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Newsletter

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Contents

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Deadline for submissions for the next issue of this newsletter is **Friday 12 September 2025**

From the Editor

Kia ora koutou,

Hello and welcome to our 191st Newsletter – and my final issue as newsletter editor. I am very happy to say that the newsletter will be in great hands as Florence Kelly (Wildlands, Wellington) takes the helm.

I wish I had some excellent wisdom to impart in my final issue, but I'll settle for letting you know that's it's been a pleasure curate these newsletters and I very much appreciate all of the contributions that have been sent in over my tenure!

As always in this newsletter you'll find the latest and greatest ecological research in Aotearoa, updates from our society and journal, and some awesome contributions of content from our members.

If you have any feedback or suggestions for this newsletter, please don't hesitate to reach out at newsletter@nzes.org.nz.

Ngā mihi nui,

Tom

News from the NZES Council

Kia ora koutou

There has been plenty of activity in the Council ranks over autumn and into winter. I'd like to extend a huge thank you to Sarah Wyse for overseeing the upgrade to our website. This has been a major undertaking and Sarah has been working closely with our website developers, Fuzion, to ensure a smooth and successful transition.

Work continues on the proposed changes in Society rules to make them compliant under the Charities Act (2022). As I mentioned in the last newsletter our financial year will need to start and finish midyear starting in 2026. The consequence of this is that our AGM will need to move in order to comply with the annual financial requirements under the Act. This year's AGM is set for Thursday 11th September instead of the usual November timeframe as we transition to next year's mid-year AGM - this will mean that we have two 9-month terms for Council positions elected at the AGM, which we felt was preferable to having one 12-month term followed by a 6-month term. Stay tuned for more details on this and also on the online event and local hubs on 20th November in lieu of an in-person conference this year. In the meantime, please put these dates in your diary!

Big thanks also to Debra Wotton, Sarah Herbert and other NZES members that contributed to the joint submission on proposed national wastewater environmental performance standards with Ngā Kohinga Wai o Aotearoa | New Zealand Freshwater Sciences Society. With major changes to environmental legislation currently out for submission there is more work to do in this space so we will be relying on many of you who have expressed an interest to be involved. Our submissions officer, Tim Curran, will be wrangling this.

And lastly, at the end of May I joined Council members Jo Monks, Tim Curran and Sara Belcher along with Karyn Paringatai and Manaia Pearmain-Fenton from Otago University to undertake a process for conferring a te reo name for the society. It was an excellent wānanga and we will be communicating our progress in due course to the membership.

Ngā mihi

Simon Moore

President

Ex-Officio Shake-Up

Over at NZES HQ we have had some changes to three of the ex-officio roles on the council.

Editor-in-Chief – New Zealand Journal of Ecology

Tom Etherington has officially vacated the role of editor-in-chief after many successful years running the journal. Under Tom's leadership the journal has undergone numerous positive changes to strengthen its foundation and ensure it continues publishing robust science. These include new policies on supplementary materials, AI, and plagiarism, the establishment of new editor roles, an overhaul of the physical journal archives, and many more.

As a society we wholeheartedly want to thank Tom for dedicating many years of service to the journal.

We are also excited to announce that Sarah Wyse has agreed to take up the mantle of editor-in-chief – meaning the journal is in very safe hands.

Webmaster

Given her new position at the journal, Sarah Wyse has officially vacated the role of NZES Webmaster. Sarah recently oversaw a major upgrade to the website – and under her tutelage the website has continued to function smoothly with all bugs ironed out promptly. A huge thank you to Sarah for these efforts!

We are happy to announce that Tom Carlin (AKA yours truly) will be stepping into the role… So if the website goes down in the next few weeks you know why!

Newsletter

As mentioned at the beginning, the esteemed mantle of newsletter editor is being taken up by Florence Kelly. I will leave Florence to introduce herself in her first official issue, but rest assured you can expect this change to result in a sharp increase in newsletter quality and timeliness (lucky readers)!

Thank you Florence for volunteering, and we look forward to working more closely with you.

Conference Highlight – EMAPI 2–5 September 2025

The 17th International Conference on the Ecology & Management of Alien Plant Invasions (EMAPI) is being held at Lincoln University.

The conference theme (*From Ecology to Action: Innovative Solutions for Plant Invasion Management*) is not only timely, but highly relevant in Aotearoa–New Zealand given we harbour more naturalised non-native plant species than almost any other island worldwide.

The full conference programme is now available online here, with an exciting line-up of plenary speakers.

Aotearoa–New Zealand is an ideal setting to illustrate the way forward in terms of invasive plant management through biological control, community initiatives, and long-term national programmes. Examples of these activities can all be found on the doorstep of Lincoln University – the ideal setting for a memorable conference that will bring together researchers and practitioners to forge new insights into alien plant management.

Three field trips are available to visit either 1) Hinewai Reserve, 2) Yarrs Flat Wildlife Management Reserve, or 3) Ōtamahua Quail Island – each covering unique aspects of plant invasion pathways.

Register online here

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Ecotones – Breakdown of New Ecological Research

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

- **Bruce Burns, University of Auckland.**

Nelson sky islands host diverse soil mesofauna full of Gondwanan relics

One of the joys of being an ecologist in New Zealand is that the biodiversity encountered is often fascinating and surprising. I was reminded of this again in reading the recent work of Minor and Robertson (2025) who reported on the soil mesofauna of three alpine and subalpine sites in northwest Nelson. Previous scattered work on alpine invertebrates in New Zealand has hinted at a diverse fauna with high levels of regional endemism and Gondwanan heritage. Knowledge of New Zealand alpine soil invertebrates, however, is poor, and particularly so in biodiversity hot spots such as north-west Nelson. The authors collected soil cores from Mt Arthur, Ben Nevis, and the Rainbow Ski Field and extracted mesofauna using Berlese funnels. The samples indeed proved highly diverse with several remarkable taxa (including some undescribed), e.g., harpacticoid copepods, moss bugs, unique-headed bugs, micro-spiders, mite harvestmen, Neelidae springtails and species of acarifauna. Many of these groups have endemic species here but distinctively Gondwanan distributions when considered at higher taxonomic levels. The mesofauna communities sampled varied significantly with elevation and habitat type (beech forest vs alpine), with abundance and richness generally decreasing with elevation. This study has provided valuable insights into these previously neglected communities. The worry is that these communities will be now vulnerable to habitat changes induced by a warming climate.

Minor MA, Robertson AW 2025. Micro Gondwana: soil and litter mesofauna in the subalpine and alpine of North-West Nelson, southern New Zealand. New Zealand Journal of Zoology, in press.

Rayforstia vulgaris – a microspider found in the samples
Image source: CC BY 3.0

Reconstructing New Zealand seabird breeding colony distributions

Prior to human arrival, there is clear evidence that breeding colonies of native burrowing procellariform seabirds occurred extensively across the main islands of New Zealand but suffered local extinction or extreme range contractions once humans and introduced predators arrived. There is substantial uncertainty, however, about these original distributions and this lack of knowledge constrains conservation management. Bellvé et al. (2025) have now used a novel combination of fossil, historic and modern distribution data to better define the niche space of these species. They divided these seabirds into three trait groups broadly based on different body sizes and constructed ecological niche models for each group based on the environments represented by the mixed distribution data. Interestingly the niche spaces estimated by the different data types (fossil, historic, modern) had low overlaps, suggesting they provide information on different aspects of the niche space and including them all in the analysis was valuable. For all trait groups, the overall results showed that breeding grounds were undoubtedly much more widespread than currently and likely extended inland throughout New Zealand. The models developed will be useful for conservation management and for selecting sites for ecological intervention and translocation.

