

Katherine (Kate) L. Wootton

(+64) 0204 011 3111 | kate.wootton@canterbury.ac.nz

Homepage: kwootton.github.io/

I work at the interface between humans and ecosystems. I work across disciplines and stakeholder groups to understand the interdependencies between human and ecological communities and what that may mean for the future.

EMPLOYMENT HISTORY

2022-current Postdoctoral Fellow

Project: Te Weu o te Kaitiaki (Indigenous Regeneration Pathways)

Advisors: Dr. Phil Lyver (Manaaki Whenua Landcare Research) and Prof. Jason Tylianakis

School of Biological Sciences

University of Canterbury, New Zealand

2021-2022 Postdoctoral Fellow

Project: Mapping the Structure and Dynamics of the Scientific Ecosystem

Advisors: Prof. Daniel Larremore and Prof. Aaron Clauset

Department of Computer Science & BioFrontiers Institute

University of Colorado Boulder

2015-2016 Biodiversity Ranger

DOC Inventory and Monitoring Programme

Department of Conservation,

Invercargill, New Zealand

2012 Laboratory assistant

Freshwater Ecology Research Group

School of Biological Sciences

University of Canterbury, New Zealand

2010- 2011 Australasian Crested Grebe breeding success monitoring

Funded by BayerBoost Scholarship

Department of Conservation

Hakaterere, New Zealand

EDUCATION

2020 PhD in Ecology

Department of Ecology

Swedish University of Agricultural Sciences

Supervisor: Professor Tomas Roslin

Co-supervisors: Prof. Riccardo Bommarco, Prof. Tomas Jonsson, Dr Alva Curtsdotter

Thesis title: Love (eating) thy neighbour? Understanding and predicting food-web structure and dynamics

Opponent: Kevin McCann

2015 Master of Science, First Class Honours

School of Biological Sciences

University of Canterbury, Christchurch, New Zealand

Supervisor: Dr. Daniel Stouffer

Co-supervisor: Professor Angus McIntosh

Thesis title: Fitting species into the complexity-stability debate

Thesis grade: A+

GPA: 9.0

2012 Bachelor of Science

School of Biological Sciences

University of Canterbury, Christchurch, New Zealand

GPA: 9.0

2011-2012 Study Abroad Exchange

University of British Columbia, Vancouver, Canada

GRANTS AND AWARDS

External funding

2024 Te Punaha Matatini seed funding (\$NZ4000)

2022 Motifs supporting stability of ecosystem services
sDiv ECR working group grant (PI: €32,340, approx \$NZ58,000)

German Centre for Integrative Biodiversity Research (iDiv)

2021 Synthesis of movement across scales: towards a process-based prediction of biodiversity patterns
sDiv ECR working group grant (AI: €30,000, approx \$NZ53,500)

German Centre for Integrative Biodiversity Research (iDiv)

2019 Travel grant, Knut & Alice Wallenbergs Foundation (23,000 SEK, approx \$NZ4200)

2019 Travel grant, Knut & Alice Wallenbergs Foundation (35,000 SEK, approx \$NZ6300)

2018 Jan Pettersson travel grant (10,000 SEK, approx \$NZ1800)

2014 Travel grant from the Canterbury Branch, Royal Society of New Zealand (\$NZ1000)

2014 Conference Presentation Travel Grant from the Canterbury Branch, New Zealand Federation of Graduate Women (\$NZ800)

Awards and Scholarships

2014 3rd Place Masters/Honours section, Annual Biology Conference, University of Canterbury (\$NZ100)

2013 University of Canterbury Masters Scholarship (\$NZ12,000 plus fees)

- 2012 – 2013 William Georgetti Award (\$NZ14,000 per annum)
- 2012 University of Canterbury Alumni Award (\$NZ5000)
- 2012 Sadie Balkind Scholarship, NZFGW (\$NZ6000)
- 2012 University Scholarship, Freemasons (\$NZ6000)
- 2012 University of Canterbury Senior Scholarship (\$NZ2000)
- 2011 University of Canterbury Summer Scholarship (\$NZ6000)

