

Takuji Usui

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Research areas: Species range dynamics; Coexistence & community assembly; Global change ecology & evolution

ACADEMIC POSITIONS

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

Research Studentship | 2016 – 2017
University of New South Wales & University of Sydney
PI: Prof. Shinichi Nakagawa

Research Studentship | 2015 – 2016
University of Edinburgh
PI: Prof. Ally Phillimore

Field Assistant | 2015 – 2016
University of Edinburgh
PI: 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
PI: Prof. Amy Angert

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

PUBLICATIONS

In revision

13. Usui, T. & Angert, A.L. (2024) Competition enables rapid adaptation to a warming range edge. In revision, *Science* (preprint: doi.org/10.1101/2024.08.22.609250)

Published

12. Gillies, G.J., Angert, A.L. & Usui, T. (2024) Temperature-dependence and genetic variation in resource acquisition strategies in a model freshwater plant. *Functional Ecology*, 38, 1600–1610.

11. Usui, T. & Angert, A.L. (2024) Range expansion is both slower and more variable with rapid evolution across a spatial gradient in temperature. *Ecology Letters*, 27, e14406.

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.

Select press coverage:

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

FELLOWSHIPS & GRANTS

2024	Faculty of Arts & Science Postdoctoral Fellowship University of Toronto	\$96,000
2023	Postdoctoral Research Funds University of Toronto	\$120,000
2017	International Doctoral Fellowship University of British Columbia	\$138,000
2017	Scientia PhD Scholarship University of New South Wales (<i>Declined</i>)	\$200,000
2017	Graduate Research Scholarship University College London (<i>Declined</i>)	£52,660
2017	Overseas Research Scholarship University College London (<i>Declined</i>)	£78,480

2017	NERC Science and Solutions for a Changing Planet Doctoral Training Partnership Imperial College London (<i>Declined</i>)	£62,935
2016	Research Studentship University of New South Wales	\$14,000
2015	Research Studentship University of Edinburgh	£2500

HONOURS & AWARDS

2024	<u><i>Evolution Early Career Award</i></u> University of Wisconsin–Madison	\$150
2024	Postdoctoral Travel Award Canadian Society for Ecology & Evolution	\$700
2023	<u><i>Excellence in Doctoral Research Award</i></u> Canadian Society for Ecology & Evolution	\$600
2023	Graduate Student Travel Award University of British Columbia	\$500
2022	Student Travel Award ESA Plant Population Ecology Section	\$600
2022	President's Academic Excellence Initiative PhD Award University of British Columbia	\$540
2021	<u><i>Best Talk Award</i></u> Botany & Zoology Conference, University of British Columbia	–
2021	President's Academic Excellence Initiative PhD Award University of British Columbia	\$1030
2021	Faculty of Science Graduate Award University of British Columbia	\$100
2021	<u><i>Student Research Award</i></u> American Society of Naturalists	\$2000
2020	President's Academic Excellence Initiative PhD Award University of British Columbia	\$1000
2019	<u><i>GREG Lewontin Award</i></u> Society for the Study of Evolution	\$2000

2018	<u>Vladimir J Krajina Prize in Plant Ecology</u> University of British Columbia	\$2000
2018	<u>Best Poster Award</u> Brackendale Ecology & Evolution Conference	–
2015	<u>Ashworth Medal and Prize for highest grade in Evolutionary Biology Honours</u> University of Edinburgh	£250
2015	Travel Award for National Biodiversity Network Conference University of Edinburgh	£100
2015	Travel Award British Ecological Society	£400

INVITED PRESENTATIONS

2025	Biology Colloquium, University of Wisconsin–Madison
2025	Biology Department Seminar, Boston University
2025	Integrative Biology Departmental Seminar Series, University of Guelph
2024	Evolution Early Career Award Talk, University of Wisconsin–Madison
2024	Symposium: Linking Theory to Empirical Research in E&E, CSEE, Vancouver
2024	Symposium: Duckweeds, microbes, & symbiosis, U of British Columbia
2023	Doctoral Awards Talk, Canadian Society for Ecology & Evolution, Winnipeg
2022	Symposium: A new frontier in symbiosis research, University of Toronto
2021	Symposium: Metascience Conference, Centre for Open Science

CONTRIBUTED PRESENTATIONS

(† Poster ‡ Talk ^ψAward)

