the link and paid for the Journal, please email info@newzealandecology.org if you want a refund (please provide your bank account number) or if you would like us to attribute the \$10 to the Kauri Fund or Nigel Barlow Fund. We are very sorry for the inconvenience.

News from across the ditch

The Ecological Society of Australia November bulletin included articles about using acoustic telemetry in fisheries, crowdfunding and micro-patronage, and Australia's first national frog count. You can read more online here: https://www.ecolsoc.org.au/files/bulletins/esabulletin_sept2018_0.pdf

"Ecological Impact Assessment. EIANZ Guidelines for use in New Zealand: Terrestrial and freshwater ecosystems" 2nd Edition.

Dr Judith Roper-Lindsay

The 2nd Edition of these Guidelines is now available online:

<https://www.eianz.org/resources/publications/2018---ecological-impact-assessment-guidelines-for-new-zealand-2nd-edition>

This update incorporates feedback and comments on the March 2015 edition received from a range of individuals, professional bodies and interest groups (including some members of NZES).

The comments led to a review of thinking on some matters. In some places the text is expanded to ensure that meanings are clear and methods well-explained. Areas "most commented-on" were:

- the process of placing a value on species, vegetation/habitats/ecosystems and/or sites for Impact Assessment purposes;
- the potential for over-reliance on the matrix in decision-making; and
- the need to emphasise that these Guidelines can be used by all professional ecologists and students working with impact assessment,

In the 2nd Edition, substantial changes have been made in some areas to:

- emphasise the focus of these Guidelines on RMA section 88/ Schedule 4 (in contrast to section 6(c)), leading to modification of Chapter 5 in particular;
- discuss the place of mana whenua values in ecological impact assessment;
- stress ecological description and analysis as a basis for impact assessment and management; and
- review and simplify the use of matrices as summary tables for ecological description and assessment.

The Glossary has been expanded considerably although the list remains limited to those *ecological* terms used regularly in EcIA. The section on Professional Practice is retained to address some of the ethical and practice issues that may be faced by ecologists undertaking or reviewing Ecological Impact Assessment. The layout, style and format of the original are also retained so that comparison between the two versions is possible.

The 2nd Edition reiterates that, as well as assisting those carrying out EcIA and preparing EcIA reports, the Guidelines are intended to assist ecologists and planners processing applications in councils to check if all expected information is generally present and treated in an appropriate way.

EIANZ hopes to produce a similar set of Guidelines for use in the Coastal-Marine ecosystems in the near future and Sharon de Luca is looking for assistance with these from ecologists. Anyone interested in contributing to can contact Sharon: sharon.deluca@boffamiskell.co.nz

Any comments or questions on the current Guidelines should be sent to newzealand@eianz.org

Note from NZES council: This information on the EIANZ guidelines is presented as information to our membership. At this stage the New Zealand Ecological Society has not been formally involved in the production of these guidelines and has not formally reviewed them or endorsed them. A process for reviewing the 2nd edition of these guidelines and the potential to provide feedback to both the authors and our membership will be discussed further by the NZES council.

The Department of Conservation has also recently published guidelines for assessing significant ecological values (Davis *et al.*, 2016). These are primarily aimed at DOC staff but are equally able to be used by other practitioners and stakeholders. The weblink is <https://www.doc.govt.nz/documents/science-and-technical/sfc327entire.pdf> As with the EIANZ guidelines these have not been formally reviewed or endorsed by NZES but drafts have been reviewed by members.

Publications in current issue of NZ Journal of Ecology (Volume 42, Issue 2)

Editorial

[Foreword to the final print edition of New Zealand Journal of Ecology](#)

George Perry

Review Article

[New Zealand forest dynamics: a review of past and present vegetation responses to disturbance, and development of conceptual forest models](#)

Sarah V. Wyse, Janet M. Wilmshurst, Bruce R. Burns, George L.W. Perry

[Population viability analyses in New Zealand: a review](#)

Craig E. Simpkins, Finnbar Lee, Breanna F. Powers, Sandra Anderson, Quinn Aseña, James M.R. Brock, George L.W. Perry

Research Article

[Shared visions: can community conservation projects' outcomes inform on their likely contributions to national biodiversity goals?](#)