PUBLICATIONS

**These authors contributed equally to this work*

- 2024 Cherif, M., Brose, U., Hirt, M.R., Ryser, R., Silve, V., Albert, G., Arnott, R., Berti, E., Cirtwill, A.R., Dyer, A., Gauzens, B., Gupta, A., Ho, H.C., Portalier, S.M.J., Wain, D., & **Wootton, K.L.** “The environment to the rescue: can physics help predict predator-prey interactions?” *Biological Reviews* (In press)
- 2024 **Wootton, K.L.** & Lyver, P.O'B. “Ecology: The fruits of local knowledge.” *Current Biology* 34(7):R273-R275
- 2024 Cirtwill, A.*, Åkesson, A.*, **Wootton, K.L.**, & Eklöf, A. “Species motif participation provides unique information about species risk of extinction.” *Journal of Animal Ecology* 93, 731–742.
- 2024 **Wootton, K.L.**, Blanchet, F.G., Liston, A., Nyman, T., Riggi, L., Kopelke, J.-P., Roslin, T., & Gravel, D. “Layer-specific imprints of traits within a plant-herbivore-predator network - complementary insights from complementary methods.” *Ecography* 2024:e07028.
- 2024 Martins, L.P., Garcia-Callejas, D., Lai, H.R., **Wootton, K.L.** & Tylianakis, J.M. “The propagation of disturbances in ecological networks.” *Trends in Ecology and Evolution* 39(6): 558-570
- 2023 **Wootton, K.L.**, Curtsdotter, A., Jonsson T., Bommarco, R., Roslin, T “Food webs coupled in space: Consumer foraging movement affects both stocks and fluxes.” *Ecology* 104(8):e4101
- 2023 **Wootton, K.L.**; Bommarco, R.B.; Curtsdotter, A.; Jonsson, T.; Roslin, T., “Toward a modular theory of trophic interactions” *Functional ecology* 37: 26-43
- 2023 Valdovinos, F.S., Hale, K.R.S., Dritz, S., Glaum, P., McCann, K.S., Simon, S.M., Thébault, E., Wetzel, W.C., **Wootton, K.L.** and Yeakel, J.D. “A bioenergetic framework for aboveground terrestrial food webs.” *Trends in Ecology and Evolution* 38(3): 301-312
- 2022 Cirtwill, A.R., and **Wootton, K.L.** “Stable motifs delay species loss in simulated food webs.” *Oikos* 2022: e09436.

- 2022 **Wootton, K.L.**, Curtsdotter, A., Jonsson T., Banks, H.T., Bommarco, R., Roslin, T, & Laubmeier A. N. “Beyond body size — new traits for new heights in trait-based modelling of predator-prey dynamics” *PLOS ONE* 17(7): e0251896
- 2021 Shaw, Jack; Coco, Emily; **Wootton, K.L.**, Daems, Dries; Gillreath-Brown, Andrew; Swain, Anshuman; Dunne, Jennifer “Disentangling ecological and taphonomic signals in ancient food webs” *Paleobiology* 47 (3), 385-401
- 2019 Cagua, Edgar Fernando; **Wootton, K.L.**; Stouffer, Daniel “Keystoneness, centrality, and the structural controllability of ecological networks” *Journal of Ecology* 107 (4) 1779 - 1790
- 2019 Cirtwill, Alyssa; Eklöf, Anna; Roslin, Tomas; **Wootton, K.L.**; Gravel, Dominique “A quantitative framework for investigating the reliability of empirical network construction” *Methods in Ecology and Evolution* 10(6), pp. 902-911
- 2018 A.N. Laubmeier*, **K.L. Wootton***, J.E. Banks, Riccardo Bommarco, Alva Curtsdotter, Tomas Jonsson, Tomas Roslin, H.T. Banks “From theory to experimental design - quantifying a trait-based theory of predator-prey dynamics” *PLOS ONE* 13 (4), e0195919
- 2017 **Wootton, K.L.** “Omnivory and stability in freshwater habitats: Does theory match reality?” *Freshwater Biology* 62 (5) 821–832
- 2016 **Wootton, K.L.** & Stouffer, D.B. “Many weak interactions and few strong; food-web feasibility depends on the combination of the strength of species’ interactions and their correct arrangement”. *Theoretical Ecology* 9 (2) 185-195
- 2016 **Wootton, K.L.** & Stouffer, D.B. “Species’ traits and food-web complexity interactively affect a food web’s response to press disturbance”. *Ecosphere* 7 (11) e01518

Manuscripts submitted or under review

- R. Ryser, E. Berti, A. Dyer, B.J. McGill, M.H.M. Menz, C. Meyer, M.A. Tucker, C. Wilkinson, **K.L. Wootton** and M.R. Hirt “A movement-based framework to delineate species-specific scales in ecology” (*Under review at Ecology Letters*)
- U. Brose, M.R. Hirt, R. Ryser, B. Rosenbaum, E. Berti, A. Hein, S. Pawar, K. Schmidt, **K.L. Wootton** and S. Kéfi “The internet of nature: embedding information flows within ecological networks” (*Submitted to Nature*)

Final draft with co-authors

- C. White*, A. Swain*, M. Kohli, L. Van Kleunen, U. Brose, L. Dee, W. Yu, and **K.L. Wootton** “Moving towards a dynamic understanding of feedback between food webs and nature's contributions to people”
- K.L. Wootton**, D.B. Larremore, M. Galesic, J. Dunne, A. Clauset “Researchers play distinct epistemic roles in constructing ecological knowledge”

