NEW ZEALAND ECOLOGICAL SOCIETY

Newsletter

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Inside

From the Editor

Kia ora koutou

Welcome to the December 2018 newsletter. I really enjoyed attending the recent NZ Ecological Society conference in Wellington and hope everyone else did too. It was fantastic to hear about research and practical ecology work that

is going on around the country across a diverse range of topics. I also enjoyed the field trip to Otari-Wilton's Bush and learning about plant conservation projects going on there, particularly ex situ projects in the new Plant Conservation Lab. In this issue of the newsletter, there are reports from the conference and information about the 2018 award winners. Thank you to everyone who has contributed to this newsletter and I hope you enjoy reading it.

Meri Kirihimete and have an enjoyable summer
Angela Simpson

Illustrate Ecology

Watching paint dry

Photo and caption by: John Flux.

Having seen mosses and lichens struggling for space in alpine areas, I decided to see how they fared on the ventilation cap of our septic tank. Over seven years, the orange *Xanthoria parietina* seemed dominant, eliminating the *Stereocaulon corticatulum* (right edge 2007-9) and the *Physcia caesia* (white, two patches, 2010-13). Martin & Child (1972, New Zealand Lichens) say *X. parietina* starts yellow and "soon darkens to orange and then to red." "Soon" seems to be four years in lichen time; and do they eat green paint?

Ecotones – New ecological research

Bruce Burns, University of Auckland

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. *The mycological axis of evil*

The relationships of humans with fungi cover the full range from highly beneficial – think yeasts, penicillin, mycorrhizae, and truffles – to highly negative. On the detrimental side, just how bad can fungi get? To answer this question, Hyde et al. (2018) have listed what they consider the ten most feared fungi in the world. Their list of the evil includes four human pathogens, two causing other human health problems, one incredibly poisonous to eat, the fungus responsible for dry rot, the plant pathogen, myrtle rust, and chytrid fungus, responsible for a lethal disease in amphibians. Of the human pathogens listed, the number one feared fungus is *Cladophialophora bantiana*, which infects human brains. The scary things about the disease caused by this fungus are that patients are symptomless until the infection has well established, and the condition is fatal more often than not. Another of the fungal human pathogens listed is *Malassezia globosa*, a yeast that lives commensally and abundantly in healthy human skin (it lives in you!). When the skin ecosystem is unbalanced, however, this yeast is implicated in such conditions as dandruff, eczema, and possibly acne, and also may have a role in the development of skin cancers. The poisonous mushroom listed is *Amanita phalloides*, the death cap, which has probably killed thousands of people through history, requiring ingestion of only about 30g to kill an adult. *A. phalloides* is widespread in New Zealand. Also of concern to New Zealand, the one plant pathogen included in this list is myrtle rust, *Austropuccinia psidii*, which arrived in New Zealand last year. This plant pathogen is feared because of its large host range within the Myrtaceae, its high dispersal ability preventing containment, and persistent infections often leading to plant death.

Hyde KD, Al-Hatmi AMS, Andersen B, Boekhout T, Buzina W, Dawson TL, Jr., Eastwood DC, Jones EBG, de Hoog S, Kang Y, Longcore JE, McKenzie EHC, Meis JF, Pinson-Gadais L, Rathnayaka AR, Richard-Forget F, Stadler M, Theelen B, Thongbai B, Tsui CKM 2018. The world's ten most feared fungi. Fungal Diversity, 93 (1), pp. 161-194.

2. *Balancing mortality with recruitment: progress on restoring mussel populations in the Hauraki Gulf*

Shellfish populations within New Zealand's coastal waters are key drivers of ecosystem structure and function, and provide much-valued wild and farmed sources of human food. It is not surprising therefore, that humans would want to move prized species into habitats without them, or to restore them to areas where they have been lost. Such manipulations of shellfish ecology have apparently been going on for quite a while; recent genetic evidence suggests that Māori probably moved toheroa (*Paphies ventricosa*) from northern New Zealand to Oreti Beach in Southland by unknown methods (Ross et al. 2018). In the Hauraki Gulf, green-lipped mussels (*Perna canaliculus*) once covered >1300km^2 of soft-sediment sea floor, with consequent ecosystem and biodiversity effects. Overharvesting up to 1978 almost removed all of these mussels, and, in a classic case of alternative stable states, populations have not recovered despite cessation of harvesting. A project has now been initiated to restore mussel beds to the Hauraki Gulf (http://www.reviveourgulf.org.nz) and Wilcox et al. (2018) have recently reported on the first attempts to start self-sustaining beds. The method used was simply to pour approximately 1000 kg of adult mussels from a barge onto one location on the seafloor (presumably attempting to exceed an allee effect) and allow the mussels to self-organise into a population. In 2013, seven such populations were established. Although these beds persisted through the two years of observation, there was a constant mortality (comparable to levels naturally measured elsewhere) and almost no recruitment for unknown reasons. Simple population dynamics suggest that these initial attempts at restoration will not survive such demographic rates long term. Studies are now starting to solve the issue of lack of recruitment, however, and further attempts will occur.