Chris Jones, Nick Kirk

[Assessing the population trend and threats to New Zealand's Fiordland crested penguin using counting and demographic modelling approaches](#)

Helen Otley, Hannah Edmonds, Jo Hiscock, Glen Newton, Jane Tansell, Paul van Klink, Rebecca Wilson, Ian Westbrooke

[Clearing islands as refugia for black-fronted tern \(*Chlidonias albostratus*\) breeding colonies in braided rivers](#)

Ann-Kathrin V. Schlesselmann, Colin F.J. O'Donnell, Joanne M. Monks, Bruce C. Robertson

[Changes in density of hihi \(*Notiomystis cincta*\), tīeke \(*Philesturnus rufusater*\) and tuī \(*Prosthemadera novaeseelandiae*\) on Little Barrier Island \(Te Hauturu-o-Toi\), Hauraki Gulf, Auckland, 2005–2013](#)

Robin Toy, Terry C. Greene, Brenda S. Greene, Alicia Warren, Richard Griffiths

[Effects of the aerial application of 1080 to control pest mammals on kea reproductive success](#)

Joshua R Kemp, Corey C Mosen, Graeme P Elliott, Christine M Hunter

[The effects of single aerial 1080 possum-control operations on common forest birds in the South Island, New Zealand](#)

Josh Van Vianen, Olivia R. Burge, Archie T. MacFarlane, Dave Kelly

[Calibrating brushtail possum \(*Trichosurus vulpecula*\) occupancy and abundance index estimates from leg-hold traps, wax tags and chew cards in the Department of Conservation's Biodiversity and Monitoring Reporting System](#)

David M. Forsyth, Mike Perry, Paul Moloney, Meredith McKay, Andrew M. Gormley, Bruce Warburton, Peter Sweetapple, Robyn Dewhurst

[Population dynamics of house mice without mammalian predators and competitors](#)

Deborah J. Wilson, John G. Innes, Neil B. Fitzgerald, Scott Bartlam, Corinne Watts, Mark C. Smale

[Can a reduced rate of herbicide benefit native plants and control ground cover weeds?](#)

Kate G. McAlpine, Shona L. Lamoureaux, Susan M. Timmins, Debra M. Wotton

[Experimental translocations of the threatened New Zealand plants *Carex inopinata* Cook \(Cyperaceae\) and *Simplicia laxa* Kirk \(Poaceae\)](#)

Kelvin Lloyd, Valerie Fay, Luke Easton

[Post-fire recovery of a dryland forest remnant in the Wither Hills, Marlborough](#)

Sarah J. Richardson, Susan King, Alan B. Rose, Matt S. McGlone, Robert J. Holdaway

[Biome transition in a changing world: from indigenous grasslands to shrub-dominated communities](#)

Pascale Ropars, Élisabeth Comeau, William G. Lee, Stéphane Boudreau

[Two new Holocene vegetation records from the margins of the Canterbury Plains, South Island, New Zealand](#)

Jamie R. Wood, Janet M. Wilmshurst, Matthew S. McGlone

[Patterns of range size in New Zealand ferns and lycophytes](#)

Catherine F. Mountier, Bradley S. Case, Leon Perrie, Patrick Brownsey, Adrian M. Paterson, Timothy J. Curran, Hannah L. Buckley

[Do local landscape features affect wild pollinator abundance, diversity and community composition on Canterbury farms?](#)

Kristina J. Macdonald, Dave Kelly, Jason M. Tylianakis

Short Communication

[Estimating population growth rates from tracking tunnels](#)

Graeme P. Elliott, Joshua Kemp, James C. Russell

[Relative consumption of two commonly used rodenticides in New Zealand](#)

Craig G. Morley, Ian G. McLean

[Composition of the understory in 132 woody weed populations and implications for succession](#)

Kate G. McAlpine, Susan M. Timmins, Sarah D. Jackman, Shona L. Lamoureaux

Forum Article

[When genetic and phenotypic data do not agree: the conservation implications of ignoring inconvenient taxonomic evidence](#)

Nicolas Dussex, Helen R. Taylor, Martin Irestedt, Bruce C. Robertson

[The importance of recognising and conserving biological diversity: a reply to Dussex et al. \(2018\)](#)

Nicolas J. Rawlence, Jonathan M. Waters

Obituary

[Charles Leslie Batcheler 23 September 1933 – 18 May 2018](#)

John Parkes

Other recent publications on New Zealand ecology

Bruce Burns

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.