PRESENTATIONS

**Invited*

- 2024 **Specialists, generalists, and gender in the ecosystem of ecological research**
Oral presentation
Capital City Complex Systems Symposium, Wellington, New Zealand
- 2023* **Functional roles of ecologists**
iDiv Seminar Series
*German Centre for Integrative Biodiversity Research (iDiv)
Halle-Jena-Leipzig, Germany*
- 2023 **The structure and function of i) ecological networks and ii) networks of ecologists**
SBS Seminar Series
University of Canterbury, New Zealand
- 2022 **Differential imprints of trait-matching in a tritrophic network: complementary insights from complementary methods**
Oral presentation
ESA, CSEE Joint Annual Meeting, Montreal, Canada (Online attendance)
- 2022* **Integration of environmental factors in a modular theory of trophic interactions**
Oral presentation in themed session “The Physics of Ecological Interactions”
Joint meeting, International conference on Ecological Sciences (SFE², GFÖ, EEF), Metz, France (Online attendance)
- 2021 ***Love eating thy neighbour: Understanding and predicting the structure and function of ecological networks***
*Seminar for Food Web Group, EBIO department,
University of Colorado Boulder, Colorado, USA*
- 2021* ***Love eating thy neighbour: Understanding and predicting the structure and function of ecological networks***
*Ecological Modellers Meeting,
Manaaki Whenua, Lincoln, New Zealand*
- 2019 **Traits as predictors of interaction structure and strength in a spatially extensive set of tritrophic networks**
Oral presentation
4th Symposium on Ecological Networks, Paris, France
- 2018 **Microhabitat use, mesocosms and models in multitrophic communities; using species traits to predict community dynamics**
Student plenary
Quantitative Ecology BES Annual Meeting, St Andrews, Scotland
- 2018 **Microhabitat use, mesocosms and models in multitrophic communities; using species traits to predict community dynamics**
Oral presentation
Inter-group meeting, Tartu, Estonia
- 2018 *Oikos Annual Meeting, Trondheim, Norway (Poster)*

- 2017* **Microhabitat use, mesocosms and models in multitrophic communities; using species traits to predict community dynamics**
 Oral presentation in themed session “Integrating functional traits in interaction networks to predict ecosystem functioning”
Ecology Across Borders: Joint Annual Meeting (BES, GFÖ, VecoV, EEF), Ghent, Belgium
- 2017 *Ecological Networks and Molecular Analysis of Trophic Interactions, SLU, Uppsala, Sweden (Poster)*
- 2016* **Many weak links and a few strong – how food-web structure affects stability**
 Oral presentation
Trophic Interactions Seminar, SLU, Uppsala, Sweden
- 2014 **How far is too far when perturbing a food web?**
 Oral presentation
ESA Annual Meeting, Sacramento, California, USA
- 2014 *BIC/Bluefern Symposium, University of Canterbury, Christchurch, New Zealand (Oral presentation)*
- 2014 **How far is too far when perturbing a food web?**
 Oral presentation
ABC Annual Biology Conference, University of Canterbury, Christchurch, New Zealand

FUNDED INVITATIONS TO WORKING GROUPS

- 2022.05.05-06 A New Synthesis for the Science of Science
Santa Fe Institute, New Mexico, USA
- 2022.04.11-13 Developing terrestrial food web models
UC Davis, California, USA
- 2021.11.02.-05 Working out the mechanics of predator-prey interactions to predict the present and future of biodiversity in food webs (Workshop 2)
German Centre for Integrative Biodiversity Research (iDiv)
- 2020.10.12-16 Working out the mechanics of predator-prey interactions to predict the present and future of biodiversity in food webs (Workshop 1)
German Centre for Integrative Biodiversity Research (iDiv)

TEACHING

- 2024 *Course development - Complex Networks Winter Workshop (To be held in August 2024)*
- 2021 *Guest lecture - Food web stability (Biol 274)*
- 2017-2020 PhD student representative on Ecology Research School steering committee
- 2019 *Course development – Ethics and Philosophy of Ecology (PhD level)*
- 2018 *Teaching assistant – Entomology (Undergraduate level)*
- 2016 *Course development, coordination and teaching – Trophic Interactions Literature Course (PhD level)*

- 2015 Tutor (Biostatistics)
NZ Aid
Christchurch, New Zealand
- 2015 *Teaching assistant* – BIOL 209, Biostatistics
- 2014 *Teaching assistant* – BIOL 309, Biostatistics
- 2014 *Teaching assistant* – BIOL 209, Biostatistics
- 2014 *Teaching assistant* – BIOL 113, Diversity of Life

OUTREACH

- 2024 Mathematics in Ecology Public Lecture at Tūranga (Central Library),
Christchurch, New Zealand
- 2024 Taught class on Food Webs in ‘Science and Mātauranga Māori Course’ for
Lincoln High School, Year 11
- 2024 Human Library Participant for Festival of Women and Girls
- 2022-current Committee Member for Te Pūnaha Matatini (Aotearoa New Zealand Centre
of Research Excellence for Complex Systems) Complexity Community of
Interest

REFERENCES

Prof. Jason Tylianakis

E-mail: jason.tylianakis@canterbury.ac.nz

Postal address:

University of Canterbury
Private Bag 4800
Christchurch 8140

Dr. Phil Lyver

E-mail: LyverP@landcareresearch.co.nz

Postal address:

Manaaki Whenua Landcare Research
76 Gerald Street
Lincoln 7608