Ross PM, Knox MA, Smith S, Smith H, Williams J, Hogg ID 2018. Historical translocations by Māori may explain the distribution and genetic structure of a threatened surf clam in Aotearoa (New Zealand). Scientific Reports 8 (1), art. no. 17241.

Wilcox M, Kelly S, Jeffs A 2018. Ecological restoration of mussel beds onto soft-sediment using transplanted adults. Restoration Ecology 26: 581-590.

3. High-rise living in a forest: how many mice live in trees?

Understanding the habitat distribution of mice and other pest mammals within New Zealand forests is necessary to determine their impacts, to monitor population densities, and in devising effective control strategies. In this regard, most of these species, including mice, regularly climb, but trees and other aboveground structures are not usually included in sampling designs when working with these populations. Should they be? Innes et al. (2018) have recently studied the distribution of mice and other pest mammals in trees using footprint tracking tunnels and chew tags deployed at different positions in canopies. They did this in areas with mice alone, and other areas with a full suite of pest mammals. In the areas with only mice, mice were abundant on the ground, detected at 35% of devices at 1.6m height, at 17% around 5m height, but were not detected at sites around 9m from the ground. In the sites with the full suite of pest mammals, mice were only detected once on the ground but not in trees, with rats and possums detected on the ground and throughout tree canopies. This study shows that trees are certainly accessible by a range of pest mammals and don't provide refuges for fauna or flora to escape predation from this source (except perhaps mice may not reach tall canopies). Innes et al. (2018), however, also conclude that all these species regularly occur on the ground, so control strategies based on ground deployment only will still be effective.

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.

4. New Zealand did not completely drown in the Oligocene.

An active topic of biogeographic debate in the last two decades has been the fate of New Zealand during the Oligocene marine transgression. At this time (23 million years ago), sea levels relative to land mass were higher than currently, and New Zealand's land area was severely reduced. Some scientists have even suggested that New Zealand was completely inundated at this time, which would mean that, rather than being a 'Moa's ark' of some biotic elements rafted from an original connection to Gondwana, that all of New Zealand's biota came from long distance dispersal after this event (the 'Flypaper of the Pacific' hypothesis). Wallis & Jorge (2018) have carried out a meta-analysis to examine this issue by reviewing the molecular estimates of all available divergence times between New Zealand lineages and their closest overseas sister groups. If New Zealand was completely inundated, then the reviewed genetic distances should all indicate times <23 million years ago. Of the 248 published dates they reviewed, however, approximately 74 major lineages showed divergence times >23 million years ago suggesting survival through the marine transgression event. The authors view this as strong evidence that complete inundation was unlikely.

Wallis GP, Jorge F 2018. Going under down under? Lineage ages argue for extensive survival of the Oligocene marine transgression on Zealandia. Molecular Ecology 27: 4368-4396.

5. Climate warming linked to increases in temperate forest disturbances

Natural disturbances, such as storms, drought, and fire, are an essential factor shaping forest ecosystems, even though often infrequent in human time frames. In recent years, however, the media has been full of reports of forest disturbances, e.g. droughts in Australia and huge forest fires in California, such that a common hypothesis is that forest disturbance regimes are changing and intensifying in response to global climate change. In a major paper addressing this hypothesis, Sommerfeld et al. (2018) have analysed patterns of recent natural disturbances in forests across the globe (including in New Zealand) to see whether a clear link between these disturbances and climate change is indicated. Their analysis differentiated three distinct groups of landscapes varying in terms of extent of disturbance dynamics. The New Zealand examples used in this analysis fell within the low or medium disturbance groups, with the high disturbance group characterized by areas subject to wildfire, bark beetle outbreaks, and droughts. Overall, although there still exists much variability in disturbance dynamics, Sommerfeld et al. (2018) showed that high recent disturbance activity in temperate forests was strongly related to warmer and drier-than-average conditions, just those observed with currently changing climate. Such predictions have implications for how forests of the future will provide ecosystem services and habitats for forest biodiversity.

Sommerfeld A, Senf C, Buma B, D'Amato AW, Després T, Díaz-Hormazábal I, Fraver S, Frelich LE, Gutiérrez AG, Hart SJ, Harvey BJ, He HS, Hlásny T, Holz A, Kitzberger T, Kulakowski D, Lindenmayer D, Mori AS, Müller J, Paritsis J, Perry GLW, Stephens SL, Svoboda M, Turner MG, Veblen TT, Seidl R 2018. Patterns and drivers of recent disturbances across the temperate forest biome. Nature Communications 9:4355.