- Affeld K, Wiser SK, Payton IJ, DeCáceres M 2018. Using classification assignment rules to assess land-use change impacts on forest biodiversity at local-to-national scales. *Forest Ecosystems* 5 (1): art. no. 13.
- Argiriadis E, Battistel D, McWethy DB, Vecchiato M, Kirchgeorg T, Kehrwald NM, Whitlock C, Wilmshurst JM, Barbante C 2018. Lake sediment fecal and biomass burning biomarkers provide direct evidence for prehistoric human-lit fires in New Zealand. *Scientific Reports* 8 (1): art. no. 12113.
- Bastakoti U, Robertson J, Alfaro AC 2018. Spatial variation of heavy metals in sediments within a temperate mangrove ecosystem in northern New Zealand. *Marine Pollution Bulletin* 135: 790-800.
- Beresford RM, Turner R, Tait A, Paul V, Macara G, Yu ZD, Lima L, Martin R 2018. Predicting the climatic risk of myrtle rust during its first year in New Zealand. *New Zealand Plant Protection* 71: 332-347.
- Bertelsmeier C, Ollier S, Liebhold AM, Brockerhoff EG, Ward D, Keller L 2018. Recurrent bridgehead effects accelerate global alien ant spread. *Proceedings of the National Academy of Sciences of the United States of America* 115: 5486-5491.
- Bridgman L, Innes J, Gillies C, Fitzgerald N, Rohan M, King C 2018. Interactions between ship rats and house mice at Pureora Forest Park. *New Zealand Journal of Zoology* 45: 238-256.
- Brock JMR, Perry GLW, Burkhardt T, Burns BR 2018. Forest seedling community response to understorey filtering by tree ferns. *Journal of Vegetation Science*, in press.
- Bulgarella M, Quenu M, Shepherd LD, Morgan-Richards M 2018. The ectoparasites of hybrid ducks in New Zealand (Mallard x Grey Duck). *International Journal for Parasitology: Parasites and Wildlife* 7: 335-342.
- Bulman SR, McDougal RL, Hill K, Lear G 2018. Opportunities and limitations for DNA metabarcoding in Australasian plant-pathogen biosecurity. *Australasian Plant Pathology* 47: 467-474.
- Bultman TL, McNeill MR, Krueger K, De Nicolo G, Popay AJ, Hume DE, Mace WJ, Fletcher LR, Koh YM, Sullivan TJ 2018. Complex interactions among sheep, insects, grass, and fungi in a simple New Zealand grazing system. *Journal of Chemical Ecology* 44: 957-964.
- Caldwell AJ, Cree A, Hare KM 2018. Parturient behaviour of a viviparous skink: Evidence for maternal cannibalism when basking opportunity is low. *New Zealand Journal of Zoology* 45: 359-370.
- Carpenter JK, Kelly D, Moltchanova E, O'Donnell CFJ 2018. Introduction of mammalian seed predators and the loss of an endemic flightless bird impair seed dispersal of the New Zealand tree *Elaeocarpus dentatus*. *Ecology and Evolution* 8: 5992-6004.
- Carter AL, Kearney MR, Hartley S, Porter WP, Nelson NJ 2018. Geostatistical interpolation can reliably extend coverage of a very high-resolution model of temperature-dependent sex determination. *Journal of Biogeography* 45: 652-663.
- Collier KJ, Pingram MA, Francis L, Garrett-Walker J, Melchior M 2018. Trophic overlap between non-native brown bullhead (*Ameiurus nebulosus*) and native shortfin eel (*Anguilla australis*) in shallow lakes. *Ecology of Freshwater Fish* 27: 888-897.
- Coomes DA, Šafka D, Shepherd J, Dalponte M, Holdaway R 2018. Airborne laser scanning of natural forests in New Zealand reveals the influences of wind on forest carbon. *Forest Ecosystems* 5 (1): art. no. 10.