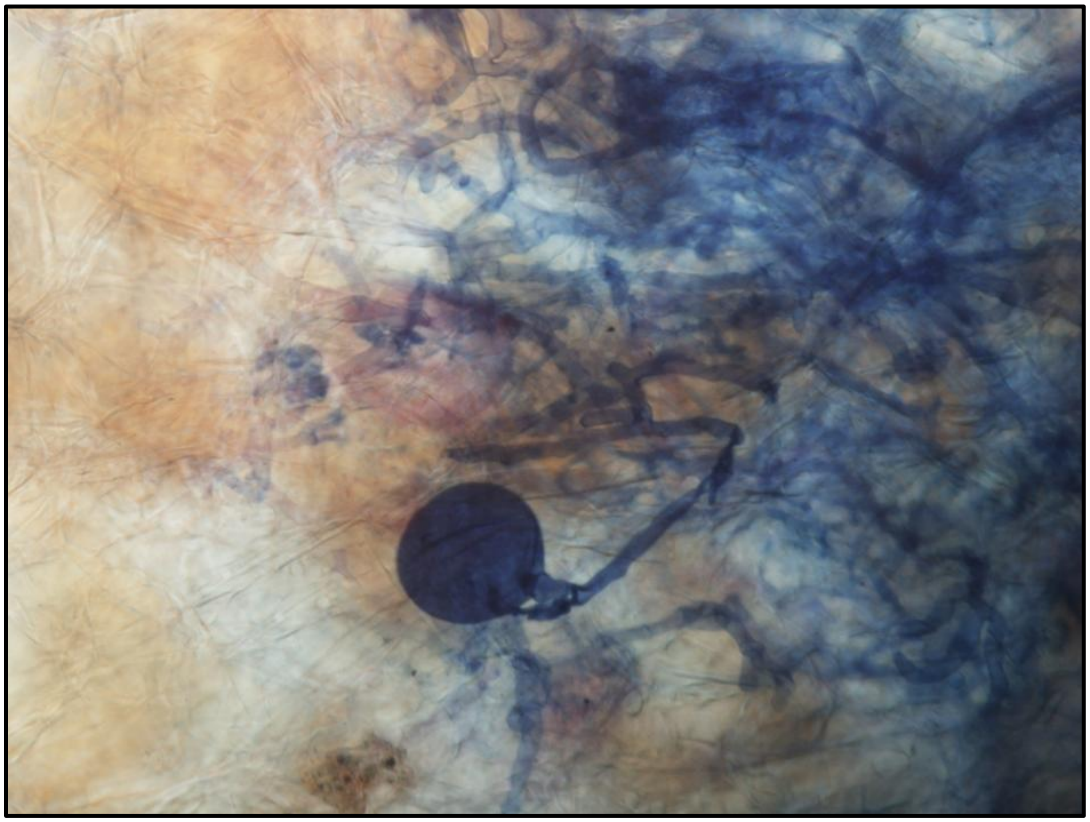
Bellvé AM, Wilmshurst JM, Wood JR, Whitehead E, Scofield RP, Worthy TH, Gaskin CP, Perry GLW 2025. Burrowing into the past: extending niche space models of Procellariiform breeding grounds by merging fossil and historic data. Diversity and Distributions 31(5): art. no. e70032.

Pterodroma gouldi (grey-faced petrel)
Image source: Paddy Stewart (CC by NC 4.0)

Untapped potential for mycorrhizal research in New Zealand

Arbuscular mycorrhizal fungi (AMF) are increasingly recognized worldwide as associating with most plant species and having important functions in helping plants access nutrients and resist diseases and environmental stresses. The diversity and functions of AMF in New Zealand ecosystems, however, remain poorly known, but there have been recent advances in technologies, e.g., high throughput next generation sequencing, that should help. Moukarzel et al. (2025) have recently reviewed the state of play with New Zealand AMF and indicate that studies on mycorrhizae within New Zealand ecosystems are increasing in number and ambition. These studies have shown that AMF diversity in New Zealand is still poorly characterized but may include a range of novel species associated with native plants. As well, growth rates of native and exotic plant species in New Zealand can sometimes be enhanced by mycorrhizal inoculation, and that plants with certain mycorrhizae can resist plant diseases. They conclude that the tools now in place could lead to unprecedented and revolutionary progress in understanding mycorrhizal associations and their potential. It seems a previously ecological 'black box' is now opening, and the opportunities could be compelling.

Moukarzel R, Waller LP, Jones EE, Ridgway HJ 2025. Arbuscular mycorrhizal fungal symbiosis in New Zealand ecosystems: Challenges and opportunities. Letters in Applied Microbiology 78(5): ovaf070.

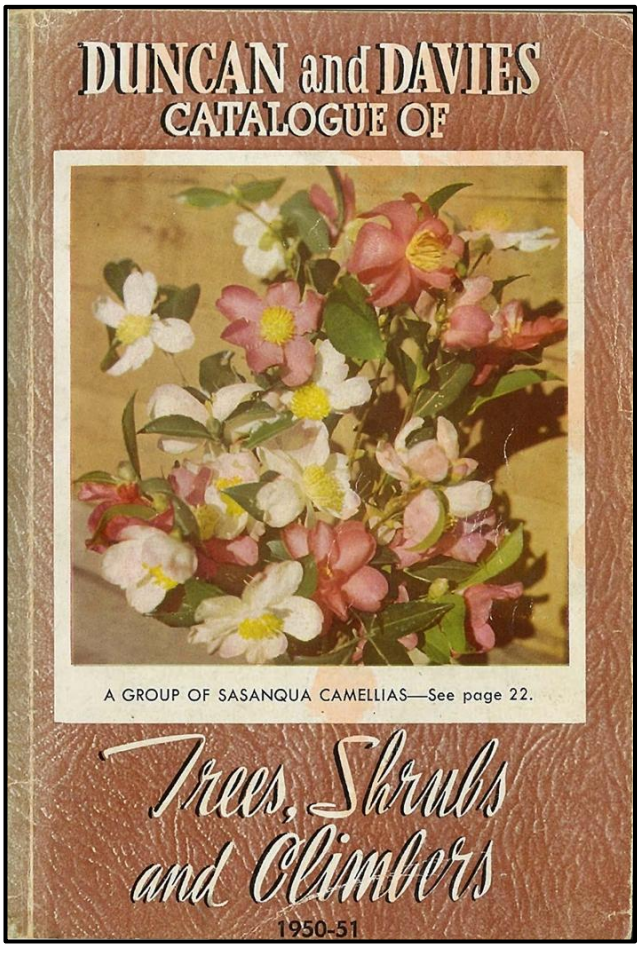


AMF spore and hyphae within kauri root tissue
Image source: Renee Johansen

Intensity of introduction effort determines likelihood of garden escape

Plants introduced into gardens and then naturalizing over the wall is one of the key pathways of invasion of non-native plants. Only a minority of garden plants, however, become naturalized, so is there any way of determining which plants are most likely to escape? Propensity to become naturalized could be due to traits of the plants themselves but could also be due to introduction pressure, i.e., how many of a particular species are planted in gardens therefore increasing the opportunities for escape. Up until now, finding some way to measure introduction pressure has been elusive, but Dawes et al. (2025) recently decided to test whether frequency of occurrence of a species in historic nursery catalogues could act as a proxy for introduction pressure. In New Zealand, such catalogues were a predominant way gardeners chose garden plants historically and the authors searched catalogues from 1861 to 1992. They also recorded plant traits associated with naturalization of each species. An analysis of which variables (frequency in catalogues, traits) best predicted naturalization highlighted that frequency of appearance in catalogues, maximum plant height, and belonging to plant families invasive elsewhere were important. This suggests that some traits and introduction pressure are both important and provide some tools to try and prevent naturalization of garden plants in the future.

