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# Newsletter

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## Inside



## From the Editor

The last few months have been eventful including fire, flooding and debates about water quality. Such events tend to reiterate the importance of the activities of ecologists to monitor, research, and provide guidance for better management of our natural world. This newsletter benefits from member's views and I would encourage you all to consider whether there is something you would like to share in the next issue.

In this issue, we announce the details for NZES award nominations for 2017. I encourage you all to consider nominating a deserving student, supervisor, colleague or friend. Make sure you check out the important dates for the joint conference with the Ecological Society of Australia in November. The EcoTAS2017 format provides a special opportunity to share learnings with our close neighbours and we hope that as many members as possible will attend.

**Newsletter Editor**: Angela Simpson. Email: newsletter@nzes.org.nz
Deadline for submissions for the next issue of this newsletter is **Friday 23th June 2017**

# Illustrate Ecology

**The deadly road-kill cycle. Photo and story: John Flux**

This run-over rabbit near Blenheim last week was being scavenged by two cats when they too were hit by a car. Both cats (touching the white line) were spotted grey with a black dorsal stripe, so were probably related. The other more central dark patch was all that remained of a hedgehog, possibly also scavenging. From the wet blood, all seemed to have been killed the previous night.

Looking at other road-kills, the next stage is squashed blowflies on the carcasses providing a meal for sparrows, starlings and magpies, followed a few days later by a feast of maggots. Then what remains is blown, or washed by rain, to fertilise the road verge. These cats were unusually lucky: the overall ratio on the 6,798 km surveyed in the South Island in February-March this year was 15 cats to 796 rabbits.

# Ecotones – new ecological research

Bruce Burns

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

### 1. The conservation conundrum of self-introduced species.

Much of the New Zealand biota has traditionally been thought of as a collection of ancient Gondwanan species 'cast afloat' on the Pacific. Indeed, the intrinsic value of this biota has largely stemmed from its highly endemic nature. Recently, however, it has become clear that New Zealand's vertebrate fauna has

been more greatly augmented by species self-colonising since the earliest human arrival than previously thought, and that these colonisation events were in response to human-caused extinction events or anthropogenically changed landscapes. Ancient DNA studies have increased the number of such self-colonisation events recognised. For example, the little penguin species currently occupying Otago is now known to be the Australian species *Eudyptula novaehollandiae* rather than the New Zealand species *E. minor*, probably due to regional human-mediated extinction of the NZ species there about 400 years ago. Waters and Grosser (2016) suggest that at least 19 vertebrate species considered native to New Zealand have self-colonised since human occupation, including pūkeko, yellow-eyed penguin, silvereye, and welcome swallow. Their fascinating and provocative essay then discusses the conservation management of these 'newly' native species, particularly in the case that these self-introduced species have deleterious impacts on more endemic species, e.g. pūkeko predation of pāteke chicks (Hing et al 2017). If the presence of self-introduced species is an artefact of human change to ecosystems, then should conservation managers choose to control these populations to the advantage of the old endemics?

Hing JS, Healey MR, Dey CJ, Quinn JS 2017. Investigating the influence of social dominance on survival during a pukeko cull. New Zealand Journal of Ecology 41(1): 139-144.

Waters JM, Grosser S 2016. Managing shifting species: Ancient DNA reveals conservation conundrums in a dynamic world. BioEssays 38 (11), pp. 1177-1184.

## 2. Did moa extinction change New Zealand forests?

Before humans arrived in New Zealand, forest understories were browsed by a suite of nine moa species (and two geese) but these all became extinct in the 15$^{th}$ century. Large herbivores didn't return to New Zealand forests until mammals such as pigs and goats were introduced in the late 18$^{th}$ century, although they failed to occupy all sites and to reach high densities until a century later. What happened in these forests when moa browsing pressure ceased? Are the forests we are familiar with now, aberrant in composition and structure compared to the original moa-browsed ecosystems? Wood and Wilmshurst (2017) have tackled this question by examining pollen changes in selected sediment cores that accumulated over the period before and after moa-extinction, and were most likely not affected by other disturbances. Surprisingly, they recorded only minor changes in forest composition coincident with the extinction of moa. For example, there were small increases in ground fern spores and *Coprosma* spp. pollen, but these groups remained relatively minor components of the vegetation assemblage as represented by pollen abundance. The changes recorded are not consistent with hypothesised increases in understory densities that would prevent conifer regeneration as some authors have suggested. However, the long life spans of many forest trees in New Zealand means that the influences of the moa extinction event on forest communities may still be playing out.

