Postdoctoral Fellow and PhD student in metacommunity and evolutionary drivers of resilience

School of Biological Sciences
University of Canterbury, New Zealand

About the project
There is an upcoming opening for one Postdoctoral Fellow and one PhD student in the labs of Prof. Jason Tylianakis and Dr. Jonathan Tonkin at the University of Canterbury in Christchurch, Aotearoa New Zealand, to work in collaboration with and funded by the Principal Investigators in Bioprotection Aotearoa Centre of Research Excellence.

Project background
Species interactions influence how they adapt to the environment, and the interactions themselves are subject to evolutionary, coevolutionary and spatial (metacommunity) processes. While pest outbreaks are typically rare (insect herbivores are suppressed by natural enemies) climate change can alter this suppression. Moreover, the presumed long-term stability of biocontrol has been challenged by our team’s recent research that demonstrates evolution of pest resistance to enemies. As evolution against enemies can influence responses to environmental extremes, and climate can influence mechanisms of coevolution, the evolution of pest resistance to enemies will be influenced by population and community source-sink spatial processes that occur alongside environmental stressors. These positions are part of a broader project entitled “Understanding metacommunity and evolutionary drivers of resilience to pests”, in which we aim to understand how the spatial arrangement of land uses influences species interactions (focusing on biological pest management as the context), with a vision to developing guidelines for maintaining the evolutionary resilience of biological control under environmental change.

See also:

Research aim
The aim of the Postdoc is to conduct theoretical work that addresses the link between ecological and (co-)evolutionary processes at local and regional scales. There will be some flexibility for the candidate to develop the specific research project, but it will likely involve the use of spatial evolving metacommunity models to understand evolutionary and ecological trade-offs between responses to the abiotic environment and interactions with enemies and resource species.

The aim of the PhD position is to address the link between ecological and evolutionary processes at local and regional scales, using a model community of host insects and their parasitoids. There will be some flexibility for the candidate to develop the specific research
project, but it will likely involve the use of laboratory mesocosms to manipulate dispersal, species diversity, environmental (nutrient and climate) heterogeneity and stochasticity to deconstruct how local species richness and spatial variability in community composition stabilise regional biodiversity through ecological insurance effects and spatial evolutionary dynamics.

Who you are
Postdoctoral Fellow
You must have completed a PhD in ecology, mathematics, statistics, or a related discipline. We are especially interested in candidates with a strong track record in publishing in leading ecological or interdisciplinary journals, analytical/modelling and programming skills (e.g. R or python), and a strong grounding in ecological and/or evolutionary theory.

PhD student
You must have completed an undergraduate degree and Honours or Master's degree (with a significant research component) in ecology or related field. A strong background in data analysis, experience working with insects and evidence of motivation to publish would be an advantage. Once selected, the preferred candidate would then need to apply to study at The University of Canterbury and meet the institutional criteria (https://www.canterbury.ac.nz/enrol/doctoral/document-requirements/) for entry prior to the scholarship being confirmed (check whether you meet these requirements here: https://checkwhatyouneed.canterbury.ac.nz/checkrequirements/postgraduate).

For both positions, you must be able to be in the country and start the position no later than early 2022. If managed isolation is required (due to COVID-19) at the time of entry, the grant will cover these expenses.

Who you will work with
Both positions will be jointly supervised by Jono Tonkin and Jason Tylianakis, and will work collaboratively with each other given the shared questions. The Tylianakis (http://tylianakislab.org) and Tonkin (http://tonkinlab.org) Labs both have a strong focus on understanding the impacts of environmental change on ecological communities. Our labs are diverse and interdisciplinary in thought and approach. The lab groups strive to cultivate an open, safe and supportive environment that values creativity, diversity, integrity and collaboration. We would therefore welcome applications from under-represented groups. For more information about both of our teams, please visit us our websites: http://tylianakislab.org, http://tonkinlab.org.

Background to Bioprotection Aotearoa
Bioprotection Aotearoa is a national Centre of Research Excellence that exists to train the next generation of bioprotection researchers and to deliver world-class research that protects the productive and natural landscapes of Aotearoa New Zealand. Our mission is to educate our nation’s future bioprotection leaders by collaborating to conduct pioneering, multi-disciplinary research that addresses the environmental challenges Aotearoa New Zealand is facing. We draw on our collective academic strengths to develop new and innovative solutions that protect our productive and natural landscapes from climate change, pathogens, pests and weeds. Our kaupapa is guided by a unique mātauranga Māori and science framework - Te Taiao-a-rangi - which supports a holistic, systems-level approach to achieving intergenerational environmental
sustainability. These positions are funded by, and sit within, the Bioprotection Aotearoa science programme.

**Funding notes**
The 3-year Postdoctoral Fellowship provides a taxable annual stipend of NZ$80,000 plus reasonable and necessary operating expenses.

The 3-year PhD Scholarship provides an annual stipend of NZ$28,000 a year tax-free, covers full university fees, and the project has additional funding towards operating expenses.

**How you apply**
To apply for either position, please provide a cover letter that addresses your research interests and experience, specific directions in which you would like to see this position go, Curriculum Vitae, and contact information for three references as a single pdf file (with your name in the file name).

Applications for the Postdoctoral Fellow position must be submitted the University of Canterbury careers website ([https://jobs.canterbury.ac.nz/jobdetails/ajid/5PVE7/Post-Doctoral-Fellow-in-Metacommunity-and-Evolutionary-Drivers-of-Resilience,6291](https://jobs.canterbury.ac.nz/jobdetails/ajid/5PVE7/Post-Doctoral-Fellow-in-Metacommunity-and-Evolutionary-Drivers-of-Resilience,6291)). Please note, we do not accept applications by email, however we are happy to answer your queries in relation to the application process, please forward these to WorkatUC@canterbury.ac.nz. Informal enquiries can be directed to jonathan.tonkin@canterbury.ac.nz.

Applications for the PhD position should be emailed to jason.tylianakis@canterbury.ac.nz with “PhD in eco-evo dynamics” in the subject line of your email.

**The closing date for these positions is: 21 August 2021 (midnight, NZ time)**

**Important notice**
In response to COVID-19 the New Zealand Government have imposed travel restrictions and in addition, all those that enter the country must currently enter Government-approved isolation/quarantine for two weeks upon arrival. You can find more information on the New Zealand Immigration website: [https://www.immigration.govt.nz/about-us/covid-19](https://www.immigration.govt.nz/about-us/covid-19).

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*I work a flexible working pattern so may send emails out of ‘normal’ working hours. Please be assured that I do not expect a response outside of your own working hours.*