News from NZES council

Kia ora koutou

Thanks to all who joined us in Wellington last month for our annual conference where we shared some fascinating science with some inspirational talks. Our plenary speakers were Richelle Kahui-McConnell (2017 Ecology in Action winner), Graeme Elliott (2017 Te Tohu Taiaio winner) and Andrea Byrom (Director of the Biolgical Heritage National Science Challenge). Another highlight was the Zealandia evening expedition with sightings of tuatara and kiwi. A very warm thank you to Stephen Hartley and the rest of the organising committee (Clayson Howell, Rod Hitchmough, KC Burns, Rachel Shaw, Michael Jackson (for a brilliant student day) and Olivia Vergara) for a really enjoyable and stimulating time. Thanks too to the student volunteers, student award judges and other helpers. We are also grateful to our sponsors – Wellington City Council, Victoria University of Wellington, Wildlands, Scottech, Royal Society Te Apārangi, Centre for Biodiversity and Restoration Ecology and Fix and Fogg. Special thanks to Vic's Sustainablity and Resilence Theme for supporting the student awards.

We need conference lanyards returned to NZES Council members please. Local collection people are Cate Macinnis-Ng (Auckland), Kiri Wallace (Waikato), Tim Curran (Lincoln), Stephen Hartley (Wellington) and Deb Wilson (Dunedin).

Very warm congratulations to all our award winners who are named elsewhere in this issue. We have been spoilt for choice in choosing winners. It's great to see so much outstanding ecology happening across the country. Thanks to the

people who put together nomination documents. We can see a lot of time and effort goes into crafting carefully worded nominations and there is a lot of respect and love for so many members of our community.

I shared some highlights from 2018 in my Presidents address at the conference. Slides are available on our website. Let me know if you have any comments, questions or feedback.

We're looking forward to some exciting activities in 2019. With our strategic plan formulated, we have plenty to work on! The 2019 conference will be in Lincoln in the first week of December so pop that in your diary now.

Enjoy the summer break and if you are doing fieldwork, don't forget to tag it on twitter with #summerfieldworkNZ

Meri Kirihimete me te Hape Nū Ia

Cate Macinnis-Ng (President)

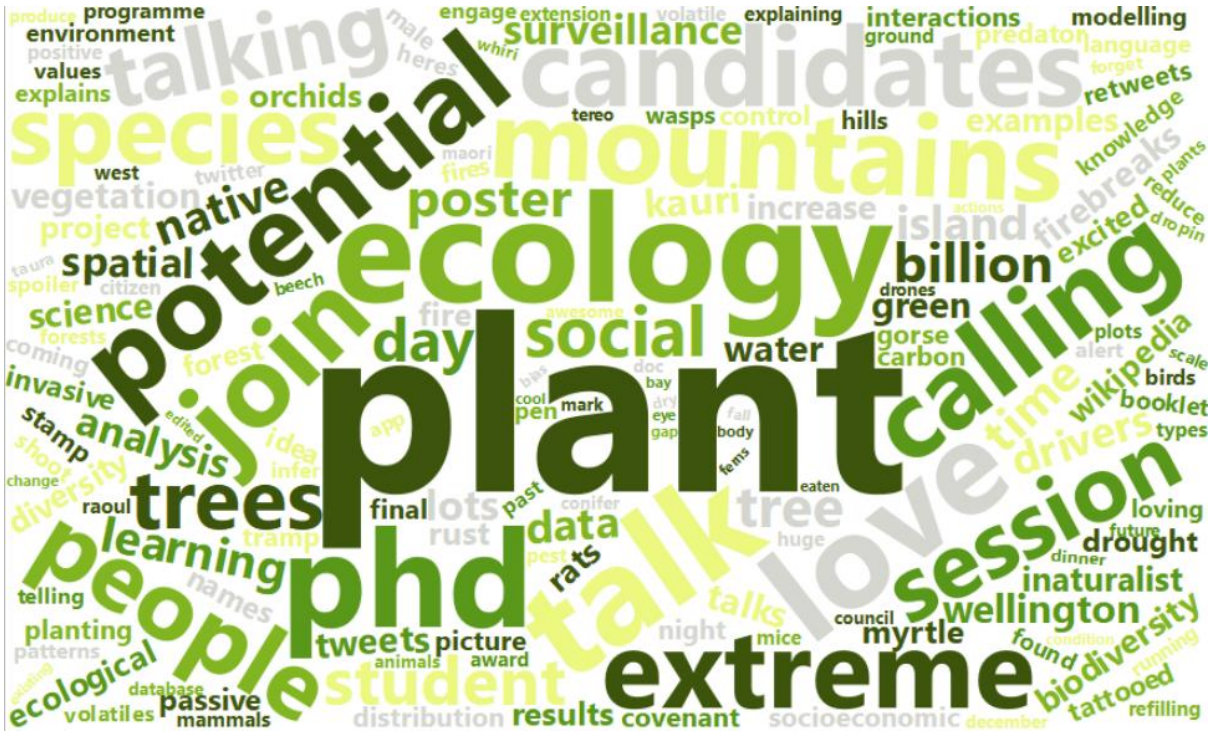
NZES 2018 Conference update

The 2018 conference took place in Wellington from 26th to 29th November, at Victoria University of Wellington. Sunday 25th was a student day. Conference talks occurred from Monday to Wednesday, and on Thursday 29th there were a selection of field trips to local and regional sites of ecological interest. Symposia included urban ecology, climate, monitoring, animal behaviour, and social perspectives. Key speakers included Graeme Elliott, Richelle Kahui-McConnell, and Dr Andrea Byrom.