Wood, J.R., Wilmshurst, J.M. 2017. Changes in New Zealand forest plant communities following the prehistoric extinction of avian megaherbivores. Journal of Vegetation Science, 28 (1), pp. 160-171.

## 3. Exposing the hidden value of pollinators to New Zealand

Pollination is a key ecosystem service for agricultural food production across the world but pollinator populations are declining due to habitat destruction, invasive organisms, and pesticide use. New Zealand is no exception to this decline with, for example, the spread of varroa mite negatively affecting honey bee populations. So what will be the productive and economic impacts of reductions in key pollinator populations that are likely to occur if current trends continue? Sandhu et al. (2016) recently reported on an experiment which imposed a gradient of pollination rates on brassica crops by bagging flowers for different lengths of time. There was a clear proportional reduction in crop production with a stepped decline in pollination rate for the crops tested, suggesting that even small reductions in pollination rate will have a negative effect. This study also extrapolated these experimental results to estimate the effect of pollinator reductions across 18 different crops dependent on pollination services. Costings from this exercise suggest that New Zealand agriculture could lose from $295-$728 million if pollinator populations continue to decline and depending on the extent of that decline. Therefore, development of policies and actions that will stop the decline of pollinators and maintain these ecosystem services need to be a crucial component of agricultural innovation now.

Sandhu, H., Waterhouse, B., Boyer, S., Wratten, S. 2016. Scarcity of ecosystem services: An experimental manipulation of declining pollination rates and its economic consequences for agriculture. PeerJ, 2016 (7), art. no. e2099.

## 4. Sub-Antarctic megaherb life-form an adaptation for capturing heat

One of the characteristic features of New Zealand's sub-Antarctic Islands are the many species of megaherb that occur there, with giant leaf size and deeply pigmented flowers for insect pollination, e.g. *Pleurophyllum speciosum, Stilbocarpa polaris*. This life-form, however, seems anomalous considering that traits usually associated with polar and alpine environments are towards smaller and shorter plants to minimise wind chill and low temperatures. Little et al. (2016) have now pointed out that these sub-Antarctic megaherbs resemble a range of giant rosette growth forms seen in tropical alpine areas of Africa, South America and Hawaii, life forms which are hypothesised to provide thermal benefits to these plants. Therefore, they measured leaf and floral temperatures of a range of megaherbs on Campbell Island in relation to ambient air temperatures and other environmental variables. Megaherb leaves and inflorescences were always warmer than the local environment, with one species' leaves up to 9 °C higher and inflorescences 11 °C higher than the surrounding air. In particular, the megaherbs seemed to take advantage of unpredictable and short periods of high solar radiation for warming. Therefore, New Zealand sub-Antarctic megaherbs may be an example of convergent evolution with giant tropical alpine plants, and designed for warmth in these unusual environments.

Little, L., Eidesen, P.B., Müller, E., Dickinson, K.J.M., Lord, J.M. 2016. Leaf and floral heating in cold climates: Do sub-Antarctic megaherbs resemble tropical alpine giants? Polar Research, 35, art. no. 26030.