Dawes TN, Bufford JL, Hulme PE 2025. Historical frequency of plants in nursery catalogues predicts likelihood of naturalization in ornamental species. Ecological Applications 35(3):



1950-51 Duncan and Davies catalogue. Image Source: RNZIH archive

Illustrate Ecology

Why wear weak white spots?

E. A. Armstrong (1946, Birds of Britain, No.2) reasoned that gulls feeding on patchy food sources were white to attract conspecifics; hard on the finder, but a group advantage. However, white feathers are weak, being eroded by UV, sand blast, and bacteria. So most white gulls have dark wings. On the biggest wing feathers (primaries) white tips are common - all three NZ gulls have them, and 5 of 12 UK species, despite the wear (left photo). When gulls swim, or stand, this series of four white spots is very conspicuous (centre of illustration). The birds pay no attention to them, and even N. Tinbergen, who studied gull behaviour for many years, does not mention them. Gulls nest in colonies; perhaps different patterns of spots allow fledglings to recognise and follow their parents.

- **John Flux**

On this day…

Thirty-five years ago the NZES published its July 1990 newsletter. At the time, Judith Roper Lindsay was the NZES President.

The society had recently submitted their recommendations on "Responding to Climate Change: A Discussion of Options for New Zealand". The recommendations were i) an immediate freeze on increasing greenhouse gas emissions gas emissions, ii) a 30% reduction in emissions by 2005 and 90% reduction by 2030, and iii) matching international and domestic policies on climate change. If only…

Other submissions on NZ legislation covered the Maori fisheries bill, the Ozone protection bill, and Conservation Law Reform Bill.

Of particular concern for NZES member in 1990 was the restructuring of DSIR – with the amalgamation of Ecology, Botany, and Land and Soil Sciences Divisions into the DSIR Land Resources Division. This mirrors concerns from some of our members in the present day with the ongoing CRI-merger – primarily the fusion of Manaaki Whenua Landcare Research, Scion, AgResearch, and Plant & Food into the Bioeconomy Science Institute.

In 1990 a whopping 24 students received travel grants!

The 1990 NZES conference was hosted at Waikato University with field trips at the Waikato Wetlands, Waitomo and Marakopa limestone areas, and the Thames Estuary.

Read the full July 1990 Newsletter here, or take a look through our newsletter archive here (past and present) for some interesting insights into New Zealand ecology over the years.

Our plan for the planet can't be the lesser of two evils

The original version of this article was originally published 9 May 2025 on Newsroom. Please find the main article here.

The vexed issue of the mining and material requirements for a renewable energy transition has been making the news.

The well-known green growth and clean energy champion Hannah Ritchie claimed that clean energy requires substantially less mining and material use than our existing fossil fuel energy systems. This made the news globally and was picked up in NZ with similar claims appearing in LinkedIn posts, blogs and social media posts from Rewiring Aotearoa.

This is one of these messy lesser-of-two-evils arguments I usually try to steer clear of because I can see that 'less harm' (and I will argue here that the 'less harm' claim is far from settled) is turned into a 'better for the planet' meme on social media. This lesser-of-two-evils meme is often used by companies as a greenwashing tactic.

The point missed when this argument is used is that growth, regardless of its colour (green, black, or purple) requires taking ever more from a stressed finite planet and this is no longer an option. The historian and philosopher Hannah Arendt nailed my thoughts when she said: "Those who choose the lesser evil forget very quickly that they chose evil."

The reason I don't want to get into a clean vs dirty energy debate is that it's not an either/or choice, and it isn't just about the climate crisis. The life-supporting capacity of the planet is already teetering on collapse with multiple existential threats reaching tipping points and any more extraction, no matter how well intentioned, is not viable.

Biophysical limits are real and non-negotiable – they simply cannot be compromised, regardless of whether the extraction is for 'carbon-free energy' or anything else. The goal of electrification to address climate change is laudable. The problem is that it's being seen in isolation, ignoring the reality that climate change is just one of a raft of crises, all symptoms of ecological overshoot.

Even the *New York Times* pointed out on Earth Day that: "Climate change is a symptom of a larger issue: ecological overshoot, the fact that humans are consuming resources faster than they can regenerate and producing more waste and pollution than nature can absorb."

Now to the specifics of the materials/mining argument. The Rewiring Aotearoa claim that low-carbon energy uses 1500 times less material than fossil fuels is based on the fact that in 2022 the world used 15 billion tonnes of materials for coal, oil, and gas and only 10 million tonnes for low-carbon energy. At face value, this sounds convincing but dig a little deeper and it is far from established. To reiterate, I think it's a moot point comparing replacing fossil fuels with 'clean energy' because neither option is feasible for a living planet.

First, it's not a fair comparison given the low-carbon energy input in 2022 was a fraction of the energy consumed by humans on the planet: in that year 91 percent of global primary energy came from fossil fuels (just 2.5 percent from wind and solar).

Second, the 10 million tonnes quoted for low-carbon energy is just counting the weight of the minerals themselves and misses the crucial reality that the harm is how much material was mined and processed to get the final product. Not just how much mineral was mined, but also how many forests were cut down, roads built, rivers and soil and air polluted to extract those minerals. To say nothing about the social costs to poor and indigenous communities. Most of these minerals are at very low concentrations in rocks, meaning that when the waste rock or overburden mining required (measured as the rock-to-metal ratio) is taken into account the 10 million tonnes quoted by Rewiring Aotearoa then becomes billions of tonnes. This point was conceded by Hannah Ritchie in a follow-up article to one she originally wrote in January 2023.

Finally, and I think the most crucial point – and one that almost never makes its way into energy transition discussions or modelling – is that the amount of material mined per unit of metal (the rock-to-metal ratio) isn't a constant: it has always, and will always, keep rising. This is a result of the simple fact that we start off mining all the easy-to-get metal and minerals and then over time must move to ever lower ore concentrations.

An example is copper. It is vital to an energy transition and the average ore grade globally has decreased approximately by 25 percent in just 10 years. In that same period, the total energy consumption for mining copper increased by 46 percent. Chile, the world's leading copper producer, increased fossil fuel and electricity consumption per unit between 2001 and 2017 by 130 percent and 32 percent respectively.

This means even without the huge increases required to replace all the fossil-fuel powered infrastructure and energy consumption growth, more and more material must be mined every year using more and more energy just to maintain metal production.

If that wasn't sobering enough, the fossil fuels used for almost all the mining, processing, and transport of the materials is undergoing the same conundrum of decline. The fossil fuel energy return on energy invested is declining fast, thus ever more fossil fuels are burnt to supply the same amount of energy. These two enigmas act on each other, meaning exponentially more harm is done to meet current demand, let alone growth.

Behind the whole debate around materials is the all-pervasive assumption that we must do everything and anything – no matter the risk – to maintain *status quo*, which is ever-increasing consumption.

So are we going to dig up what's left of the planet and threaten the very life supporting systems we can't live without to power ever more gadgets? Will we jeopardise our futures for the sake of artificial intelligence and data centres to hold our pet and family holiday pictures? When will we shape our lives around what the planet can support rather than try to make it give us the lifestyles we have become accustomed to?

Instead of trying to keep up supply, surely we must look at the energy and material demand side and reduce consumption to a level that the planet can support. Our fossil fuel-powered lives of excess in the wealthy world are not normal. Radical reduction in consumption is required in the wealthy world – but also necessary for biophysical limits. This will not be convenient, but we must realise that how we in the wealthy world live is radical.