A book of abstracts from the oral and poster presentations is available on the website, at https://newzealandecology.org/events/past-conferences

The Twitter chain provided an informative summary and can be found using this link:https://twitter.com/hashtag/nzes18?f=tweets&vertical=default&src=hash&lang=en&lang=en&lang=en

Jennifer Pannell (Auckland University of Technology) made this word cloud of the conference hashtag #nzes18 during her return trip from the conference. It is a great visual summary of the event! Here is a link to her blog post which explains how she made it
https://jenniferpannell.jimdo.com/2018/12/11/rstats-on-the-go-or-how-to-make-a-word-cloud-from-a-hashtag/



2018 Annual General Meeting for NZ Ecological Society

The New Zealand Ecological Society held its 65th AGM on Tuesday 27th November at 12 pm at Victoria University of Wellington. Minutes from this meeting will be presented in the next issue of this newsletter.

Strategic Plan of NZ Ecological Society 2019-2023

In 2013, the Council completed a Five Year Strategic Plan for the New Zealand Ecological Society. Council identified three key areas of activity required to meet the Society's core objectives: Membership benefits, engagement and communication, and governance. The plan identifies specific actions within the three key areas of activity that are required to ensure the NZES is operating in a manner consistent with its purpose and meeting its objectives.

As the five-year strategy for the New Zealand Ecological Society 2013-2018 approaches its expiration we have conducted a review of the existing strategy and refined it to reflect our strategy for the next five years. Discreet activities that were completed have been removed, and additional aims and activities have been suggested. The Strategic Plan 2019-2023 presents the results of the

review, including the updated plan for 2019-2023, subject to council and membership review.

The strategy provides a road map for the next five years that can be passed from the present NZES Council to future councils. The document can also serve as a work plan to help keep progress on track and justify expenditure that it is clearly in line with the strategic direction of the Society and/or has been planned for. It is a living document that will be updated as required.

The draft strategic plan was tabled at our 2018 AGM. This document is available on our website via the following link. https://newzealandecology.org/strategy Please send comments and feedback to our Secretary, Kiri Wallace, kiri.wallace@waikato.ac.nz.

Summary of Strategic Aims 2019-2023

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

Ecology in Action Award, 2018

The Ecology in Action award reflects one of the primary aims of the society: the promotion of the study of ecology and the application of ecological knowledge in all its aspects. This award was established to recognise individuals who have made outstanding contributions to the application of ecological knowledge, including communication, education and transfer of ecological science at the grass roots in NZ or the Pacific. The Society would like to recognise such

individuals' achievements in promoting ecology and education, with landowners, community groups, politicians, councils and others. The society recognises the important role of the transfer of ecological knowledge in changing behaviours and achieving practical protection and restoration of biodiversity.

The 2018 Ecology in Action Award winner is Dr Susan Walker.

One aspect of Susan's nomination which particularly impressed the judging panel was the wide range of organisations who supported her application. These included:

- DOC
- Environmental Defence Society
- Forest and Bird
- Environment Canterbury
- MacKenzie Guardians
- University and CRI researchers

Here are some of the passages from her nomination, co-ordinated by Nick Head:

We wish to nominate Dr Susan Walker, Landcare Research, Dunedin, for her outstanding and sustained contribution towards recognising and protecting dryland ecosystems in New Zealand. Drylands were previously neglected and overlooked ecosystems with few statutory protection mechanisms. As a result, they have been subjected to ongoing loss and fragmentation, they are highly threatened and generally poorly protected.

Susan's research has tackled challenging and previously unexplored aspects of New Zealand's environmentally extreme ecosystems in eastern rain-shadow regions of New Zealand. She combines academic rigour with a profound understanding of the functioning of plant communities and habitats. Her insightful perspective and her willingness to engage in discussions to improve policy and implementation outcomes for drylands has been a significant factor in current decisions around protecting and managing these ecosystems. Susan's significant contribution in the Environment Court, at District hearings, and presentations at regional and national public workshops, often in her own time, have all made a formative contribution to the increasing recognition of dryland ecosystems in district Plans and land tenure decisions.