## 5. Low genetic diversity in a native ant of wasp-invaded beech forests

Invasive common wasps can reach extremely high densities in beech forest in New Zealand and are considered a major threat to biodiversity and conservation. These wasps are largely invertebrate predators with up to one third of prey items from the order Hymenoptera, mostly ants. The time of peak abundance of wasps in the northern South Island also coincides with the nuptial flights of the queens of the native small brown bush ant *Prolasius advenus*, and queens of this species therefore become highly common prey items at that time. Burne et al. (2017) hypothesised that this high predation pressure would impact genetic diversity of populations of this ant, and this effect would be greater in locations with high wasp densities. Using six microsatellite markers to examine populations of this ant at seven sites, they found that those populations in sites with high wasp densities did display much lower genetic diversity suggesting that wasp predation is adversely affecting population genetic structure. Although this effect is only a relatively recent phenomenon, it may have long term implications for the resilience of this ant particularly its ability to evolve under changing climates.

Burne, A.R., Ritchie, P.A., Gruber, M.A.M., Lester, P.J. 2017. A genetic bottleneck in populations of a New Zealand endemic ant associated with density of an invasive predatory wasp. Insectes Sociaux, 64 (1), pp. 65-74.

**Other recent publications on New Zealand ecology. 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.**

Armstrong DP 2017. Population responses of a native bird species to rat control. Journal of Wildlife Management, 81 (2), pp. 342-346.

Baling, M., Stuart-Fox, D., Brunton, D.H., Dale, J. 2016. Habitat suitability for conservation translocation: The importance of considering camouflage in cryptic species. Biological Conservation, 203, pp. 298-305.

Bell, B.D. 2016. A review of potential alpine newt (*Ichthyosaura alpestris*) impacts on native frogs in New Zealand. Journal of the Royal Society of New Zealand, 46 (3-4), pp. 214-231.

Bell, N.L., Adam, K.H., Jones, R.J., Johnson, R.D., Mtandavari, Y.F., Burch, G., Cave, V., Cameron, C., Maclean, P., Popay, A.J., Fleetwood, D. 2016. Detection of invertebrate suppressive soils, and identification of a possible biological control agent for *Meloidogyne* nematodes using high resolution rhizosphere microbial community analysis. Frontiers in Plant Science, 7, art. no. 1946.

Bell, T.P., Herbert, S.M. 2017. Establishment of a self-sustaining population of a long-lived, slow-breeding gecko species (Diplodactylidae: *Hoplodactylus duvaucelii*) evident 15 years after translocation. Journal of Herpetology, 51 (1), pp. 37-46.

Bogisch, M., Cree, A., Monks, J.M. 2016. Short-term success of a translocation of Otago skinks (*Oligosoma otagense*) to Orokonui Ecosanctuary. New Zealand Journal of Zoology, 43 (2), pp. 211-220.

Bokhorst, S., Kardol, P., Bellingham, P.J., Kooyman, R.M., Richardson, S.J., Schmidt, S., Wardle, D.A. 2017. Responses of communities of soil organisms and plants to soil aging at two contrasting long-term chronosequences. Soil Biology and Biochemistry, 106, pp. 69-79.

Boyer, S., Kim, Y.-N., Bowie, M.H., Lefort, M.-C., Dickinson, N.M. 2016. Response of endemic and exotic earthworm communities to ecological restoration. Restoration Ecology, 24 (6), pp. 717-721.

Braithwaite, M., Johnston, P.R., Ball, S.L., Nourozi, F., Hay, A.J., Shoukouhi, P., Chomic, A., Lange, C., Ohkura, M., Nieto-Jacobo, M.F., Cummings, N.J., Bienkowski, D., Mendoza-Mendoza, A., Hill, R.A., McLean, K.L., Stewart, A., Steyaert, J.M., Bissett, J. 2017. *Trichoderma* down under: species diversity and occurrence of *Trichoderma* in New Zealand. Australasian Plant Pathology, 46 (1), pp. 11-30.

Braund, J. 2016. Leonard Cockayne's surveys of New Zealand's offshore islands, 1901–1908. New Zealand Geographer, 72 (3), pp. 169-178.

