

Takuji Usui

Department of Ecology and Evolutionary Biology
University of Toronto
25 Willcocks Street, Toronto, ON, Canada

usuitakuji@gmail.com
takujiusui.github.io

PROFESSIONAL POSITIONS

Frederickson Lab, University of Toronto | 2023 – current
Faculty of Arts & Sciences Postdoctoral Fellow
Supervisor: Prof. Megan Frederickson

Interdisciplinary Eco-Evolution Lab, University of New South Wales | 2016 – 2017
Research Studentship
Supervisor: Prof. Shinichi Nakagawa

Phillimore Group, University of Edinburgh | 2015 – 2016
Research Studentship
Supervisor: Prof. Ally Phillimore

Hadfield Group, University of Edinburgh | 2015 – 2016
Field Assistant
Supervisor: Prof. Jarrod Hadfield

EDUCATION

University of British Columbia | 2017 – 2023
PhD, Botany (*Excellence in Doctoral Research Award*)
Dissertation: Experimental evolution of species ranges and coexistence
Supervisor: Prof. Amy Angert

University of Edinburgh | 2011 – 2015
BSc, Evolutionary Biology (*First Class Honours with Ashworth Medal*)
Thesis: Temporal shifts and temperature sensitivity of spring migratory phenology
Supervisor: Prof. Ally Phillimore

PUBLICATIONS

Accepted and in revision

12. Gillies, G.J., Angert, A.L., & Usui, T. (2024) Temperature-dependence and genetic variation in resource acquisition strategies in a model freshwater plant. Minor revision, Functional Ecology. (Preprint: doi.org/10.1101/2023.11.28.569122).
11. Usui, T. & Angert, A.L. (2024) Range expansion is both slower and more variable with rapid evolution across a spatial gradient in temperature. Accepted, Ecology Letters. (Preprint: doi.org/10.1101/2023.09.14.557841).

Published

10. Usui, T., Lerner, D., Angert, A.L., Eckert, I., Garroway, C.J., Hargreaves, A.L., Lancaster, L.T., Lessard, J-P., Riva, F., Schmidt, C., van der Burg, K. & Marshall, K. (2023) The evolution of plasticity at geographic range edges. Trends in Ecology & Evolution, 38, 831–842.
9. Usui, T., Senior, A., MacLeod, M., McCann, S. & Nakagawa, S. (2021) Meta-analysis of variation suggests that embracing heterogeneity improves both replicability and generalizability in preclinical research. PloS Biology, 19(5), e3001009.
8. Bontrager, M., Usui, T., Lee-Yaw, J.A., Anstett, D.N., Branch, H.A., Hargreaves, A.L. & Angert, A.L. (2021) Adaptation across geographic ranges is consistent with strong selection in marginal climates and legacies of range expansion. Evolution, 75, 1316–1333.
7. Germain, R.M., Angert, A.L., Bassar, R.D., Henao Diaz, F.L., Hart, S.P., Otto, S.P., Rolland, J., Sakarchi, J., Schluter, D., Siepielski, A.M., Turcotte, M.M., Usui, T. & Waters, M. (2020) On the origin of coexisting species. Trends in Ecology & Evolution, 36, 284–283.
6. Miller, T.E.X., Angert, A.L.A., Brown, C.D., Lee-Yaw, J.A., Lewis, M., Lutscher, F., Marculis, N.G., Melbourne, B.A., Shaw, A.K., Szűcs, M., Tabares, O., Usui, T., Weiss-Lehman, C. & Williams, J.L. (2020) Eco-evolutionary dynamics of range expansion. Ecology, 101, e03139.
5. Baur, J., Laurentino, T.G., Usui, T. & Eichhorn M. (2019) Liana abundance and relationships to sapling and tree hosts in an East African primary forest. African Journal of Ecology, 57, 130–136.

4. **Usui, T.** & Angert, A.L.A. (2018) *Species Ranges*. Elsevier Reference Module in Life Sciences.

3. **Usui, T.**, Noble, D.W.A., O'Dea, R.E., Fangmeier, M.L., Lagisz, M., Hesselson, D. & Nakagawa, S. (2018) The French Press: a repeatable and high-throughput approach to exercising zebrafish (*Danio rerio*). *PeerJ*, e4292.