Of importance to understanding dryland ecology, and the protection of dryland ecosystems, has been Susan's research on the ecological history, patterns, processes and resilience of the Mackenzie Basin's ecosystems. Her work has been particularly instrumental in the recognition of the basin as a nationally significant biome for its glacially derived moraine and outwash ecosystems and as a stronghold for threatened indigenous biota of dryland habitats.

Moreover, her engagement with the local community, in varied and often challenging forums, and more formally through judicial processes, has built consensus in ecological understanding, application and appreciation of the ecology of drylands, and specifically the Mackenzie Basin as a national priority for protection.

National recognition of the ecological significance of Mackenzie Basin is of considerable importance to nature conservation, and to our international obligations to halt the decline of indigenous biodiversity. It is also timely, as the Mackenzie Basin's undeveloped glacially derived ecosystems are under enormous threat from agricultural intensification. This has led to substantial challenges, largely overcome through Susan's skilled transfer of ecological knowledge, with landowners, community groups, politicians, councils and others.

Left to right: Tim Curran (NZES Vice president), Susan Walker, Cate Macinnis-Ng (NZES president).

Te Tohu Taiao Award for Ecological Excellence, 2018

The 2018 Te Tohu Taiao award winner is Prof George Perry.

This award is presented annually to recognise individuals who have made an outstanding contribution to the study and application of ecological science. The award is made to the person(s) who have published the best original research regarding the ecology of New Zealand or its dependencies (including the Ross Dependency), or to the person(s) who have made a sustained and outstanding contribution to applied ecology, particularly conservation and management.

This year, two past recipients of the Te Tohu Taiao Award were elected as fellows of the Royal Society Te Apārangi. Jason Tylianakis was our 2014 winner and Kim King was our 1999 winner.

In 2018, we had 5 outstanding nominations. It was quite a thrill to read the warm and powerful nomination letters and supporting letters from across the world. We have some very highly regarded ecologists in NZ! Thank you to everyone who contributed to nominations so we had a strong pool to choose from. This allowed us to use a short-listing process to consider gender equity in the assessment process.

The winner had three things stood out to us. First, the global reach of his work and his outstanding research track record. He has more than 110 journal articles, 1 book, 9 book chapters, 6 refereed conference proceedings, 6 book reviews and a software package. His papers have been cited almost 5000 times

and he has an h-index of 34. In addition to doing outstanding research, he has supervised (completed and current) over 50 postgraduate students and postdocs so he is making a huge contribution towards teaching and mentoring the next generation of ecologists. Finally, his contributions as editor of NZ J Ecology have an unmeasurable impact on local ecology.

George was nominated by Bruce Burns and Janet Wilmshurst. This is an excerpt from their nomination letter.

'Despite an often frantic schedule and huge demands on his time, George remains friendly, approachable, positive and helpful to all who ask for his assistance. This combination of contributions, past and ongoing, and his collegial personality make George an exceptional candidate for the Te Tohu Taiao award.

Specifically, George's research has focused on understanding the effects of humans on forest ecosystems. He has been particularly interested in how anthropic changes to disturbance regimes, especially fire, have restructured ecosystems in the past and the legacy effects of these changes in modern ecosystems. He has also advanced understanding of how plant-animal mutualisms, such as seed dispersal and pollination, have changed over time. As mentioned previously, George often uses a spatial context for his research and has an outstanding grasp of spatial statistics, simulation models and approaches. This interest in spatial statistics and simulation models has included the development of a range of innovative new techniques himself. He is now much in demand to apply these approaches to a wide range of problems in many ecological fields.

They then go on to explain his contribution to NZ ecology, specifically in the fields of fire, disturbance and prehistoric extinction events.

Some highlights of his research internationally include new understanding of the population dynamics of endangered conifers in New Caledonia (e.g., Perry and Enright 2002, Enright *et al.* 2014), evaluating the application of the neutral theory of biodiversity to a previously unstudied hyperdiverse system (e.g., Perry *et al.* 2009, 2010, 2013); and interpreting the relationships between spatial pattern and process in forest ecosystems (Perry and Millington 2008). This latter work has advanced understanding internationally of the role of tipping points in determining ecosystem trajectories, and in identifying modern landscape traps that combine the effects of new disturbance regimes with those of invasive plants and animals to arrest succession (e.g., Perry *et al* 2015). Such work is fundamentally guiding and changing restoration and conservation planning. His understanding of simulation modelling and spatial statistics has led to co-authorship of a book on these techniques (O'Sullivan and Perry 2013); supported by a website (http://patternandprocess.org).'

The nomination had supporting letters from John Ogden, Neal Enright, Matt McGlone and Monica Turner from University of Wisconsin Madison.

Left to right: Tim Curran (NZES Vice president), George Perry, Cate Macinnis-Ng (NZES president).

Outstanding Publication on New Zealand Ecology, 2018

The purpose of this award is to recognise a publication made in the last three years that has made an outstanding contribution to our understanding and/or management of ecosystems (terrestrial, aquatic or marine) in New Zealand or its dependencies (including the Ross Dependency). Publications may take the form of peer-reviewed journal articles, book chapters or books.