I acknowledge the distinct perspectives present in energy transition discussions. Mine emphasises the fundamental ecological view that immediate radical action is critical for us to have a liveable planet. Others take a more political 'art of the possible' position, focusing on currently achievable steps and public consensus. Despite these differing approaches, there is an underlying alignment in the intention and that is to navigate the challenges of a civilisation in crisis.

- **Dr Mike Joy**

A note on Genus *Petroica* territories on the Old Ghost Road, New Zealand 2019

Here is an update of an initial report (24 November 2019) shared on Facebook to highlight the efficacy of a wide-scale aerial distribution of pest-control poison in a national park in December 2016.

Location

The start of the Old Ghost Road (OGR) is situated at the Lyell Campground just off the road between Murchison and Westport. The location is at the south-west corner of the Kahurangi National Park. All observations are from the Lyell Campground to the Lyell Saddle Hut, 17km distant.

Timeline

The first mountain bike trip to the OGR was in November 2015, a year before the New Zealand Department of Conservation conducted an aerial application of 1080-laced pellets in the Kahurangi National Park with the purpose of suppressing the numbers of introduced mammalian predators. The scarcity of native birds other than usual common species, both native and introduced, was noticeable.

South Island Robin, Kakaruai, Petroica australis *ssp.* australis *Song*

On the second trip in March 2017 (four months after the 1080 application mentioned above) there was an obvious increase in bird numbers, especially Robin/Kakaruai. None were recorded.

Third trip: December 2017. Robins were more evident and Tomtit/Ngirungiru song was becoming more noticeable. None were recorded.

Fourth trip: February 2019. Notes were taken and three photos of birdlife, this time recording the presence of a much-increased diversity of species including kea, kaka, kakariki and small flocks of riflemen. This prompted a plan to undertake a systematic count of Petrioca territories in spring or early summer. This approach is supported by Miller and Anderson (1992) who cited Morrison (1986): "Birds have traditionally been used as indicators of environmental condition and contamination because of their conspicuousness and because they occupy the most trophic levels."

Fifth trip: 22 November 2019. As planned, the purpose of this field trip was to record all calls and sightings of robins and tomtits to assess numbers of territories along the first 17km of the track. The audio recorder was an Olympus digital voice recorder. Photos were taken of non-vocal robins that came close. Hand-written notes were made of each observation noting time, distance from the start (as determined by the activity tracker app on a mobile phone), species observed, number of birds and method of recording.

South Island Tomtit, Ngirungiru, Petroica macrocephala *ssp.* macrocephala *Song (with Pipipi song)*

Discussion

The results were outstanding. In the 17km of track about 43 robins and about 56 tomtits were recorded. Of the observations that were digitally recorded, each were loaded into iNaturalist.nz. Note that these numbers are not absolute and are an indication of presence with sufficient distance between observations to assume territories. The intention was to provide a better-than-guess estimate based on data that can be accessed and replicated (or refined).

Since that date, numbers of observations have been few and sparse (see iNaturalist "Explore" search results to date) indicating either a paucity of interested observers or a decline of the bird population, or both. To determine the current size of the population a second assessment is planned for a November or December 2025 field trip using the same methods and equipment as before.

Conclusions

This brief study demonstrates the dramatic increase in vulnerable bird life in the studied species (including other native bird species) due to the judicious application of 1080 poison by the Department of Conservation, designed to protect our native wildlife and forests from exotic predators and browsers. Further, it demonstrates the use of iNaturalist as the open repository for the raw data which is subjected to rigorous identification and curation. This supports and proves that the pest control or elimination methods are effective. In addition, the reliable and easily-accessed information about rapid recovery from intense predation pressure on the two Petroica species demonstrates they may be regarded as reliable early indicators of the health of other avifauna communities.

References

Cunningham, D. M. (2019). Meanwhile, on the Old Ghost Road - the Story so Far. Facebook, 1080: Does The Job You Don't (public)

Department of Conservation Te Papa Atawhai. 1080 research and references. Introduction: Independent experts, conservation agencies, community groups and scientists endorse the use of 1080.

Miller, C.J., Anderson, S. (1992). Impacts of Aerial 1080 Poisoning on the Birds of Rangitoto Island, Hauraki Gulf, New Zealand. New Zealand Journal of Ecology (1992) 16(2): 103 – 107.

Morrison, M.L. (1986). Bird Populations as Indicators of Environmental Change. In: Johnston, R.F. (eds) Current Ornithology. Current Ornithology, vol 3. Springer, Boston, MA.

Other information

Powlesland R. G., Knegtmans J. W., Marshall I. S. J. (1999). Costs and benefits of aerial 1080 possum control operations using carrot baits to North Island robins (*Petroica australis longipes*), Pureora Forest Park. New Zealand Journal of Ecology (1999) 23(2): 149-15.

- **Duncan Cunningham**

Across the Tasman

This article was originally published as an Ecological Society of Australia Hot Topic, and has been republished with permission.

Nature Positive – What does it mean for Australia?

Authors: Dale Wright, Brendan Wintle, Matthew Selinske, & Sarah Bekessy.

Key Points:

- Nature positive is an emerging concept based on a new global goal for halting and reversing biodiversity declines by 2050. The nature positive framing is gaining rapid uptake in popular and corporate discourse and driving new biodiversity disclosure platforms.
- Australian policy and practice are engaging with nature positive via the Federal Government's Nature Positive Plan, Nature Repair Bill and recently hosting the first Global Nature Positive Summit.
- Diverse approaches exist for measuring biodiversity and quantifying biodiversity impacts for organisations; however, all the current approaches carry uncertainties and assumptions.
- The uptake of nature positive approaches offers significant opportunities for ensuring biodiversity is being considered across all sectors globally and ultimately generating transformative change for society.


Image: Shutterstock

The nature positive global goal focuses on the termination and subsequent reversal of biodiversity decline[1,2,3]. Organisations, both in Australia and globally, can have negative impacts on biodiversity directly, via their landholdings and operations, or indirectly via complex supply chains[6]. Supply chain impacts on biodiversity are significant[4], but until now have been inadequately considered in conservation and supply chain literature[5]. A new policy target in the Global Biodiversity Framework requires transnational corporations to track, assess, and provide full disclosure of their direct and indirect impacts on biodiversity (see Target 15: CBD COP15). There are many measures of biodiversity and ecosystem state and condition that can be considered candidates for understanding business impacts on or benefits for biodiversity[6]. The most widely used include 'mean species abundance'[7] and 'potentially disappeared fraction of species' (PDF)[7,8,9].

However, unlike tracking net zero carbon targets, nature is both place-based and relational: local and cultural values of species are central and must be considered in business reporting[10]. Current methods are unable to capture the multiple dimensions of biodiversity and produce widely applicable and generalisable measures of biodiversity impact[7,8,11]. It is unclear what measures might be most appropriate for organisations to track their impacts on biodiversity[18], potentially inhibiting organisations from responding to the nature positive framing. A key challenge is determining biodiversity equivalency, across different types of impacts in either value chains or at physical sites, and between activities which either negatively impact or positively benefit biodiversity. Developing a national framework for standardising the process of selecting biodiversity indicators for Australian organisations, against a set of criteria backed by good governance will be a fruitful research activity[18].