Brockerhoff, E.G., Dick, M., Ganley, R., Roques, A., Storer, A.J. 2016. Role of insect vectors in epidemiology and invasion risk of *Fusarium circinatum*, and risk assessment of biological control of invasive *Pinus contorta*. Biological Invasions, 18 (4), pp. 1177-1190.

Brummer, T.J., Byrom, A.E., Sullivan, J.J., Hulme, P.E. 2016. Alien and native plant richness and abundance respond to different environmental drivers across multiple gravel floodplain ecosystems. Diversity and Distributions, 22 (7), pp. 823-835.

Carpenter, J.K., Monks, J.M., Nelson, N. 2016. The effect of two glyphosate formulations on a small, diurnal lizard (*Oligosoma polychroma*). Ecotoxicology, 25 (3), pp. 548-554.

Catlin, A.K., Collier, K.J., Duggan, I.C. 2017. Zooplankton generation following inundation of floodplain soils: Effects of vegetation type and riverine connectivity. Marine and Freshwater Research, 68 (1), pp. 76-86.

Chase, K.D., Kelly, D., Liebhold, A.M., Bader, M.K.-F., Brockerhoff, E.G. 2017. Long-distance dispersal of non-native pine bark beetles from host resources. Ecological Entomology, 42 (2), pp. 173-183.

Clarkson, B., Whinam, J., Good, R., Watts, C. 2017. Restoration of *Sphagnum* and restiad peatlands in Australia and New Zealand reveals similar approaches. Restoration Ecology, 25 (2), pp. 301-311.

Clothier, B.E., Green, S.R., Müller, K., Gentile, R.M., Mason, K., Herath, I., Holmes, A. 2016. Orchard natural capital supplying valuable ecosystem services. Acta Horticulturae, 1130, pp. 1-10.

Cohena, J.E., Poulinc, R., Lagrue, C. 2017. Linking parasite populations in hosts to parasite populations in space through Taylor's law and the negative binomial distribution. Proceedings of the National Academy of Sciences of the United States of America, 114 (1), pp. E47-E56.

Cruz, J., Thomson, C., Parkes, J.P., Gruner, I., Forsyth, D.M. 2017. Long-term impacts of an introduced ungulate in native grasslands: Himalayan tahr (*Hemitragus jemlahicus*) in New Zealand's Southern Alps. Biological Invasions, 19 (1), pp. 339-349.

Daigneault, A.J., Eppink, F.V., Lee, W.G. 2017. A national riparian restoration programme in New Zealand: Is it value for money? Journal of Environmental Management, 187, pp. 166-177.

Doddala, P.R.C., Minor, M.A., Wang, Q., Rogers, D.J., Koot, E.M., Trewick, S.A. 2016. Role of olfaction in host plant selection and local adaptation of a polyphagous herbivore, *Eucolaspis* Sharp. Journal of Applied Entomology, 140 (6), pp. 444-452.

Fromont, C., DeGabriel, J.L., Riegler, M., Cook, J.M. 2017. Diversity and specificity of sap-feeding herbivores and their parasitoids on Australian fig trees. Insect Conservation and Diversity, 10 (2), pp. 107-119.

Gard, H.J.L., Fordyce, R.E. 2017. A fossil sea turtle (Testudines: Pan-Cheloniidae) from the upper Oligocene Pomahaka Formation, New Zealand. Alcheringa, 41 (1), pp. 134-140.

Gilbertson, C.R., Wyatt, J.D. 2016. Evaluation of euthanasia techniques for an invertebrate species, land snails (*Succinea putris*). Journal of the American Association for Laboratory Animal Science, 55 (5), pp. 577-581.

Glen, A.S., Latham, M.C., Anderson, D., Leckie, C., Niemiec, R., Pech, R.P., Byrom, A.E.2017. Landholder participation in regional-scale control of invasive predators: an adaptable landscape model. Biological Invasions, 19 (1), pp. 329-338.

Goldson, S.L., Barratt, B.I.P., Armstrong, K.F. 2016. Invertebrate biosecurity challenges in high-productivity grassland: The New Zealand example. Frontiers in Plant Science, 7 (NOVEMBER2016), art. no. 1670.