The 2018 winner is Alex Boast for the publication:

Coprolites reveal ecological interactions lost with the extinction of New Zealand birds. Proc Natl Acad Sci USA Volume 115 (7).

His co-authors were: Alexander P. Boast, Laura S. Weyrich, Jamie R. Wood, Jessica L. Metcalf, Rob Knight, and Alan Cooper.

Janet Wilmshurst (left) accepts best publication award on behalf of Alex Boast.

Best publication by an emerging researcher, 2018

The NZES awards an annual prize for the best published paper of an ecological nature by a new researcher in the *New Zealand Journal of Ecology*. This award is targeted at people at the start of their research career.

The 2018 winner is James Brock for the publication:

Brock, J. M. R., Perry, G. L. W., Lee, W. G., Schwendenmann, L., & Burns, B. R. (2018). Pioneer tree ferns influence community assembly in northern New Zealand forests. New Zealand Journal of Ecology, 42, 18–30.

Left to right: Tim Curran (NZES Vice president), James Brock, Cate Macinnis-Ng (NZES president).

Best student presentations, 2018

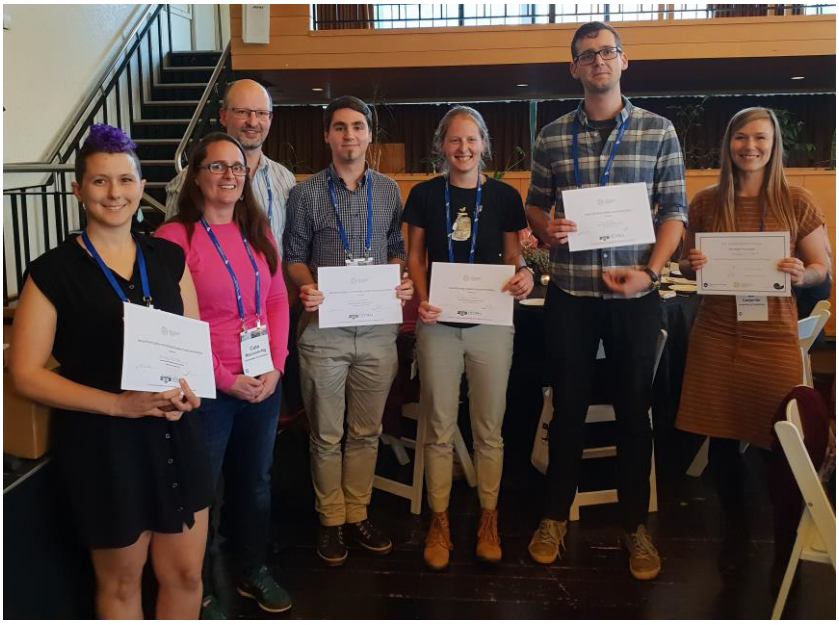
Best talk and best Zoology talk: Jo Carpenter, University of Canterbury – Assessing the ecological significance of extinction: are flightless birds important seed dispersers?

Very Highly Commended: Justyna Giejsztowt, Victoria University of Wellington – Climate change, plant invasion and their interactive effects on species' distributions

Very Highly Commended: André Bellvé, University of Auckland – The role of perching lilies as habitat formers in northern New Zealand forests

Highly Commended: Michelle Marraffini, University of Canterbury– Indirect facilitation and invasion success in annual plant communities

Highly Commended: Julius Juodakis, Victoria University of Wellington – Automated detection of kiwi (*Apteryx* spp.) from continuous field acoustic recordings – New Zealand Tier 1 data analysis.

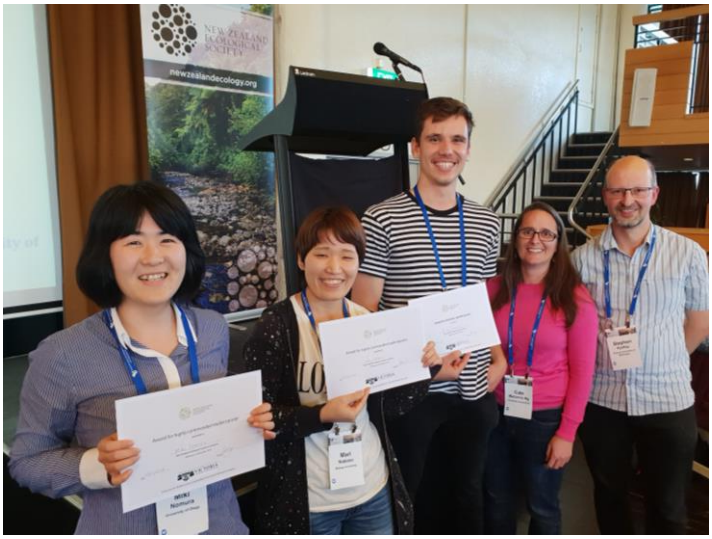


Left to right: Michelle Marraffini, Cate Macinnis-Ng (NZES president), Stephen Hartley, Julius Juodakis, Justyna Giejsztowt, André Bellvé, Jo Carpenter.