Australia has an opportunity to advance biodiversity considerations through this framing and the Federal Government has responded with the development of new policies[12,17]. Strong regulatory frameworks will be essential to ensure that businesses provide robust biodiversity disclosures[20]. Organisational responses to biodiversity impacts are very new, compared to other aspects of sustainability reporting such as carbon or energy disclosures[13]. The use of biodiversity credits and 'green' financial instruments is being considered[3]; however, caution is critical given the failings of carbon markets[19]. There is potential for the nature positive movement to generate greenwashing if companies promote conservation initiatives superficially[14,20]. Organisations planning to respond to their impacts must follow the impact mitigation hierarchy and focus on tangible environmental restoration actions to compensate for impacts[14]. New knowledge regarding organisational goals, motivations and values across multiple scales (i.e. individual, institutional, societal and global) is also needed to design appropriate nature positive response pathways[15]. A critical component in Australia is the centring of Indigenous people's knowledge in policies and response planning, to ensure an inclusive, people and nature positive future[16,17].

More information:

- Plain English Factsheet -

- References -

Publications in the current issue of NZ Journal of Ecology (vol 49)

Research Article

Reproductive trait shift in *Pinus contorta* helps explain invasion success in Aotearoa New Zealand
Thomas F. Carlin, Matthew B. Scott, & Thomas S.H. Paul

Using population viability analysis and fossil records to inform the conservation of pāteke (*Anas chlorotis*)
Finnbar Lee, André M. Bellvé, Hayley Alena, Quinn Asena, & George L.W. Perry

Do fragmented forests host sufficient birds for forest restoration on Banks Peninsula, New Zealand?
Maia C Gerard, James V Briskie, & Dave Kelly

Spatial distribution of probable ship rat reinvaders in a pest-fenced ecosanctuary
Helen Nathan, Robert Schadewinkel, & Nick Mulgan

An ecological survey of Kuranui (Penguin Island) and Waikaia (Rabbit Island), western Bay of Plenty
James C. Russell, Peter Corson, Kathryn O'Toole, Ben Gordon, & Craig Balsom

Life in the slow and high lane: ecology of an alpine gecko (*Mokopirirakau* "Cascades") in the Southern Alps | Kā Tiritiri o te Moana, Aotearoa New Zealand
Marieke Lettink, Alison Cree, & Joanne M. Monks

Understanding foraging and nesting behaviour of ground nesting bees in Dunedin, New Zealand
Zhuali Lim, Janice Lord, & Sheri Johnson

VKORC1 mutations in house mice in the Auckland Region (Aotearoa/New Zealand)
Francesco Gallozzi, Riccardo Castiglia, Paolo Colangelo, & James C. Russell

Video monitoring finds no bat interactions with resetting traps in Pureora Forest Park
Lucy Bridgman, Jade Watkin, & Nic Gorman

Effects of untrapped land on the control of predators and associated monetary costs
Mark Hostetler & Dean P. Anderson

A spatial layer of human terrestrial pressures for New Zealand
Olivia R. Burge, Richard Law, & Sandy Wakefield

Habitat use of obligate alpine geckos from southern New Zealand
Jess Randall, Aaron Bertoia, & Joanne M. Monks

Multiplex PCR reveals population structure in an inbred communal bird
Sarah Babaei, Leanne A. Grieves, Ben Evans, & James S. Quinn

Preference and performance of Pūrerehua Kahukura (*Vanessa gonerilla gonerilla*) on native and introduced nettles of Aotearoa
Greer J Sanger, Janice M Lord, & Jennifer M Jandt

The karoro *Larus dominicanus* in northern Aotearoa | New Zealand: diet and evidence of changing trophic position from regurgitated pellets and stable isotope analysis of contemporary and historic feathers and bones
Mel Galbraith, Sarah J. Bury, Diane L. Fraser, & Matt J. Rayner

Evolutionary and ecological controls over leaf-level traits in New Zealand's tussock grasses
Richard A. Gill, Steven I. Higgins, Matthew J. Larcombe, Benjamin Potter, & William G. Lee

Frog-predator interactions in Aotearoa New Zealand: observations and two case studies using molecular and visual gut-content analyses
Emily R. Hotham, Amanda Haigh, Sara Smerdon, & Jennifer M. Germano

Aversion training wild kea with anthraquinone-treated repellent in non-toxic baits prior to 1080 operations does not improve survival outcomes
Laura M. Young, Amy L. Whitehead, Lana M. Handley, Ivor J. Yockney, Mark B. Watson, Mathew Hickson, Jeffrey W. Benson, Ivana D. Giacon, & Kerry A. Weston

Forum Article
Facilitating better ecological outcomes from high-stakes decision-making requires evaluation of biodiversity models to address risk and transparency
Fleur J. F. Maseyk, Laurence P. Barea, Cassie Mealey, Ilse Corkery, & Justyna Giejsztowt

Rethinking freshwater translocation policy and practice in Aotearoa New Zealand

Aisling Rayne, Kari Beaven, Joanne E Clapcott, Roland A Eveleens, Jane C Kitson, Jo Ledington, Angus R McIntosh, Terese McLeod, Riki N Parata, Danielle F Shanahan, Tammy E Steeves, Helen J Warburton, Erina M Watene, & Matthew J Wylie

Native plantings for beneficial insects in Canterbury: scoping and researching economic, environmental, and social benefits in a simplified agricultural landscape
Brad G. Howlett & Melanie M. Davidson

The Biodiversity Compensation Model: a framework to facilitate better ecological outcomes
Matt Baber, Justine Quinn, John Craig, Gary Bramley, Mark Lowe, Claire Webb, Graham Ussher, Connor Whiteley, Gerry Kessels, Fiona Davies, Josh Markham, Dean Miller, Dylan van Winkel, Chris Wedding, & Simon Chapman

Review Article
Harnessing spider biodiversity for sustainable horticulture: A call for research and conservation in Aotearoa New Zealand
Nicola J. Sullivan, Lloyd D. Stringer, Amanda Black, & Cor Vink

Ecology, history, threats, and management of gumland ecosystems in Aotearoa | New Zealand
Riki M. Taylor, Jamie R. Stavert, Dion L. Pou, Janet M. Wilmshurst, & George L. W. Perry

Short Communications
Storm surge impacts on a coastal lizard community: a case study on how climate change may affect endemic species
Madeleine R. Deacon, Sarah M. Herbert, & Nicola J. Nelson

Assessment of pyroligneous acid as a pest bird deterrent in a New Zealand pest-exclusion fenced sanctuary
Nicolas Sandoval, Karen Denyer, Sasha Dowling, & Hayden Smedts

Other recent publications on New Zealand Ecology

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.

Aitken E, Rufaut C, Scott J, Read S, Craw D, Pillai D 2025. Otago Schist tor lithology controls on lizard habitats, East Otago, New Zealand. New Zealand Journal of Geology and Geophysics, in press.

Anjan A, Geldmann J, Harfoot M, Christie AP 2025. The spatial distribution of tests of conservation interventions does not align with global conservation needs. Biological Conservation 309: art. no. 111313.

Bailey S, Guhlin J, Senanayake DS, Scherer P, Brekke P, Ewen JG, Santure AW, Whibley A 2025. Assembly of female and male hihi genomes (stitchbird; *Notiomystis cincta*) enables characterization of the W chromosome and resources for conservation genomics. Molecular Ecology Resources 25(5): art. no. e13823.

Baso NC, Bownes A, Hill M, Coetzee JA 2025. Modelling the distribution of a submerged invasive macrophyte and its potential biological control agent in invaded ranges. Hydrobiologia 852(14): 3661–3672.

Batucan NSP, Tremblay LA, Northcott GL, Matthaei CD 2025. Low concentrations of ibuprofen had no adverse effects on *Deleatidium* spp. mayfly nymphs: a 7-day experiment. Environments 12(4): art. no. 102.