2023	EEB Seminar Series, University of Toronto [†]
2023	Botany Seminar Series, University of British Columbia [†]
2023	Asilomar Conference, Society of American Naturalists [†]
2022	Joint Annual Meeting of ESA & CSEE [†]
2021	Botany & Zoology Meeting, University of British Columbia ^{†ψ}
2019	Brackendale Ecology & Evolution Conference [†]

2018 Brackendale Ecology & Evolution Conference^{†‡}
2017 Brackendale Ecology & Evolution Conference[†]

SYNERGISTIC RESEARCH ACTIVITIES

Scheduled working groups:

Invited member: **Cold tolerance and range limits**, German Centre for Integrative Biodiversity Research (iDiv) | 2025

Group: International Range Edge Dynamics (RED) Working Group

Invited member: **Temporal variation in dispersal and range expansion**, CIEE Working Group at University of Toronto | 2025

PI: Graydon Gillies (Memorial U), Mia Akbar (U Toronto), Carissa Brown (Memorial U)

Past activities and collaborations

Lead 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)

Invited member of working group: **Coexistence on evolutionary scales**, UBC | 2019

PI: Rachel Germain (UBC) and Adam Siepielski (University of Arkansas)

Invited member of working group: **Ecoevo 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 TA in course design 2021; Senior TA 2022–2023)

Undergraduate Supervision | 2018 – current

Gabrielle Diez (Work-learn 2024-current)

Jerry Yu (Work-learn 2023; KSR USRA 2024; Honours student 2024-current)

Joshua Dyer (NSERC Undergraduate Student Research Award 2023)

Amy Wong (Work-learn 2022 & 2023)

Burak Ozkan (Research volunteer 2022)

Kenzie Chute (Research volunteer 2022)

Sourena Oveisi (Work-learn 2022)

Vicky Kim (Research volunteer 2022)

Graydon Gillies (NSERC Undergraduate Student Research Award 2020 & 2021)

Chris Spangenberg (Work-learn 2020 & 2021)

Hafsa Ahmed, UBC (Work-learn 2019)

Emma Menchions, UBC (Work-learn 2018)

Mentorship Programs | 2020 – 2022

Indigenous Undergraduate Research Mentorship Program (x1 student)

Botany Department Peer Mentor for Incoming Graduates (x1 student)

SERVICE ACTIVITIES

Manuscript reviews

American Journal of Botany; American Naturalist; Ecology; Ecography; Evolution; Global Change Biology; Journal of Animal Ecology; Journal of Avian Biology; Journal of Biogeography; Journal of Ecology; Nature Ecology & Evolution; Perspectives in Plant Ecology, Evolution and Systematics

Professional 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

Academic service

2024 Judge Panel for Excellence in Doctoral Awards
Canadian Society for Ecology & Evolution

2023 Lead Organizer for Make Your Own Model Origami Organism
University of British Columbia

- 2021 Conference Planning Committee
Canadian Society for Ecology & Evolution
- 2020 Graduate Student Representative for Biodiversity PDF Selection Committee
University of British Columbia
- 2020 Selection Committee for Annual Evolution Lecture
University of British Columbia
- 2019 Lead Organizer and Host for Annual Evolution Lecture
University of British Columbia
- 2019 Co-director for Annual Zoology/Botany Show
University of British Columbia

Community service

- 2024 Volunteer to develop a coding program for houseless and at-risk youth
Partner: 360 Kids, Toronto, ON
- 2022 Volunteer working with Indigenous youth in Vancouver
Partner: Urban Native Youth Association, Vancouver, BC
- 2017 Volunteer tutor providing free education to low-income families
Partner: Knowledge Is Power Program, Houston, TX

SELECT MEDIA FEATURES

- 2024 **Computing and the future of AI in EEB**
The EEQ Quarterly, University of Toronto
- 2023 **Using experimental evolution of duckweeds to understand spatiotemporal patterns of biodiversity**
International Duckweed Forum
- 2022 **Teaching Spotlight: Getting to know diverse scientists**
BioNews, University of British Columbia
- 2021 **Meta-analysis of variation suggests that embracing variability improves both replicability and generalizability**
Partnership for Assessment and Accreditation of Scientific Practice
- 2020 **How species distributions are moving in response to climate change**
Researchers Revealed, University of British Columbia
- 2016 **Bird migration and global warming**
World Service News, BBC

- 2016 Early birds miss out
The Times
- 2016 Climate change driving birds to migrate early, research reveals
The Guardian
- 2016 Global temperature rises causing birds to migrate early
The Independent