- Crawshaw JA, Schallenberg M, Savage C 2018. Physical and biological drivers of sediment oxygenation and denitrification in a New Zealand intermittently closed and open lake lagoon. *New Zealand Journal of Marine and Freshwater Research*, in press.
- Czenze ZJ, Tucker JL, Clare EL, Littlefair JE, Hemprich-Bennett D, Oliveira HFM, Brigham RM, Hickey AJR, Parsons S 2018. Spatiotemporal and demographic variation in the diet of New Zealand lesser short-tailed bats (*Mystacina tuberculata*). *Ecology and Evolution* 8: 7599-7610.
- Davis AR, Walls K, Jeffs A 2018. Biotic consequences of a shift in invertebrate ecosystem engineers: Invasion of New Zealand rocky shores by a zone-forming ascidian. *Marine Ecology* 39 (3): art. no. e12502.
- Dearden PK, Gemmill NJ, Mercier OR, Lester PJ, Scott MJ, Newcomb RD, Buckley TR, Jacobs JME, Goldson SG, Penman DR 2018. The potential for the use of gene drives for pest control in New Zealand: A perspective. *Journal of the Royal Society of New Zealand* 48: 225-244.
- Dollery R, Bowie MH, Dickinson NM 2018. Tree guards and weed mats in a dry shrubland restoration in New Zealand. *Ecological Management and Restoration* 19: 259-263.
- Dussex N, Taylor HR, Stovall WR, Rutherford K, Dodds KG, Clarke SM, Gemmill NJ 2018. Reduced representation sequencing detects only subtle regional structure in a heavily exploited and rapidly recolonizing marine mammal species. *Ecology and Evolution* 8: 8736-8749.
- Easton LJ, Rawlence NJ, Worthy TH, Tennyson AJD, Scofield RP, Easton CJ, Bell BD, Whigham PA, Dickinson KJM, Bishop PJ 2018. Testing species limits of New Zealand's leiopelmatid frogs through morphometric analyses. *Zoological Journal of the Linnean Society* 183: 431-444.
- El-Sayed AM, Jósvali JK, Brown RL, Twidle A, Suckling DM 2018. Associative learning of food odor by social wasps in a natural ecosystem. *Journal of Chemical Ecology* 44: 915-921.
- Esperón-Rodríguez M, Curran TJ, Camac JS, Hofmann RW, Correa-Metrio A, Barradas VL 2018. Correlation of drought traits and the predictability of osmotic potential at full leaf turgor in vegetation from New Zealand. *Austral Ecology* 43: 397-408.
- Forgie SA, Paynter Q, Zhao Z, Flowers C, Fowler SV 2018. Newly released non-native dung beetle species provide enhanced ecosystem services in New Zealand pastures. *Ecological Entomology* 43 (4): 431-439.
- Fromont C, Rymer PD, Riegler M, Cook JM 2018. An ancient and a recent colonization of islands by an Australian sap-feeding insect. *Journal of Biogeography* 45: 2389-2399.
- Gedye KR, Fremaux M, Garcia-Ramirez JC, Gartrell BD 2018. A preliminary survey of *Chlamydia psittaci* genotypes from native and introduced birds in New Zealand. *New Zealand Veterinary Journal* 66: 162-165.
- Gill BJ, Zhu A, Patel S 2018. Post-mortem examinations of New Zealand birds. 2. Long-tailed cuckoos (*Eudynamys taitensis*, Aves: Cuculinae). *New Zealand Journal of Zoology* 45: 371-386.
- Gillies C, Brady M 2018. Trialling monitoring methods for feral cats, ferrets and rodents in the Whangamarino wetland. *New Zealand Journal of Zoology* 45: 192-212.
- Goodman M, Hayward T, Hunt GR 2018. Habitual tool use innovated by free-living New Zealand kea. *Scientific Reports* 8 (1): art. no. 13935.
- Hand SJ, Beck RMD, Archer M, Simmons NB, Gunnell GF, Scofield RP, Tennyson AJD, De Pietri VL, Salisbury SW, Worthy TH 2018. A new, large-bodied omnivorous bat (Noctilionoidea: Mystacinidae) reveals lost morphological and ecological diversity since the Miocene in New Zealand. *Scientific Reports* 8 (1): art. no. 235.
- Hartnett DE, MacDonald FH, Martin NA, Walker GP, Ward DF 2018. A survey of the adventive parasitoid *Meteorus pulchricornis* (Hymenoptera: Braconidae) and native larval parasitoids of native Lepidoptera. *New Zealand Journal of Zoology* 45: 326-340.