Bennett J, Presswell B, Little M, Lagrue C, Webster T, Dutoit L, Poulin R, Davidson I, Cahill P, Hutson KS 2025. Endoparasite communities of New Zealand penguins differ over time and among species. Marine Biology 172(6): 94.

Bourdôt GW, Wynn-Jones B, Mills J, Lamoureaux SL, Buddenhagen CE, Noble ADL 2025. Evaluating flotation and sieving for removing *Nassella neesiana* seeds from gravel harvested from infested riverbeds in New Zealand. New Zealand Journal of Agricultural Research, in press.

Brader K, Prado NA, Brown JL, Kearney M, Boisseau N, Ware L, Delaski KM, Bailey W 2025. Fecal glucocorticoid metabolite responses of brown kiwi (*Apteryx mantelli*) to ambassador program participation and translocation: implications for captive management and welfare. Animals 15(8):1156.

Brav-Cubitt T, Sinclair HM, Robertson HA, Veale AJ 2025. The discovery of a genetically distinct subpopulation of Haast tokoeka (Southern brown kiwi, *Apteryx australis* 'Haast'). Conservation Genetics, in press.

Brown JI, Sheppard JL, Mohl J, Engilis IE, Engilis A Jr, Lavretsky P 2025. Anthropogenic hybridization contributes to the naturalization of introduced domestic mallards (*Anas platyrhynchos*) at the expense of native New Zealand grey ducks (*A. s. superciliosa*). Ecology and Evolution 15(6): e71536.

Buckley TR 2025. Charting a future for entomological taxonomy in New Zealand. New Zealand Entomologist 48(1):31–47.

Bulmer R, Palacios MM, Masqué P, Lundquist CJ, Schwendenmann L, Trevathan-Tackett SM, Waryszak P, Kettles H, Macreadie PI 2025. Carbon capture by expanding temperate mangrove forests. Estuarine, Coastal and Shelf Science 323: 109415.

Burnham KA, Hillman JR, Jeffs AG 2025. Macroalgae and conspecifics serve as critical attachment substrates for juvenile green-lipped mussels (*Perna canaliculus*) during different stages of development. Journal of Experimental Marine Biology and Ecology 588: 152108.

Busby I, Palmer A, Harcourt N, Jones C 2025. Can community-based conservation improve social acceptance of invasive species management? Lessons from New Zealand. People and Nature 7(7): 1639–1651.

Campbell M, Walter R, Furey L, Ash E, McAlister A, Tromp M, Reid M, Zhang J, Simone M, Lilkendey J, White L, Sabetian A 2025. Reconstructing pre-European marine habitats using archaeological assemblages: A case-study from the Ōtata midden, New Zealand. Journal of Archaeological Science: Reports 64: 105160.

Campbell R, Beresford R, Turner R, Carey-Smith T, FitzHerbert S 2025. Potential climate change impacts on myrtle rust risk in Aotearoa/New Zealand. Plant Pathology 74(5): 1426–1441.

Canessa S, Converse SJ, Adams L, Armstrong DP, Makan T, McCready M, Parker KA, Parlato EH, Sipe HA, Ewen JG 2025. Simulating demography, monitoring, and management decisions to evaluate adaptive management strategies for endangered species. Conservation Letters 18(2): e13095.

Carlin TF 2025. *Pinus contorta* cone scale fertility is similar between two Aotearoa New Zealand sites despite fourfold difference in seed potential. New Zealand Plant Protection 78: 1–9.

Che-Pelicier A, Hampton HG, Sabadel AJM, Thomson Laing G, Miller T, Pochon X 2025. Release and degradation of environmental DNA and RNA from eels in Aotearoa New Zealand. Environmental DNA 7(3): e70128.

Ciarle R, de Lange P, Burns KC 2025. Ancestral state reconstruction sheds new light on the loss of divarication hypothesis on New Zealand's outlying islands. *Journal of Ecology* 113(5): 1293–1303.

Clemente KJE, Thomsen MS 2025. Co-occurring foundation species increase habitat heterogeneity across estuarine intertidal environments on the South Island of New Zealand. Marine Environmental Research 208: 107150.

Crofts-Bennett J, Lord J 2025. Are evergreen mistletoes on deciduous hosts arthropod winter refugia? New Zealand Entomologist 48(1): 20–30.

Cushnahan TA, Grafton MCE, Pearson D, Ramilan T 2025. Hyperspectral data can classify plant functional groups within New Zealand hill farm pasture. Remote Sensing 17(7):

Dionisio MRDJ, Schindler M, Challies E, McNabb T, Yates A 2025. Community actions to revitalize urban blue and green capitals: learnings from Abberley Park, Ōtautahi Christchurch, Aotearoa, New Zealand. Ecology and Society 30(2):14.

Dodd MB, Pinxterhuis IB, Judson HG 2025. Narrow-leaved plantain (*Plantago lanceolata* L.): A review of research on forage management within temperate grazing systems. Grassland Research 4(1): 41–56.

Dowling L, Craig HM, McDonald N 2025. Fragility and damage functions for production forests exposed to volcanic ashfall and flood hazards in Aotearoa-New Zealand. Natural Hazards 121(6): 7027–7049.

Durán-Vinet B, Stanton J-AL, Jeunen G-J, von Ammon U, Treece J, Pochon X, Zaiko A, Gemmell NJ 2025. CRISPR-based environmental biosurveillance assisted via artificial intelligence design of guide-RNAs. Environmental DNA 7(3): e70105.

Eastman-Densem RW, Glenny DS, Heenan PB, Wold JR, Pelser PB 2025. Conservation genomics for threatened New Zealand *Gentianella calcis* (Gentianaceae) and implications for vulnerable limestone ecosystems. Ecology and Evolution 15(6): e71596.

Fan A, McCulloch GA, Waters JM 2025. Do freshwater insect assemblages in exotic plantations resemble those from native forest? Evidence from environmental DNA. Restoration Ecology, in press.

Fan A, Ni S, McCulloch GA, Waters JM. 2025. Disturbance drives concordant functional biodiversity shifts across regions: new evidence from river eDNA. *Ecography* 2025(4): e07264.

Finlay-Smits S, Ayala MB, Allen W, Grant A, Greenaway A, MacBride-Stewart S, O'Brien L, Ehler K-S 2025. Decolonising knowledge practices in biosecurity: Developing a reflective toolkit for more inclusive, equitable and respectful research. People and Nature 7(7): 1724–1737.

French RK, Anderson S, Cain K, Digby A, Greene TC, Miskelly CM, Muller CG, Taylor MW, Recovery Team Kākāpō, Geoghegan JL, Holmes EC 2025. Diversity and cross-species transmission of viruses in a remote island ecosystem: implications for wildlife conservation. Virus Evolution 11(1): veae113.

Garcia-R JC, Cimatti M, Di Marco M 2025. Past and recent drivers of extinction risk in endemic New Zealand birds. Animal Conservation 28(3): 436–444.

Gault AA, Welsh SA, Paewai A, Drysdale P, Wilkinson SP, Morris H, Mōtū E, Dorset H, Collis R, Cookson A 2025. Promoting community-led monitoring of taonga (treasured) species and freshwater health through eDNA metabarcoding. Environmental DNA 7(3): e70098.

Gerard PJ, Wilson DJ, Barker GM, Addison PJ 2025. The New Zealand spread and distribution of the South American weevils *Foresianus sordidus* Hustache and *Atrichonotus taeniatulus* (Berg). New Zealand Entomologist 48(1): 48–56.