Greenwood, M.J., Booker, D.J., Smith, B.J., Winterbourn, M.J. 2016. A hydrologically sensitive invertebrate community index for New Zealand rivers. Ecological Indicators, 61, pp. 1000-1010.

Gritcan, I., Duxbury, M., Leuzinger, S., Alfaro, A.C. 2016. Leaf stable isotope and nutrient status of temperate mangroves as ecological indicators to assess anthropogenic activity and

recovery from Eutrophication. Frontiers in Plant Science, 7 (DECEMBER2016), art. no. 1922.
Haenfling, C., Newnham, R., Rees, A., Jara, I., Homes, A., Clarkson, B. 2017. Holocene history of a raised bog, northern New Zealand, based on plant cuticles. Holocene, 27 (2), pp. 309-314.
Hardwick, S., Ferguson, C.M., McNeill, M.R., Phillips, C.B. 2016. Using mass-emergence devices to introduce an insect biocontrol agent to a new region and assist its dispersal. Journal of Pest Science, 89 (4), pp. 965-976.
Heaney, M., Gray, R.D., Taylor, A.H. 2017. Keas perform similarly to chimpanzees and elephants when solving collaborative tasks. PLoS ONE, 12 (2), art. no. e0169799.
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Huang, Y.-T., Lowe, D.J., Zhang, H., Cursons, R., Young, J.M., Churchman, G.J., Schipper, L.A., Rawlence, N.J., Wood, J.R., Cooper, A. 2016. A new method to extract and purify DNA from allophanic soils and paleosols, and potential for paleoenvironmental reconstruction and other applications. Geoderma, 274, pp. 114-125.
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Julian, J.P., De Beurs, K.M., Owsley, B., Davies-Colley, R.J., Ausseil, A.-G.E. 2017. River water quality changes in New Zealand over 26 years: Response to land use intensity. Hydrology and Earth System Sciences, 21 (2), pp. 1149-1171.
Kerr, J.L., Kelly, D., Bader, M.K.-F., Brockerhoff, E.G. 2017. Olfactory cues, visual cues, and semiochemical diversity interact during host location by invasive forest beetles. Journal of Chemical Ecology, 43 (1), pp. 17-25.
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Lester, P.J., Haywood, J., Archer, M.E., Shortall, C.R. 2017. The long-term population dynamics of common wasps in their native and invaded range. Journal of Animal Ecology, 86 (2), pp. 337-347.
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Mayr, G., De Pietri, V.L., Paul Scofield, R. 2017. A new fossil from the mid-Paleocene of New Zealand reveals an unexpected diversity of world's oldest penguins. Science of Nature, 104 (3-4), art. no. 9, .
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McCulloch, G.A., Wallis, G.P., Waters, J.M. 2017. Does wing size shape insect biogeography? Evidence from a diverse regional stonefly assemblage. Global Ecology and Biogeography, 26 (1), pp. 93-101.
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Nboyine, J.A., Saville, D., Boyer, S., Cruickshank, R.H., Wratten, S.D. 2017. When host-plant resistance to a pest leads to higher plant damage. Journal of Pest Science, 90 (1), pp. 173-182.
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Rutledge, S., Wall, A.M., Mudge, P.L., Troughton, B., Campbell, D.I., Pronger, J., Joshi, C., Schipper, L.A. 2017. The carbon balance of temperate grasslands part II: The impact of pasture renewal via direct drilling. Agriculture, Ecosystems and Environment, 239, pp. 132-142.
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Smith, B.J., Reid, D.J. 2016. Silent assassins: predation of native New Zealand trichopteran eggs by non-native freshwater gastropods. Aquatic Insects, 37 (4), pp. 293-302.
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Todd, J.H., Barratt, B.I.P., Withers, T.M., Berndt, L.A., Gresham, B., Avila, G.A., Malone, L.A. 2017. A comparison of methods for selecting non-target species for risk assessment of the biological control agent *Cotesia urabae*. BioControl, 62 (1), pp. 39-52.

