

RACHEL M. GERMAIN

DEPARTMENT OF BOTANY AT THE BIODIVERSITY CENTRE
UNIVERSITY OF BRITISH COLUMBIA, VANCOUVER, BC, CA
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EDUCATION



PhD in Ecology & Evolutionary Biology, University of Toronto

Thesis title: “Historical contingencies in the ecology and evolution of species diversity”

Committee: Benjamin Gilbert (advisor), Jason Weir, and John Stinchcombe



BSc Honors in Ecology, University of Guelph

Thesis topics: evolution of maternal effects¹ and niche/neutral dynamics²

Advisors: ¹Christina Caruso, ¹Hafiz Maherali, and ²Andrew MacDougall

PUBLICATIONS

6. Grainger, TN, **RM Germain**, NT Jones, B Gilbert (2017) Predation modifies biogeographic constraints in an insect metacommunity. *Ecology* 98: 851-860.
5. **Germain RM**, JT Weir, B Gilbert (2016) Species coexistence: macroevolutionary relationships and the contingency of historical interactions. *Proceedings of the Royal Society B* 283: 20160047.
4. Jones NT, **RM Germain**, TN Grainger, A Hall, L Baldwin, B Gilbert (2015) Dispersal mode mediates the effect of patch size and patch connectivity on metacommunity diversity. *Journal of Ecology* 103: 935-944.
3. **Germain RM**, B Gilbert (2014) Hidden responses to environmental variation: maternal effects reveal species niche dimensions. *Ecology Letters* 17: 662-669.
2. **Germain RM**, L Johnson, S Schneider, K Cottenie, E Gillis, AS MacDougall (2013) Spatial variability in seed predation determines the strength of stochasticity during community assembly. *American Naturalist* 182:169-179.
1. **Germain RM**, CM Caruso, H Maherali (2013) Mechanisms and consequences of parental effects in an invasive annual grass. *The International Journal of Plant Sciences* 171:960-971.

Manuscripts submitted or in prep, available upon request

3. **Germain RM**, SY Strauss, and B Gilbert (minor revision requested, *PNAS*) The spatial scaling of plant diversity and its ecological correlates: experimental evidence from a global biodiversity hotspot. MS#: 2016-15338RR

2. **Germain RM**, TN Grainger, NT Jones, B Gilbert (revisions requested, *American Naturalist*) Frequency-dependent maternal effects across species and environments. MS#: 56940
1. Blackford C, **RM Germain**, B Gilbert. (in prep) The phenology of competition: differences in germination timing lead to competitive asymmetries among species.

RESEARCH SCHOLARSHIPS

- 2016 – Biodiversity Postdoctoral Fellowship, University of British Columbia (\$69,000 accepted): **\$110,000**
- 2016 – Killam Postdoctoral Fellowship, University of British Columbia: **\$104,000**
- 2014 – NSERC CGS-D Alexander Graham Bell, University of Toronto: **\$70,000**
- 2013 – Michael Smith Foreign Study Supplement, NSERC: **\$6000**
- 2012 – NSERC CGS-M Alexander Graham Bell, University of Toronto: **\$17,500**
- 2012 – Ontario Graduate Scholarship, University of Toronto (Declined): **\$15,000**
- 2010 – NSERC Undergraduate Student Research Award, University of Guelph: **\$4500**

AWARDS AND RECOGNITION

- 2016 – Excellence in Doctoral Research, Canadian Society for Ecology & Evolution: **\$750**
- 2016 – Invitation to speak at prestigious Early Career Scientists Symposium in Ann Arbor, Michigan
- 2015 – Runner-up for Ramsay Wright award, University of Toronto, for exceptional contribution to the Dept. of Ecology and Evolutionary Biology
- 2014 – Grants-in-aid of Research, Sigma Xi: **\$700**
- 2014 – Best Talk Award, Ecological Section at Botany 2014, Botanical Society of America: **\$500**
- 2014 – Ecological Section Student Travel Award, Botanical Society of America: **\$500**
- 2014 – Frederick P. Ide Graduate Award in EEB, University of Toronto: **\$1917**
- 2014 – Robert L. Jefferies Graduate Award, University of Toronto: **\$797**
- 2013 – Nominated by students for outstanding teaching assistant award
- 2013 – Jeanne F. Goulding Fellowship, University of Toronto: **\$2000**
- 2012 – Graduate Student Research Award, Botanical Society of America: **\$500**
- 2011 – E. M. Walker Graduate Award in Biodiversity, University of Toronto: **\$2800**
- 2011 – Monroe Landon Memorial prize for conservation research, University of Guelph: **\$550**