Gerrity S, Schiel DR 2025. Assessing methods of enhancement for New Zealand blackfoot abalone (*Haliotis iris*) populations affected by mass mortality. New Zealand Journal of Marine and Freshwater Research 59(1): 235–262.

Ghasemi M, González-García A, Serrao-Neumann S 2025. Ecosystem services modelling to analyse the isolation of protected areas from a social-ecological perspective. Journal of Environmental Management 386: 125459.

Goode SL, Rowden AA, Clark MR, Bowden DA, Stephenson F 2025. Early signs of recovery suggested by changes in the structure and function of deep-sea megabenthic communities on a seamount 19 years after fishing. Deep-Sea Research Part I: Oceanographic Research Papers 220: 104488.

Greig KJ, Buckley TR, Holwell GI, Leschen RAB 2025. Flight loss decreases diversification in New Zealand beetles (Coleoptera: Zopheridae). Biological Journal of the Linnean Society 145(2): blaf021.

Hall AA, Chilvers BL, Weir JS 2025. Towards an abundance estimate for New Zealand fur seal in New Zealand. Aquatic Conservation: Marine and Freshwater Ecosystems 35(4): e70142.

Handley SJ, Hale R, Smeaton C, Swales A, Kerr-Hislop O 2025. Shellfish carbonate in sediments: assessing historical baselines, dissolution dynamics, and carbon storage beneath shellfish farms, Marlborough, New Zealand. Estuarine, Coastal and Shelf Science 323: 109396.

Hewitt KG, Hofmann RW, Ball OJ, Finch SC, Bryant RH, Popay AJ 2025. Phosphorus induced changes in food quality enhance porina fitness feeding on *Epichloë* endophyte free forage grasses. Scientific Reports 15(1): 6448.

Hodge S, Merfield CN 2025. Screening of aqueous leaf extracts from Australian and New Zealand trees for repellent effects against the tomato potato psyllid, *Bactericera cockerelli*. New Zealand Entomologist 48(1): 1–7.

Hoffbeck C, Middleton DMRL, Nelson NJ, Taylor MW 2025. Season, body condition and developmental stage influence the gut microbiota of the sole living rhynchocephalian reptile (*Sphenodon punctatus*). Ecology and Evolution 15(4): e71068.

Holdsworth NS, Weinzweig N, Lalas C, Waller SJ, Geoghegan JL, French RK 2025. Uncovering the faecal virome of New Zealand sea lions (*Phocarctos hookeri*) reveals virus sharing among geographically distinct pinnipeds. Virology 610: 110617.

Holmes R, McFarlane K, Challies E, MacNeil C, Arnold J 2025. The social–ecological fabric of freshwater fish management: accounting for feedback loops in human–fish interactions. Ecosphere 16(4): e70249

Holwell GI, Mech A, Parzer H, Probert AF 2025. Teaching entomology online: challenges, benefits and examples of effective hands-on activities. Austral Entomology 64(2): e70007.

Howarth JD, Fitzsimons SJ, Moody A, Wang J, Garnett MH, Croissant T, Densmore AL, Howell A, Hilton RG 2025. Long term carbon export from mountain forests driven by hydroclimate and extreme event driven landsliding. Communications Earth and Environment 6(1): 432.

Hurst MRH, O'Callaghan M, Glare TR, Jackson TA 2025. *Serratia* spp. bacteria evolved in Aotearoa-New Zealand for infection of endemic scarab beetles. New Zealand Journal of Zoology 52(2): 121–143.

Ishii HS, Tsujimoto SG, Kadoya MB, Watanabe Y, Kohyama TI, Hiraiwa MK, Ushimaru A, Kudo G 2025. Linkage between community assemblage of floral traits and pollinator fauna: a comparison among six geographical regions. Plant Biology 27(4): 538–548.

Kabir S, Walter M, Pushparajah S, Panda P, Stephens T, Gee M, Parry B, Everett K, Tyson JL, Vanga B, Horner I, Williams N, Bulman S 2025. *Phytophthora* biodiversity in New Zealand kiwifruit. Acta Horticulturae 1431:347–352.

Kentjens W, Glenny D, Curran TJ, Sullivan JJ 2025. Bryophyte community composition is influenced by microhabitat and cover of vascular plants and lichens in New Zealand montane forest. New Zealand Journal of Botany 63(4): 573–596.

Kirschbaum MUF, González-Moreno MA, Mudge PL 2025. Observed and modelled carbon fluxes at a grazed site with CO_2 enrichment. Science of the Total Environment 981: 179552.

Lafont DJ, Shears NT 2025. Assessing drivers of variation in the distribution of macroalgal forests across a complex marine environment in Central New Zealand. Marine Environmental Research 209: 107171.

Leggett MA, Hill J, Nelson XJ 2025. Behavioural and physiological adaptations of a jumping spider to a marine environment. Journal of Zoology, in press.

Long RG, Vink CJ, Paterson AM 2025. A new genus of jumping spiders (Araneae: Salticidae) inhabiting the South Island New Zealand rocky alpine zone. New Zealand Journal of Zoology, in press.

Macaskill AC, Kaine G, Aley JP 2025. Reporting wandering dogs to protect kiwi and dogs: New Zealanders' involvement, attitudes, and beliefs. Conservation 5(1): art. no. 10.

MacDiarmid A 2025. What is an appropriate spatial scale for ecosystem-based fishery management of kōura, spiny lobster *Jasus edwardsii*, in the

Hauraki Gulf Marine Park, Aotearoa New Zealand? Fisheries Research 281: 107261.

MacDougall MS, Nelson XJ, Stringer LD 2025. Harshing the vibes: behavioural responses to predation and deterrent vibrational playback in *Scolypopa australis* (Hemiptera: Ricaniidae). Journal of Applied Entomology 149(4): 598–608.

McCarthy JK, Richardson SJ, Houliston GJ, Etherington TR, McGlone MS, Ausseil A-GE 2025. National-scale mapping of potential floral resources for honeybees and native pollinators in New Zealand. Ecological Applications 35(3): e70041.

McCulloch GA, Pohe SR, Wilkinson SP, Drinan TJ, Waters JM 2025. Targeted eDNA metabarcoding reveals new populations of a range-limited stonefly. Ecology and Evolution 15(4): e71244.

McDougal RL, Ruaine K, Vaidyanathan G, Shiller J, Frickey T, Herron D, Bradshaw R 2025. Genome data for 25 isolates of the prevalent forest and nursery pathogen, *Phytophthora cinnamomi*, from New Zealand. Data in Brief 60: 111655.

McKenzie M, Collins AL, Davis NG, Hodson R, Jones JI, Matthaei CD, Murphy JF, Wagenhoff A, Mathers KL 2025. Stream invertebrate responses to fine sediment depend on the organic and inorganic components. Freshwater Biology 70(3): e70022.

Mehta S, Booth L, Hunter S, Jolly M, Gartrell BD 2025. Suspected brodifacoum poisoning in tuatara (*Sphenodon punctatus*). New Zealand Veterinary Journal, in press.

Moor A, Jones M, Wilson I, Zhang J, Lilkendey J, Trip DL, Sabetian A 2025. Age-based population dynamics of the four-rayed rattail *Coryphaenoides subserrulatus* from the Chatham Rise, New Zealand. New Zealand Journal of Marine and Freshwater Research, in press.

Nguyen H, Bellingham PJ, Fergus AJ, McCarthy JK, Padamsee M, Schwendenmann L 2025. Comparing forest carbon fluxes at locations with different land-use histories and restoration strategies. Plant and Soil 509(1): 67–82.