2. Fangmeier, M., Noble, D.W.A., O'Dea, R.E., **Usui, T.**, Lagisz, M., Hesselson, D. & Nakagawa, S. (2018) Computer animation technology in behavioral sciences: a sequential, automatic, and high-throughput approach to quantifying personality in zebrafish (*Danio rerio*). *Zebrafish*, 15, 206–210.

1. **Usui, T.**, Butchart, S.H.M. & Phillimore, A.B. (2017) Temporal shifts and temperature sensitivity of avian spring migration phenology: a phylogenetic meta-analysis. *Journal of Animal Ecology*, 86, 250–261.

Selected press coverage:

- Birds migrating earlier as temperatures rise (BBC News)
- Climate change driving birds to migrate early (The Guardian)

AWARDS & SCHOLARSHIPS

2024 Faculty of Arts & Science Postdoctoral Fellowship Award (\$96,000 CAD)

2023 Excellence in Doctoral Research Award, CSEE (\$600 CAD)

2023 Graduate Student Travel Award, UBC (\$500 CAD)

2022 Student Travel Award, ESA Plant Population Ecology Section (\$600 USD)

2022 President's Academic Excellence Initiative PhD Award, UBC (\$540 CAD)

2021 President's Academic Excellence Initiative PhD Award, UBC (\$1030 CAD)

2021 Faculty of Science Graduate Award, UBC (\$100 CAD)

2021 Student Research Award, American Society of Naturalists (\$2000 USD)

2020 President's Academic Excellence Initiative PhD Award, UBC (\$1000 CAD)

2019 GREG Lewontin Award, Society for the Study of Evolution (\$2000 USD)

2018 Vladimir J Krajina Prize in Plant Ecology, UBC (\$2000 CAD)

2017 International Doctoral Fellowship, UBC (\$138,000 CAD)

2017 Scientia PhD Scholarship, UNSW (\$200,000 AUD; Declined)

2017 Graduate Research Scholarship, UCL (£52,660 GBP; Declined)

- 2017 Overseas Research Scholarship, UCL (£78,480 GBP; Declined)
- 2017 NERC Science and Solutions for a Changing Planet Doctoral Training Partnership, Imperial College London (£62,935 GBP; Declined)
- 2015 Ashworth Medal and Prize 2015 for highest grade in Evolutionary Biology Honours, University of Edinburgh (£250 GBP)
- 2015 Undergraduate Summer Studentship, University of Edinburgh (£2500 GBP)
- 2015 Travel Bursary for National Biodiversity Network Conference 2015, Institute of Evolutionary Biology, University of Edinburgh
- 2015 Travel Grant, British Ecological Society (£400 GBP)

INVITED PRESENTATIONS

CSEE Doctoral Award Symposium, Winnipeg, MN | 2023

On the origins of coexistence (and the curious paradox of the duckweed)

Duckweeds: A new frontier in symbiosis research, University of Toronto | 2022

The evolution of coexistence and range expansion

Metascience Conference, Centre for Open Science | 2021

How can we embrace heterogeneity to improve replicability?

CONTRIBUTED PRESENTATIONS

† Poster ‡ Talk

Department of EEB Seminar Series, University of Toronto | 2023

Experimental evolution of species ranges and coexistence[‡]

Botany Department Seminar Series, UBC | 2023

The eco-evolutionary dynamics of species ranges and coexistence[‡]

Conference of the Society of American Naturalists, Asilomar | 2023

The evolution of coexistence across the species boundary[‡]

CSEE & ESA Conference, Montreal, QC | 2022

Competition and temperature stress drive the evolution of range limits[‡]

Botany & Zoology Conference, UBC | 2021

Range expansion across ecological gradients (*Best Talk Award*)[‡]

Blackendale Ecology & Evolution Retreat, BC | 2019
Eco-evolutionary Dynamics of Range Expansions[‡]

Blackendale Ecology & Evolution Retreat, BC | 2018
The Role of Evolution in Predicting Range Expansion Across Spatially Heterogeneous Landscapes (*Best Poster Award*)[†]

Blackendale Ecology & Evolution Retreat, BC | 2017
Are Range-Edge Populations Maladapted? A Synthesis of Transplant Experiments[†]

SYNERGISTIC ACTIVITIES

Member of working group: Plasticity Across Species' Ranges, UBC | 2023
PI: Katie Marshall (UBC) and Jean-Philippe Lessard (Concordia University)

Member of workshop: Bayesian Modelling in JAGS, UBC | 2023
PI: Anne Bjorkman (University of Gothenburg)