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## Barlow Scholarship call for applications

Applications for the Barlow Scholarship are now open. The scholarship provides support to international (including Australian) postgraduate students studying ecology in New Zealand. Funds may be used for direct costs associated with research such as, but not limited to, field costs and analytical expenses, but excluding fees, living expenses and conference costs. Applicants must be enrolled in a New Zealand university for postgraduate study (MSc, PhD or equivalent) in ecology and can apply for up to $2,500.

The Barlow Scholarship was made possible by a generous bequest from Nigel Barlow. As a quantitative ecologist, Nigel Barlow made significant contributions to our understanding of the dynamics of New Zealand's ecosystems, especially in the context of understanding animal population dynamics. He won the NZ Ecological Society Award (now the Te Tohu Taiao award) in 1986 for his sustained contributions to applied ecology in NZ.

Your application needs to include a statement outlining how the funding will assist your research and a supporting statement from your academic supervisor. An application form and further details are available on the website at http://newzealandecology.org/barlow-scholarship.

Applications must be emailed to the Awards Convenor awards@newzealandecology.org by **4 June 2017**.

## News from NZES council

Complied by Cate Macinnis-Ng

At our recent meeting at Conservation House in Wellington, we formally welcomed our new newsletter editor, Angela Simpson and our new membership officer, Gretchen Brownstein. Angela (Wildlands) has already started making her mark on the newsletter and we welcome her fresh perspective and enthusiasm. Gretchen (Landcare Research) will be doing some behind the scenes work to help us keep track of our members. We're also planning to find out from you what you would like the society to provide for members, so put your thinking caps on and keep an eye out for a member's survey coming soon.

*Memberships:* In managing memberships, the easiest way for us to administer renewal is through the website. When your fees are due for renewal, you will be sent a personal link that directs you to the website. This helps us track your membership from year to year. New members can sign up here http://newzealandecology.org/civicrm/contribute/transact?reset=1&id=1 but if you are an existing member using the generic form, we sometimes end up with a new record as if you were a new member. So, please help us out and renew your membership using the emailed link and make sure you pay on time to avoid lapsing.

*Kauri Seed Scholars:* We have been hearing from some of our kauri seed scholars. These are undergraduate students who are given financial support to attend the annual conference. Thanks to those who had been in touch. We are still looking for more so if you were a kauri seed, or you know of someone who was, please get in touch because we'd love to hear how you are doing.

*Barlow scholarship:* The Barlow scholarship will open for applications again this year. You can find the application details here http://newzealandecology.org/barlow-scholarship This is an award for international postgraduate students enrolled at a New Zealand university to cover project costs for ecological research. The call for applications is open now and closes on 4th June.

*Conference update:* EcoTAS2017 is the joint conference of the Ecological Society of Australia and the New Zealand Ecological Society to be held in the Hunter Valley, New South Wales, 26 November – 1 December 2017. The theme of the conference is 'Putting ecology to work' so there will be a strong applied ecology focus but there is also a wide range of sessions planned. As the venue is outside a capital city, accommodation options will be villas at the conference centre with provision for camping onsite (byo tent). The number of camp sites will be capped so get in quick if you want this option. More details on the website http://ecotas2017.org.au/registration/accommodation/

The conference organising committee is currently assessing symposium proposals.

*Key dates for your diaries*

Call for abstracts open: 3 April 2017

Call for abstracts close: 14 July 2017

Conference registration opens: 5 June 2017

Conference earlybird registration close: 15 September 2017

## NZES Annual Awards: Call for Nominations

The following New Zealand Ecological Society awards are now open for nominations:

Te Tohu Taiao – Award for Ecological Excellence

Ecology in Action

Honorary Life Membership

Outstanding Publication on New Zealand Ecology

Details of the awards and nomination requirements are available on the website at http://newzealandecology.org/awards-grants.