Orchard S, Thoral F, Pinkerton M, Battershill CN, Ohia R, Schiel DR 2025. River radii: a comparative national framework for remote monitoring of environmental change at river mouths. Remote Sensing 17(8): 1369.

Pagon T, Smyth T, Wilson R, Fox B 2025. Distribution and constructed morphology of artificial foredune notches. Earth Surface Processes and Landforms 50(7): e70094.

Palmer JTT, Vink JNA, Castro LM, Craig OJS, Davison EE, Gerth ML 2025. Improved isolation and PCR detection of *Phytophthora agathidicida* oospores from soils. Microbiology Spectrum 13(5).

Pascoe PP, Bartlett M, Shaw J, Trebilco R, Weldrick CK, Jones HP 2025. Decadal change in seabird-driven isotopes on islands with differing invasion histories. Ecological Applications 35(4): e70030.

Peñalver E, Speranza M, Delclòs X 2025. Fungal cortices in kauri resin from New Zealand as taphonomic and ecological analogues of Cretaceous amber cortices: an actualistic approach. Spanish Journal of Palaeontology 40(1): 133–146.

Perrie L, Shepherd L 2025. Naturalisation of the tree of love *Aichryson laxum* (Crassulaceae) and its implications for biosecurity surveillance in New Zealand. New Zealand Journal of Botany 63(4):537–547.

Prieto SV, Avila GA, Lima B, Gonella E, Alma A 2025. Assessment of symbiont-targeted control on non-target stink bugs and their associated egg parasitoids: Could this technique be suitable against *Halyomorpha halys* in New Zealand? Journal of Pest Science 98(3): 1399–1411.

Saverimuttu S, Hunter S, Gartrell B, McInnes K, Warren K, Pas A, Chatterton J, Yeap L, Jackson B 2025. What's in a database? Insights from a retrospective review of penguin necropsy records in Aotearoa New Zealand. PLoS ONE 20(4): e0321975.

Shields MW, Wratten SD, Van Koten C, Phillips CB, Bennett JR, Goldson SL 2025. Different parasitoid species elicit varied Argentine stem weevil, *Listronotus bonariensis* avoidance responses. New Zealand Journal of Agricultural Research 68(2): 475–484.

Siqueira DP, Ford C, Lloyd A, White D, Salvatierra G, Dungey H 2025. Container size and site quality affect survival and early growth performance of New Zealand native tree species. Journal of Forestry Research 36(1): 51.

Stronge D, Kaine G, Hyslop J 2025. A social practice perspective on environmental volunteering and pest management in Aotearoa New Zealand. Pacific Conservation Biology 31(3): PC24077.

Sweatman JA, Aguirre JD, Smith ANH, Liggins L 2025. Using the size structure of populations to infer range dynamics and the frequency of recruitment. Ecology and Evolution 15(6): e71603.

Villamor GB, Steer BSC, Baluyot A, Meason DF 2025. Understanding land-use transitions in rural areas of the North Island, New Zealand from 1996 to 2018: an intensity analysis approach. GeoJournal 90(2): 76.

Viriyautsahakul S, Poulin R, Johnson SL, Bennett J 2025. Unravelling hidden battles: Genetic insights into parasite diversity and competition in mottled triplefin (*Forsterygion capito*). Parasitology Research 124(6): 62.

Wade B.L., Resende A.C., Willis-Kaio D., Rogers A 2025. Exploring the consequences of complex habitat loss for the New Zealand blue cod, *Parapercis colias*. Ecosphere 16(3): e70233.

Ward S, Logan D, Mata L, van Rooyen A, Umina PA 2025. Fluffy bums and their aliens: passionvine hoppers (*Scolypopa australis* (Walker)) and their elusive parasitoid wasps. Bulletin of Entomological Research.

Watt MS, Kimberley MO, Steer BSC, Scholer MN 2025. Carbon sequestration estimates for minor exotic softwood species for use in New Zealand's emissions trading scheme. Forests 16(4): 598.

Wehi PM, Cox MP, Whaanga H, Roa T 2025. Plant biocultural landscapes in Māori oral tradition. Journal of Ethnobiology 45(1): 51–62.

Wing LC, Wing SR, Kinaston R, Sabadel AJM, Smith I 2025. You can't go home again: Changes in trophic niche following extinction and recolonization of the New Zealand sea lion. Ecosphere 16(6): e70287.

Withers TM 2025. Classical biological control of defoliators in eucalyptus plantations. In: Biological Control of Insect Pests in Plantation Forests, pp. 205–221.

Wolf RP 2025. Using taxonomy to strengthen aquaculture for climate change, ocean acidification and invasive species. New Zealand Journal of Marine and Freshwater Research.

Ye N, Mason E, Xu C, Morgenroth J 2025. Estimating individual tree DBH and biomass of durable *Eucalyptus* using UAV LiDAR. Ecological Informatics 89: 103169.

Yiu SW, Suraci JP, Norbury G, Glen AS, Peace JE, Garvey PM 2025. Problematic cats in urban reserves: implications for native biodiversity and urban cat management. Global Ecology and Conservation 60: e03584.

Zelli E, Ellis J, Pilditch C, Rowden AA, Anderson OF, Geange SW, Holland LP, Stephenson F 2025. Bottom-trawling affects the viability of climate refugia for vulnerable marine ecosystem indicator taxa. Ocean and Coastal Management 269: 107768.

Noticeboard of Upcoming Conferences

The **Ecology & Management of Alien Plant Invasions (EMAPI) 2025** conference will be held at Lincoln University, Christchurch, 2-5 September 2025. The conference theme "From Ecology to Action: Innovative Solutions for Plant Invasion Management" captures the need for the science of plant invasions to deliver solutions. New Zealand is an ideal setting to illustrate the way forward in terms of invasive plant management through biological control, community initiatives, and long-term national programmes.

The **International Society of Arboriculture Conference** will be held in Ōtautahi Christchuch 20–22 October 2025.

The **73rd Entomological Society of New Zealand Conference** will be jointly held with the Australian sister-society at the Australian National University (Canberra) from 1–4 December 2025.

The **Australasian Wildlife Management Society (AWMS) Conference** will be held 2–4 December 2025 at the Heritage Hotel, Queenstown, New Zealand. The theme "New challenges, new solutions" will include a range of symposia including i) new technology and new innovations, ii) one health in conservation and iii) human dimensions of wildlife management.

The next biennial **Society for Research of Amphibians and Reptiles (SPARNZ) conference** will be held in 2025. More details to come.

The **2025 New Zealand Marine Sciences Society Conference** is looking to be held in Marlborough from 7-10 July 2025.

Island Invasives 2026 is the fourth conference in the Island Invasives series started in Auckland, New Zealand in 2001. In 9-13 February 2026 the conference returns to Auckland to celebrate its 25th anniversary. The conference continues its resolute focus on the complete eradication of invasive species of any taxa from islands or island-like bodies. Scholars and practitioners from around the world will convene to present on any aspect of this topic with their work published as peer-reviewed papers in the renowned conference proceeding series.

The **11th International Deer Biology Congress** will take place in Ōtepoti Dunedin from the 10–13 February 2026. Abstract submissions are now open!

The **24th Australasian Weeds Conference (24AWC)** will be held in Ōtautahi Christchuch 23-27 August 2026. More details to come.

The **24th International Conference on Aquatic Invasive Species** will be hosted by Queen's University Belfast, in Belfast, Northern Ireland 23-27 August 2026. The conference theme is 'Transcending Boundaries' to explore how aquatic invasive species can be addressed through integration of research and practice across habitat types, geographic regions, scientific and other disciplines, and research-policy interfaces.

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