Student poster awards, 2018

Best student poster: Roald Bomans, Victoria University of Wellington, for the topic "Automated bioacoustic monitoring of morepork (*Ninox novaeseelandiae*) across three aerial 1080 operations."

Highly commended student posters:
Mari Nakano, Massey University, for the topic "Mate choice and sexual communication in the New Zealand stick insect (*Clitarchus hookeri*)."
Miki Nomura, University of Otago, for the topic "Does phylogeny explain climatic niche patterns?"



Left to right: Miki Nomura, Mari Nakano, Roald Bomans, Cate Macinnis-Ng (NZES president), Stephen Hartley (NZES2018 conference organising committee member).

News from across the ditch

The Ecological Society of Australia December bulletin includes articles about effective science-policy work, government submissions and monitoring of the oldest spider ever recorded. There are also articles about camera trapping, drone data, and monitoring of mangroves. You can read more online here: https://www.ecolsoc.org.au/files/bulletins/esabulletin_sept2018_0.pdf

Report on #NZES18

Renata Lara Muylaert,
PhD student in Ecology and biodiversity
UNESP São Paulo State University, Rio Claro, Brazil
International Visitor in Massey University, Palmerston North, New Zealand

Renata at Matiu/Somes island during the conference trip. Photo by Marie Moinet.

I am a Brazilian biologist starting a new life in Aotearoa and I enjoyed the #nzes18 very much. It gave me the opportunity to have contact with such an interesting range of themes that can be studied. I am so impressed by the biodiversity monitoring that has been conducted long-term on animals and plants. The conference provided me with a good idea of what the kiwi and kiwi-lover ecologists are doing.

I highlight here the high-tech tools for reporting invasive plants and insects presented by Jon Sullivan. I already found a strange ladybug in my backyard in Palmy. His presentation made me feel like I can contribute more to ecology here by opening my eyes to iNaturalistNZ and other projects. The pure ecology talk presented by Susan Wiser, made me think that I should start using similar approaches to face similar impacts to biodiversity in different areas. Also, after last week, I will never forget about tree fern skirts and their potential functions. And how could a stats lover not be excited after seeing Ian Westbrooke talking about propensity scores?

We had a little bit of Ecology developed in South America: interaction networks, stressors, disease, and open data. And it was amazing to meet new colleagues from many different nations and backgrounds doing research here: New Zealand, Japan, China, Brazil, Uruguay, Chile, France, England and much more.

To finish my report, I must say I was delighted to see Susan Walker´s talk. Could not stop clapping my hands after this one! I am pleased to see such a high level of science, natural history, and statistics. Her graphs and figures were just awesome (did Jared Diamond see them?). Congratulations to the society! I am happy to be part of it.

Three new sections on the Our Estuaries Hub

From Helen Kettles, Department of Conservation - Te Papa Atawhai

Three new sections have been added to the Our Estuaries Hub on the DOC website: Revegetating estuaries, Seagrass and mangroves extent, and Featured estuaries projects.

The Our Estuaries Hub was launched in February 2016 as a dedicated resource to help anyone explore and learn more about our many estuaries. The Hub also includes interactive maps that show where monitoring and restoration work is happening around New Zealand.

Revegetating estuaries: a map showing we have a wealth of information around the country. Now looking at the restoration map, you will see red markers for current restoration groups, yellow for plant inventories and purple for restoration guides. Clicking on the markers will give some information and leads to a webpage.

Seagrass and mangroves extent: this interactive map shows the current and historical extent of seagrass and mangroves in New Zealand. This is a repository for any survey work undertaken. It's the first time this information has been brought together in a nationally consistent data layer.

Featured estuaries projects: there are many opportunities to get involved with online and practical projects based around estuaries in New Zealand. This page has links to a range of projects including the Seagrass Spotter App, the National Riparian Restoration Database, Marine Meter Squared, and guidance on how to run a bioblitz.

Publication of the Biodiversity Collaborative Group's recommendations on a draft National Policy Statement on Biodiversity and Complementary and Supporting Measures

On 25 October 2018, the Biodiversity Collaborative Group handed its recommended draft NPS Indigenous Biodiversity and Complementary & Supporting Measures to the Minister of Biodiversity, Nanaia Mahuta, and Minister of Conservation, Eugenie Sage. The report and draft NPS has been a result of about 18 months of work by the group, which was originally commissioned by Nick Smith and includes representatives of Forest and Bird, Federated Farmers, Forest Owners Association, EDS, Electricity Generators and iwi advisors. DOC has been heavily involved as active observers on the group, along with MfE, MPI, LINZ and TPK. The report can be found here: www.biodiversitynz.org

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 Asena, 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 albostriatus*) 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.