2011 – Young Botanist Award, Botanical Society of America: BSA membership

2011 – Best poster award at Ontario research conference, Canadian Botanical Association:
\$100

2010 – Best Thesis Proposal award, University of Guelph: **\$300**

PRESENTATIONS

Select presentations can be viewed online at: rgermain.wordpress.ca/talks-and-posters/

Germain RM (2017) The ecology and evolution of biodiversity in spatially-structured landscapes, McGill University

Germain RM (2017) Historical contingencies in the ecology of species diversity. Invited research seminar, University of British Columbia

Germain RM (2016) Historical contingencies in the ecology and evolution of species diversity. Botany seminar series, University of British Columbia

Germain RM (2016) Cascading effects of spatial structure across trophic levels. *Biodiversity Luncheon Internal Seminar Series*, University of British Columbia

Germain RM (2016) Historical contingencies in the ecology and evolution of species diversity. Ecology & Evolutionary Biology exit seminar at the University of Toronto

Germain RM, B Gilbert (2016) Historical contingencies in the ecology and evolution of species diversity. Meeting of the Canadian Society for Ecology and Evolution, St. Johns, NL
Selected by a committee to speak in special section: Graduate Student Showcase

Germain RM, J Weir, B Gilbert (2016) Species coexistence: macroevolutionary relationships and the contingency of historical interactions. Early Career Scientist Symposium, Ann Arbor, Michigan

Selected by a committee to speak at this prestigious symposium; Media coverage: “[12th U-M EEB Early Career Scientists Symposium still hitting its stride](#)”, *U Michigan News*

Germain RM, SY Strauss, B Gilbert (2015) Limits to plant diversity: an experimental decoupling of local and regional control. 100th Meeting of the Ecological Society of America, Baltimore, MD

Germain RM (2014) The evolution of coexistence mechanisms. Ecology & Evolutionary Biology departmental seminar at the University of Toronto

Germain RM, B Gilbert (2014) The evolution of species invasion potential. Terrestrial Invasive Plant Symposium (TIPS), Mississauga, CA

Germain RM, B Gilbert (2014) Ghost of environments past: maternal effects reveal species niche dimensions. Botany 2014 New Frontiers, Boise, ID

Won two awards from the Botanical Society of America: travel grant and best ecological presentation

Germain RM, B Gilbert (2014) Ghost of environments past: maternal effects reveal species niche dimensions. Genomes to/aux Biomes: Joint meeting of CSEE, SCZ, SCL, Montreal, CA

Germain RM, B Gilbert (2013) Phylogeny-coexistence relationships: disentangling the role of species differences, environment, and biogeography. 98th Meeting of the Ecological Society of America, Minneapolis, MN

Germain RM, B Gilbert (2012) Evolution of coexistence mechanisms in Mediterranean annual plant communities. 97th Meeting of the Ecological Society of America, Portland, OR

Germain RM, B Gilbert (2012) Evolution of species interactions: finding meaning in community-level phylogenetic patterns. Evolution: 1st Joint Congress on Evolutionary Biology, Ottawa, ON

Germain RM, B Gilbert (2012) Evolution of species interactions: finding meaning in community-level phylogenetic patterns. Atwood Memorial Colloquium, University of Toronto, Toronto, ON

Germain RM, L Johnson, AS MacDougall, K Cottenie, E Gillis (2011) Spatial variability in granivory determines the strength of stochasticity during community assembly. 96th Meeting of the Ecological Society of America, Austin, TX

Germain RM, L Johnson, AS MacDougall, K Cottenie, E Gillis (2011) Spatial variability in granivory determines the strength of stochasticity during community assembly. Ontario Ecology, Ethology, & Evolution Colloquium, University of Toronto at Scarborough, Toronto, ON

Germain RM, L Johnson (2011) Little mouse on a prairie: small mammal impacts on native plant diversity. *rare* Charitable Research Reserve, Blair, ON

Germain RM, CM Caruso, H Maherali (2011) Functional traits underlie adaptive parental effects in the annual grass *Avena barbata*. Ontario Biology Day, Wilfred Laurier University, Waterloo, ON