Member of working group: Coexistence Across Evolutionary Scales, UBC | 2019
PI: Rachel Germain (UBC) and Adam Siepielski (University of Arkansas)

Member of working group: Eco-Evo Dynamics of Range Expansion, UBC | 2018
PI: Tom Miller (Rice University) and Jennifer Williams (UBC)

Member of tropical field research course: Kibale National Park, Uganda | 2015
Group: Tropical Biology Association (University of Cambridge)

TEACHING & MENTORING

Teaching Assistant | 2020 – 2023
BIOL 121: Genetics, Ecology & Evolution
BIOL 300: Biostatistics
BIOL 336: Fundamentals of Evolution (Lead/Senior TA, 2021 and 2023)
BIOL 406: Plant Ecology (Lead in R tutorials redesign, 2021)

Undergraduate Mentorship | 2018 – current
Jerry Yu (Work-learn, 2023)
Joshua Dyer, UBC (NSERC Undergraduate Student Research Award, 2023–current)
Amy Wong (Work-learn, 2022 & 2023)

Burak Ozkan (Volunteer, 2022)
Kenzie Chute (Volunteer, 2022)
Sourena Oveisi (Work-learn, 2022)
Vicky Kim (Volunteer, 2022)
Emma Pflanz (Indigenous Undergraduate Research Mentorship Program, 2022)
Graydon Gillies (NSERC Undergraduate Student Research Award, 2020 & 2021)
Chris Spangenberg (Work-learn research experience, 2020 & 2021)
Hafsa Ahmed, UBC (Work-learn research experience, 2019)
Emma Menchions, UBC (Work-learn research experience, 2018)

SERVICE & OUTREACH

Peer Reviewer for: *American Journal of Botany, American Naturalist, Ecography, Evolution, Global Change Biology, Journal of Animal Ecology, Journal of Avian Biology, Journal of Biogeography, Nature Ecology & Evolution*

Memberships: American Naturalist Society; Botanical Society of America; Canadian Society for Ecology & Evolution; National Biodiversity Network; Society for the Study of Evolution; Tropical Biology Association

CSEE Excellence in Doctoral Awards Judge, Canadian Society for Ecology & Evolution | 2024

Workshop lead, Make your own origami model organism with Botany/Zoology Wellness Initiative, UBC | 2023

Mentor, Indigenous Undergraduate Research Mentorship Program, UBC | 2022–2023

Conference Planning Committee, Canadian Society for Ecology & Evolution | 2021

Graduate Student Representative, Biodiversity Postdoctoral Fellowship Search, UBC | 2020

Selection Committee, Annual Evolution Lecture, UBC | 2020

Botany Department Peer Mentor for starting graduate students, UBC | 2020

Researchers Revealed, UBC. A video series for the Beaty Biodiversity Museum | 2020

Co-director, Annual Zoology/Botany Huts Skit & Show, UBC | 2019

Symposium Organizer and Host, Annual Evolution Lecture, UBC | 2019

Member, STEM Culture, UBC. A cross-departmental action group on STEM issues | 2018

Member, People & Planet, University of Edinburgh. An environmental discussion & action group | 2015

Volunteer, Navdanya Biodiversity Conservation Farm, India. A sustainable farming initiative | 2014

OUTREACH

Usui, T. (2023) Using experimental evolution of duckweeds to understand spatiotemporal patterns of biodiversity. *International Duckweed Forum*, 11, 92–134. Link: www.ruduckweed.org/uploads/1/0/8/9/10896289/duckweed_forum_issue_42.pdf

- A feature on the global newsletter on duckweed research and applications.

Usui, T., Dall’Alba, G. & Goedhart, C. (2022) Teaching Spotlight: Getting to know diverse scientists. *Bio News*, University of British Columbia. Link: <https://blogs.ubc.ca/bionews/2022/03/02/teaching-spotlight-getting-to-know-diverse-scientists-in-biol-336/>

- A feature on the UBC newsletter on the importance of diversity in EEB

Usui, T. (2020) How species distributions are moving in response to climate change. *Researchers Revealed*, University of British Columbia.

- A feature on my research for a video series at the Beaty Biodiversity Museum

Usui, T. (2016) Bird migration and global warming, *World Service News*, BBC.

- A radio interview on my work on the consequences of climate change and the timing of spring bird migrations