- Hickford MJH, Stevens JCB, Schiel DR 2018. Nonselective use of vegetation for spawning by the diadromous fish *Galaxias maculatus*. *Restoration Ecology* 26: 650-656.
- Innes J, Kelly C, Fitzgerald N, Warnock M, Waas J 2018. Detection of wild house mice and other small mammals up trees and on the ground in New Zealand native forest. *New Zealand Journal of Zoology* 45: 227-237.
- Izadi S, Johnson M, de Soto NA, Constantine R 2018. Night-life of Bryde's whales: Ecological implications of resting in a baleen whale. *Behavioral Ecology and Sociobiology* 72 (5): art. no. 78.
- Jones MS, Tylianakis JM, Reganold JP, Snyder WE 2018. Dung beetle-mediated soil modification: A data set for analyzing the effects of a recent introduction on soil quality. *Ecology* 99: 1694.
- Jorge F, White RSA, Paterson RA 2018. Hiding in the swamp: New capillariid nematode parasitizing New Zealand brown mudfish. *Journal of Helminthology* 92: 379-386.
- Kim D, Cui R, Moon J, Kwak JI, Kim SW, Kim D, An Y-J 2018. Estimation of the soil hazardous concentration of methylparaben using a species sensitivity approach. *Environmental Pollution* 242: 1002-1009.
- Kusabs IA, Hicks BJ, Quinn JM, Perry WL, Whaanga H 2018. Evaluation of a traditional Māori harvesting method for sampling kōura (freshwater crayfish, *Paranephrops planifrons*) and toi toi (bully, *Gobiomorphus* spp.) populations in two New Zealand streams. *New Zealand Journal of Marine and Freshwater Research*, in press.
- Lambert S, Waipara N, Black A, Mark-Shadbolt M, Wood W 2018. Indigenous biosecurity: Māori responses to kauri dieback and myrtle rust in Aotearoa New Zealand. Chapter 5 in Urquhart J, Marzano M, Potter C. (eds.) *The Human Dimensions of Forest and Tree Health: Global Perspectives*. Pp. 109-137.
- Landers TJ, Hill SD, Ludbrook MR, Wells SJ, Bishop CD 2018. Avian biodiversity across Auckland's volcanic cone reserves. *New Zealand Journal of Zoology*: in press.
- Leunissen EM, Dawson SM 2018. Underwater noise levels of pile-driving in a New Zealand harbour, and the potential impacts on endangered Hector's dolphins. *Marine Pollution Bulletin* 135: 195-204.
- Liang LL, Campbell DI, Wall AM, Schipper LA 2018. Nitrous oxide fluxes determined by continuous eddy covariance measurements from intensively grazed pastures: Temporal patterns and environmental controls. *Agriculture, Ecosystems and Environment* 268: 171-180.
- Lyver POB, Richardson SJ, Gormley AM, Timoti P, Jones CJ, Tahī BL 2018. Complementarity of indigenous and western scientific approaches for monitoring forest state. *Ecological Applications* 28: 1909-1923.
- Malone LA, Burgess EPJ, Barraclough EI, Poulton J, Todd JH 2018. Invertebrate biodiversity in apple orchards: Agrichemical sprays as explanatory variables for inter-orchard community differences. *Agricultural and Forest Entomology* 20: 380-389.
- Marden M, Lambie S, Rowan D 2018. Root system attributes of 12 juvenile indigenous early colonising shrub and tree species with potential for mitigating erosion in New Zealand. *New Zealand Journal of Forestry Science* 48 (1): art. no. 11.
- Mattern T, Pütz K, Garcia-Borboroglu P, Ellenberg U, Houston DM, Long R, Lüthi B, Seddon PJ 2018. Marathon penguins—Reasons and consequences of long-range dispersal in Fiordland penguins/Tawaki during the pre-moult period. *PLoS ONE* 13 (8): art. no. e0198688.
- McIntosh AR, Mc Hugh PA, Plank MJ, Jellyman PG, Warburton HJ, Greig HS 2018. Capacity to support predators scales with habitat size. *Science Advances* 4 (7): art. no. eaap7523.
- McKenna PB 2018. Additions to the checklists of helminth and protozoan parasites of terrestrial mammals and birds in New Zealand. *New Zealand Journal of Zoology* 45: 395-401.
- McLean IG, Fleming A 2018. Successful restoration of an unnatural breeding habitat for white-fronted terns (*Sterna striata*). *Notornis* 65: 54-58.