Won best poster award from the Canadian Botanical Association

ACADEMIC SERVICE

A. Departmental (BRC = UBC Biodiversity Research Centre; EGSA = UofT Ecology & Evolution Graduate Student Association)

2017 – Selection committee, Biodiversity Postdoctoral Fellowship, BRC

2016 – Coordinator, Biodiversity Lunchtime Internal Seminar Series (BLISS), BRC

- 2016 – Organizing committee, Squamish Eco-Evo retreat, BRC
- 2016 – Panel speaker, EEB seminar at UofT, “Failing your way to success: a balanced perspective of life in academia”; presented a “real CV” of successes and failures to remind graduate students that perceived failures are normal and part of learning
- 2016 – President, EGSA; responsible for running the EGSA and representing graduate student interests at faculty meetings
- 2015 – Atwood Colloquium Chair, EGSA; head of committee tasked with selecting, inviting, and hosting an esteemed professor of ecology and evolutionary biology (Dr. Sally Otto) at a prestigious annual event
- 2014 – Atwood Colloquium selection committee, EGSA; participated in the selection of the 2013 Atwood lecturer (Dr. Dolph Schluter)
- 2013 – Social coordinator (two terms), EGSA; responsible for organizing and advertising all departmental social events (HallowEEB, Darwin Day, etc.)

B. Non-departmental

- 2016 – Organizer, working group: “A trophic framework for metacommunity ecology”
- 2016 – Organizer, accepted symposium at upcoming meeting of the Canadian Society for Ecology and Evolution, “Metacommunity theory for real-world communities: theoretical and empirical advances for trophic metacommunities”
- 2016 – Organizer, symposium at the meeting of the Canadian Society for Ecology and Evolution, “[The interplay between ecology and evolution in spatially-structured landscapes](#)”
- 2015 – Workshop development, School of Graduate Studies. Working with the Dean’s office to develop mental health initiatives for graduate students across the University of Toronto
Media coverage: “[Graduate students identify strategies to boost morale, mental health](#)”, *U of T News*
- 2015 – Invited panel speaker, University of Toronto’s President’s office on ways to improve graduate student experiences in the Faculty of Arts and Sciences
- 2014 – Publications Committee member, *Botanical Society of America*; two-year term, tasked with modernizing the American Journal of Botany for a new generation of scientists

C. Reviewer services

Axios Review, Botany, Ecography, Ecology Letters, Evolution, Evolutionary Ecology, Functional Ecology (x4), Global Change Biology, Journal of Ecology (x2), Journal of Vegetation Science, Oecologia, Oikos, Proceedings of the Royal Society B

TEACHING EXPERIENCE

A. University courses (all at University of Toronto)

2016 – Lab tutorials, four terms, *Community Ecology*

2015 – Course development, *Community Ecology*. Designed computer simulations of species coexistence for laboratory exercises

2015 – Guest lecturer, *Community Ecology*; lecture on species coexistence and phylogenetic community assembly. Professors: Megan Frederickson/Benjamin Gilbert

2014 – Guest lecturer, *Community Ecology*; lecture on community phylogenetics. Professors: Martin Krkosek/Karen Alofs

2013 – Lab tutorials, one term, *Population Ecology*

Nominated by students for Outstanding Teaching Assistant Award

2012 – Lab tutorials, one term, *From Genomes to Ecosystems in a Changing World*

2011 – Lab tutorials, two terms, *Adaptation and Biodiversity*

B. Student mentoring

I have assisted in the guidance of the following undergraduate students, as they conducted independent research projects (†) and gained experience with research techniques in the lab and greenhouse (‡):

Carla Difillipo‡, Annette Misiurak‡, Danielle Main‡, Kephra Beckett‡, Leanne Kim†, Joanne Plahouras†, Alexander Fang†, Munzir Rahman†, Christopher Blackford†, James Boyko†, Alexandra Mushka†, Alanna Leale†, Deirdre Loughan‡, Mags Ngo‡, Alicia Chou‡, Kevin Hawkshaw‡, Yvonne Chan‡, Rasheeq Hossein‡, Abdul Yossof‡, June Nguyen‡, Veronica Chong‡, Aftab Erfanny‡, Haley Branch‡, Michelle Lee‡

C. Science outreach

Let's Talk Science National – Presented *Dispersal Detectives: The Diversity and Adaptations of Seeds*, an interactive science exhibit on functional trait variation among seed species, to engage middle school students in scientific observation and discovery

Planting Science, Botanical Society of America – Scientist mentor, five terms, mentored middle school and high school students as they conducted experiments on pollination and seed germination