

# Takuji Usui

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

## ACADEMIC POSITIONS

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**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

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**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

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### 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

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2024	Faculty of Arts & Science Postdoctoral Fellowship University of Toronto	\$96,000
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

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2024	Evolution Early Career Award University of Wisconsin–Madison	\$150
2023	Excellence in Doctoral Research Award Canadian Society for Ecology & Evolution	\$600
2021	Best Talk Award Botany & Zoology Conference, University of British Columbia	–
2021	Faculty of Science Graduate Award University of British Columbia	\$100
2021	Student Research Award American Society of Naturalists	\$2000
2020	President's Academic Excellence Initiative PhD Award University of British Columbia	\$1000
2019	GREG Lewontin Award Society for the Study of Evolution	\$2000
2018	Vladimir J Krajina Prize in Plant Ecology University of British Columbia	\$2000
2018	Best Poster Award Brackendale Ecology & Evolution Conference	–
2015	Ashworth Medal; Highest grade in Evolutionary Biology Honours University of Edinburgh	£250

## INVITED PRESENTATIONS

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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

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(† Poster ‡ Talk <sup>Ψ</sup>Award)

- 2023 EEB Seminar Series, University of Toronto<sup>‡</sup>
- 2023 Botany Seminar Series, University of British Columbia<sup>‡</sup>
- 2023 Asilomar Conference, Society of American Naturalists<sup>‡</sup>
- 2022 Joint Annual Meeting of ESA & CSEE<sup>‡</sup>
- 2021 Botany & Zoology Meeting, University of British Columbia<sup>†Ψ</sup>
- 2019 Brackendale Ecology & Evolution Conference<sup>‡</sup>
- 2018 Brackendale Ecology & Evolution Conference<sup>†Ψ</sup>
- 2017 Brackendale Ecology & Evolution Conference<sup>†</sup>

## SYNERGISTIC RESEARCH ACTIVITIES

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### 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

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### 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

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### 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

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- 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