Nominations close **Friday 30 June 2017**. Please email all nominations to awards@newzealandecology.org.

## News from across the ditch

The March bulletin included articles about ex-situ conservation, replanting seaweed forests, the Bushfire 2016 conference and several tributes to Professor Michael Bull. Read more online: http://www.ecolsoc.org.au/files/bulletins/esa_bulletin_march_2017.pdf

## The Port Hills, a love story

By Sarah-Jane O'Connor, originally posted on sciblogs.co.nz

The first few years I lived in Christchurch, the Port Hills were a hazy mirage on my horizon.

An undergraduate student – living in the suburbs neighbouring the university, without a car and distracted by the daily dramas of assignments, waking up in time for lectures and shaking off hangovers – they were just a sight to occasionally glance up at. Sometimes they had snow on them; a big deal for us North Islanders.

In later years, they became my figurative home. As a PhD student I chose the Port Hills as my field site because they required little travel and I thought it'd be interesting. I liked the idea of urban ecology – science close to our homes – and I wondered if there might be something neat going on in Cantabrians' backyard that they didn't know about. Little did I know I'd fall in love.

Over about five years I traipsed the hills on the city side of Summit Rd, with field sites from Kennedy's Bush to Cooper's Knob. I found a wonderland of old growth podocarps, regenerating native bush, swarms of native birds. Mere kilometres from people's homes, our native wildlife had hung on tooth and nail despite all we'd thrown at them. A series of vegetations maps of Banks Peninsula, oft-cited by ecology lecturers, showed the rapid decimation of forests in the area, followed by the slow creep of regeneration. Things were getting better.

The more time I spent on the flanks of the hills, the more I discovered. I startled goats, deer, a sow and her piglets and once, terrifyingly, a boar. I sat eating my lunch watching a black phase fantail flitter about me. I saw a flock of kereru flying above the treetops and watched a hawk swooping above, startling the locals. Sometimes the bellbirds were so loud they'd give me a headache. Once I was sure I heard an elusive tūī.

It wasn't all fair sailing. I fell numerous times; spraining ankles, wrenching shoulders. I electrocuted myself on an electric fence and once was stung so badly by ongaonga I thought I was going to pass out. Health and Safety never heard about those incidents…

Working up a bank in Kennedy's Bush one day I heard someone coming up the track below me and stood still so I didn't frighten them by crashing around in the bush out of sight. Colour me surprised when a man walked past wearing nary but a pair of hiking boots.

Another time I came into cell range after a few hours without coverage to find a voice message from the police. I'd left my car unlocked at the top of the hill and they were worried about it. So, I hiked back out and rescued my poor Subaru only to find out later that there was a man on the run from police in the area, driving a similar car to mine, and while I was in the bush that day the Armed Offenders Squad was down the hill searching for him. It did explain the helicopter that had been hovering over me that morning while I walked across paddocks to the field site.

These were formative years in my life. I struggled as a PhD student, filled with self doubt and loathing. In these years I fell in and out of love, travelled overseas, moved into my first flat on my own; my father died, I forgot who I was, I considered dropping out of uni. I spent many hours alone in the bush, high above the city, soul searching and finding solace.

Then the earthquakes arrived. My time in the field was brutally cut short. Those hills, with their rolling boulders, no longer felt safe. When I managed to get back into some of the safer sites – the ones that didn't require several hours walking to get out again in an emergency – I found landslips and trees knocked over. These places I knew like the back of my hand: changed. Some sites I never managed to get back into to retrieve field equipment; by the time I was brave enough to revisit them my job had taken me out of Christchurch.

Watching the wildfires from afar has been devastating. I know so many in Christchurch are still traumatised by the earthquakes, many have been flooded out of their homes, too many still wait for their homes to be repaired. It's hard to comprehend what it's like to see this towering stack of smoke over your city; to smell smoke everywhere you go; to be evacuated with few of your belongings or to wait anxiously to find out if your home will be next.

To know that at least one of my field sites is in the midst of the fire feels like knowing an old home – one with lots of good memories – has been demolished.