- McNab BK, Weston KA 2018. The energetics of torpor in a temperate passerine endemic to New Zealand, the Rifleman (*Acanthisitta chloris*). *Journal of Comparative Physiology B: Biochemical, Systemic, and Environmental Physiology* 188: 855-862.
- Meffin R, Duncan RP, Hulme PE 2018. Testing weed risk assessment paradigms: Intraspecific differences in performance and naturalisation risk outweigh interspecific differences in alien *Brassica*. *Journal of Applied Ecology* 55: 516-525.
- Michael KP, Shima JS 2018. Four-year decline in *Ostrea chilensis* recruits per spawner in Foveaux Strait, New Zealand, suggests a diminishing stock–recruitment relationship. *Marine Ecology Progress Series* 600: 85-98.
- Middlemiss KL, Cook DG, Jerrett AR, Davison W 2018. Effects of group size on school structure and behaviour in yellow-eyed mullet *Aldrichetta forsteri*. *Journal of Fish Biology* 92: 1255-1272.
- Montgomery JM, Bryan KR, Horstman EM, Mullarney JC 2018. Attenuation of tides and surges by mangroves: Contrasting case studies from New Zealand. *Water (Switzerland)* 10 (9): art. no. 1119.
- Murphy E, Sjöberg T, Dilks P, Smith D, MacMorran D, Aylett P, Ross J 2018. A new toxin delivery device for stoats—results from a pilot field trial. *New Zealand Journal of Zoology* 45: 184-191.
- Newnham R, Lowe DJ, Gehrels M, Augustinus P 2018. Two-step human–environmental impact history for northern New Zealand linked to late-Holocene climate change. *Holocene* 28: 1093-1106.
- Norton DA, Butt J, Bergin DO 2018. Upscaling restoration of native biodiversity: A New Zealand perspective. *Ecological Management and Restoration* 19: 26-35.
- Ocampo-Ariza C, Bufford JL, Hulme PE, Champion PD, Godsoe W 2018. Strong fitness differences impede coexistence between an alien water fern (*Azolla pinnata* R. Br.) and its native congener (*Azolla rubra* R. Br.) in New Zealand. *Biological Invasions* 20: 2889-2897.
- Orchard DSE, Hickford MJH, Schiel DR 2018. Use of artificial habitats to detect spawning sites for the conservation of *Galaxias maculatus*, a riparian-spawning fish. *Ecological Indicators* 91: 617-625.
- Park JBK, Craggs RJ, Tanner CC 2018. Eco-friendly and low-cost enhanced pond and wetland (EPW) system for the treatment of secondary wastewater effluent. *Ecological Engineering* 120: 170-179.
- Pennell CGL, Rolston MP, Van Koten C, Mace WJ, Hume DE, Card SD 2018. The effect of grass endophytes on earthworms and slugs under a turf mowing regime. *New Zealand Plant Protection* 71: 240-247.
- Phillips CB, Kean JM, Vink CJ, Berry JA 2018. Utility of the CLIMEX ‘match climates regional’ algorithm for pest risk analysis: An evaluation with non-native ants in New Zealand. *Biological Invasions* 20: 777-791.
- Pietras M, Litkowiec M, Gołębiewska J 2018. Current and potential distribution of the ectomycorrhizal fungus *Suillus lakei* ((Murrill) A.H. Sm. & Thiers) in its invasion range. *Mycorrhiza* 28 (5-6): 467-475.
- Pipek P, Petrusková T, Petrušek A, Diblíková L, Eaton MA, Pyšek P 2018. Dialects of an invasive songbird are preserved in its invaded but not native source range. *Ecography* 41: 245-254.
- Power JF, Carere CR, Lee CK, Wakerley GLJ, Evans DW, Button M, White D, Climo MD, Hinze AM, Morgan XC, McDonald IR, Cary SC, Stott MB 2018. Microbial biogeography of 925 geothermal springs in New Zealand. *Nature Communications* 9 (1): art. no. 2876.
- Sam S, Ross J, Agnew T, Razzaq H, Woods C, Tucker N, Murphy E 2018. Novel edible coatings to improve longevity of rodent baits. *New Zealand Journal of Zoology* 45: 257-266.
- Sikes BA, Bufford JL, Hulme PE, Cooper JA, Johnston PR, Duncan RP 2018. Import volumes and biosecurity interventions shape the arrival rate of fungal pathogens. *PLoS Biology* 16 (5): art. no. e2006025.