Alley MR, Gartrell BD 2019. Wildlife diseases in New Zealand: recent findings and future challenges. New Zealand Veterinary Journal 67: 1-11.

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Heinen JH, van Loon EE, Hansen DM, Kissling WD 2018. Extinction-driven changes in frugivore communities on oceanic islands. Ecography 41: 1245-1255.

Herewini EM, Scott PM, Williams NM, Bradshaw RE 2018. *In vitro* assays of *Phytophthora agathidicida* on kauri leaves suggest variability in pathogen virulence and host response. New Zealand Plant Protection 71: 285-288.

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Noticeboard and upcoming conferences

New Zealand Ecological Society conference 2019

The next NZES conference will be held in Lincoln, Canterbury, from 1st to 5th December 2019, at Lincoln University. A student day will be run on Sunday 1st December. Conference talks will occur from Monday to Wednesday, and on Thursday 5th there will be a selection of field trips to local and regional sites of ecological interest More information will be available in future issues of this newsletter and on the New Zealand Ecological Society website.

11th INTECOL International Wetlands Conference, Christchurch, 2020

The INTECOL Wetland Working Group (WWG) will hold the 11th INTECOL International Wetlands Conference in Christchurch, New Zealand, in Spring 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

National Freshwater Conference 2019

Highlighting the 2019 Freshwater Management Conference. 11-12 February, Wellington.

Join freshwater stakeholders from all sectors of New Zealand with sessions including:

- An examination of the legal regulations that shape freshwater management policies – including updates on changes to NPS-FM, the relevant NES and other freshwater regulations and how these will affect users and stakeholders
- Collaboration and its role in successful freshwater management strategies for the benefit of all New Zealanders
- The future of freshwater infrastructure in New Zealand – from design and funding to the technology and its implementation
- Freshwater disaster management – an update on recent freshwater supply crises
- A guided look at the freshwater sciences in New Zealand, the data that it produces
- Modern life and its growing impact on the freshwater continuum
- PLUS, International Keynote Speaker Dr Luke Mosley, *Senior Research Fellow*, University of Adelaide, and *Visiting Scientist*, CSIRO

Funded PhD position in Forest Soil Food Web Restoration Ecology

Institution: The University of Waikato, Hamilton

Applications due by Tuesday, December 18, 2018

PhD position: Reassembly of soil food web structure, stability and functioning during forest restoration in New Zealand

Ecological restoration is vital for repairing human impacts on native biota and ecosystem processes. Networks of trophic interactions (food webs) determine the structure and function of communities; yet we know little about food web restoration and almost nothing about how soil food webs reassemble during long-term restoration despite their high biodiversity and importance for many key ecosystem processes. Using more than 80 forest restoration sites spanning the complete latitudinal range of New Zealand's main islands, this funded project will apply recently developed methods for linking food web structure with ecosystem functioning across an unprecedented age-range of restored urban forests to answer the following key questions: 1) Does soil food web complexity increase over restoration time and how does reassembly of soil communities vary at different spatial scales and across environmental gradients? 2) Does forest succession drive shifting energetic structure of soil food webs toward fungal-based energy channels and increased top-down effects on primary consumers? 3) Is there a shift in the distribution and strength of trophic interactions and what affect does this have on food web stability?

The PhD student will conduct field sampling of soil biota (from microbes to macro-fauna) in forest restoration sites throughout nine cities in New Zealand. Lab work will consist of identifying and measuring functional traits of soil invertebrates, measuring microbial respiration and identifying microbial

functional groups in order to construct soil food webs and quantify energy flux in regenerating forest ecosystems.

To fill this position, we are seeking an independent and highly motivated applicant with:

- An Honours or MSc degree in ecology
- Experience in ecological field work and/or lab and field experiments
- Strong skills in analysing ecological data (preferably in R)
- Experience in soil community ecology (would be highly advantageous)
- Excellent communication skills in English (spoken and written)
- A general willingness to work in a team

We are offering this exciting position for a PhD candidate to be based at the University of Waikato in Hamilton, New Zealand under the supervision of Dr Andrew Barnes, Dr Chris Lusk, and Dr Kiri Joy Wallace. The successful candidate will also work closely with the Experimental Interaction Ecology lab at the German Centre for Integrative Biodiversity Research (iDiv) in Leipzig, Germany, and in alignment with the People, Cities & Nature project. The position is fully funded for a fixed term of three years (including a stipend, full tuition fees and research costs) and is to begin as soon as possible. Candidates should send electronic applications as a single PDF document comprising a letter of motivation, curriculum vitae, scientific publications (if applicable), and contact details for two academic references to Dr Barnes (andrew.barnes@waikato.ac.nz). Review of applications will begin on the 18th of December 2018 and will continue until the position is filled.

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(Effective from December 2018)

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