Ecologists know that ecosystems repair after fire. But they don't necessarily return to the same state. Exotic species like gorse and broom thrive after fire and it can take decades for native regeneration to succeed in pushing through the exotics, eventually overshadowing them and returning to dominance.

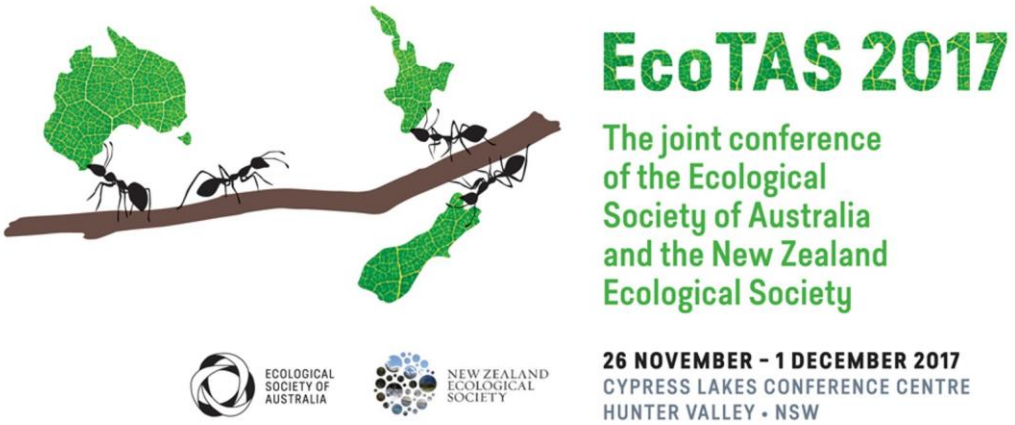
My PhD was on mātai, one of our towering native podocarps, and in those years of traipsing around the hills I met many of the remaining giants. I gave them each an ID – a code for the site and a number – but many I grew to know on a

more intimate basis. The towering female in Kennedy's Bush (KB03), flanked by an even taller tōtara and a thicket of regenerating mātai saplings. A few dozen metres away, the three young poles growing in almost a straight line (KB 07-09): the teenagers. Two lone mātai in a small remnant near Cass Peak (CP01/02) – on the flanks of the fire's current extent.

Many of the Port Hill's podocarp giants would be hundreds of years old, many will have survived fire in the past: some bore the scars to prove it. Hopefully they'll survive this one, too. As you will, Cantabrians.

## Noticeboard and upcoming conferences

The 6th joint conference of the New Zealand and Australian Ecological Societies is coming up! This will be held in the Hunter Valley, New South Wales from 26 November – 1 December 2017. The theme of the conference is 'Putting ecology to work' so there will be a strong applied ecology focus but there is also a wide range of sessions planned. As the venue is outside a capital city, accommodation options will be villas at the conference centre with provision for camping onsite (byo tent). The number of camp sites will be capped so get in quick if you want this option. More details on the website http://ecotas2017.org.au/




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

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

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

Thematic topics of the congress:

- Ecosystem services and management

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

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


The Botanical Art Society of New Zealand (BASNZ) is delighted to announce that New Zealand will be taking part in the 'Botanical Art Worldwide' exhibition organised by the American Society of Botanical Artists and supported by the 'Friends of Auckland Botanic Gardens'.

This inaugural worldwide event, which will take place in many countries simultaneously, will bring together artists, institutions, and the public to highlight the role contemporary botanical artists play in bringing attention to the need of safe-guarding our planet's botanical diversity.

Our exhibition - 'Ngāi Tipu Taketake – Indigenous Flora' will take place from March 30th - 1st July 2018 at the Auckland Botanic Gardens, with the possibility of it travelling to other main NZ cities.

The Botanical Art Society of New Zealand is pleased to call for submissions for this exhibition. Artists interested in submitting paintings are invited to complete the submission form and provide details of their work.

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(Effective from November 2016)

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