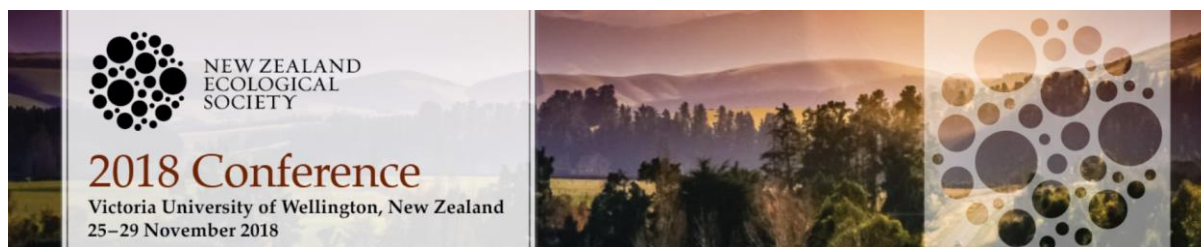
- Sriram A, Roe W, Booth M, Gartrell B 2018. Lead exposure in an urban, free-ranging parrot: Investigating prevalence, effect and source attribution using stable isotope analysis. *Science of the Total Environment* 634: 109-115.
- Stenhouse V, Carter AL, Chapple DG, Hare KM, Hartley S, Nelson NJ 2018. Modelled incubation conditions indicate wider potential distributions based on thermal requirements for an oviparous lizard. *Journal of Biogeography* 45: 1872-1883.
- Stephenson SL, Kahlert B 2018. Myxomycetes associated with canopy organic matter in temperate rainforests of southern New Zealand. *Phytotaxa* 360: 161-166.
- Van Der Geer AAE 2018. Changing invaders: Trends of gigantism in insular introduced rats. *Environmental Conservation* 45: 203-211.
- Weston KA, O'Donnell CFJ, van dam-Bates P, Monks JM 2018. Control of invasive predators improves breeding success of an endangered alpine passerine. *Ibis* 160: 892-899.
- Whitaker T, Chapple DG, Hitchmough RA, Lettink M, Patterson GB 2018. A new species of scincid lizard in the genus *Oligosoma* (Reptilia: Scincidae) from the mid-Canterbury high country, New Zealand. *Zootaxa* 4377: 269-279.
- Williams EM, O'Donnell CFJ, Armstrong DP 2018. Cost-benefit analysis of acoustic recorders as a solution to sampling challenges experienced monitoring cryptic species. *Ecology and Evolution* 8: 6839-6848.
- Ye Z, Damgaard J, Burckhardt D, Gibbs G, Yuan J, Yang H, Bu W 2018. Phylogeny and historical biogeography of Gondwanan moss-bugs (Insecta: Hemiptera: Coleorrhyncha: Peloridiidae). *Cladistics*, in press.

Noticeboard and upcoming conferences

New Zealand Ecological Society conference 2018

The next NZES conference will be held in Wellington, from 26th to 29th November 2018, at Victoria University of Wellington. A student day will be run on Sunday 25th November. Conference talks will occur from Monday to Wednesday, and on Thursday 29th there will be a selection of field trips to local and regional sites of ecological interest. For more information visit the conference website

<https://www.confer.nz/nzes2018/>



TWO PHD SCHOLARSHIPS ON NEW ZEALAND'S INDIGENOUS GRASSLANDS

The *Miss E.L. Hellaby Indigenous Grasslands Research Trust* is seeking applications for two PhD Scholarships at any New Zealand university investigating aspects of the sustainable management of New Zealand's indigenous grasslands (for more information on the Trust see <http://www.hellabygrasslandstrust.org.nz/>). The funding is for 3 years and includes stipend, university fees and operational expenses for research. The total value of each scholarship is up to \$150k.

Project proposals should focus on questions relevant to the stability and persistence of the indigenous grasslands. These may relate to adaptations to climate change, regeneration and restoration of native grasses, sustainable land use, and/or soil processes.

Potential supervisors and/or PhD candidates are welcome to apply outlining the specific research questions and approach (maximum two pages, plus references) accompanied with a CV and certified academic record. Applications need to identify the University and supervisor(s) associated with the project. If no PhD candidate is identified in the application then support for successful projects will be provisional and funding will be approved only when a suitable PhD candidate is confirmed.

Applications close 30th November 2018 and should be sent to Dr Bill Lee, Chairman, Hellaby Indigenous Grasslands Research Trust, Manaaki Whenua – Landcare Research, Private Bag 1930, Dunedin (Leew@landcareresearch.co.nz)

11th INTECOL International Wetlands Conference, Christchurch, September 2020

The INTECOL Wetland Working Group (WWG) will hold the 11th INTECOL International Wetlands Conference in Christchurch, New Zealand, in early September 2020. The Chair of the organizing committee is Philippe Gerbeaux, and the Co-Chairs are Deirdre Hart, Clive Howard-Williams, Di Lucas, Aroha Mead and Shona Myers. The tentative conference theme is: Traditional knowledge and innovative science in wetland research and management. A strong Maori and Oceania cultural presence is guaranteed within and around the conference.

Stay tuned for more information! <http://intecol.org/node/37>



Ecological Society of Australia 2018 conference

The 2018 conference of the Ecological Society of Australia will be held from 25 - 30 November 2018 at the Royal International Convention Centre, Brisbane, Queensland. <http://esa2018.org.au/>



Office Holders of the New Zealand Ecological Society 2018

(Effective from December 2017)

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
P: 64 3 318 1056
F: 64 3 318 1061
E: nzecosoc@paradise.net.nz
W: www.nzes.org.nz

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

Immediate Past 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

Vice President

Tim Curran
PO Box 85084
Pest-management and
conservation
Lincoln University
Lincoln 7647
Christchurch
E: Timothy.Curran@lincoln.ac.nz
T: @TimCurran8

Secretary

Kiri Wallace
Environmental Research Institute
University of Waikato
Hamilton
E: kiri.wallace@waikato.ac.nz

Treasurer

Chris Bycroft
Wildland Consultants
PO Box 7137
Te Ngae
Rotorua 3042
E: Chris.Bycroft@wildlands.co.nz

Councillors (4)

Martin Bader
Auckland University of
Technology
Auckland
E: martin.bader@aut.ac.nz

Bruce Burns
School of Biological Sciences
University of Auckland
Private Bag 92019
Auckland
P: 64 27 280 8332
E: b.burns@auckland.ac.nz
T: @BruceTracks

Simon Moore
Department of Conservation
Private Bag 5
Nelson 7042
P: 027 204 4791
E: shmoore@doc.govt.nz

Rachel Nepia
University of Waikato
Hamilton
E: ret12@students.waikato.ac.nz

Journal scientific editor

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

Sarah Wyse
Bio-Protection Research Centre
PO Box 85084
Lincoln University
Lincoln 7647
Christchurch
E: Webmaster@newzealandecology.org
T: @SarahTheWyse

Membership officer

Gretchen Brownstein
Landcare Research
Dunedin
E: brownsteing@landcareresearch.co.nz

Newsletter Editor: Angela Simpson. Email: newsletter@nzes.org.nz

Deadline for submissions for the next issue of this newsletter is **Friday 7th December 2018**