Chris Brimacombe

Email: cbrimaco@uoguelph.ca

Current Position

University of Guelph 2025–
Integrative Biology
NSERC Postdoctoral Fellow
Supervisor: McCann KS

Education

University of Toronto (UofT) 2019–2024
PhD in Ecology and Evolutionary Biology
Supervisor: Fortin M-J

University of Western Ontario (UWO) 2015–2018
BSc (Hons) in Applied Mathematics *with distinction*
Supervisors: Zamir M and Corless RM

University of Ottawa 2008–2012
BSc (Hons) in Biology with a Specialization in Ecology
Supervisors: Leroux S and Findlay CS

Publications

Published Peer Reviewed Articles

14. Banville F, Strydom T, Blyth P, **Brimacombe C**, Catchen MD, Dansereau G, Higino G, Malpas T, Mayall H, Norman K, Gravel D, Poisot T. *Deciphering probabilistic species interaction networks.* Ecology Letters, 2025, 28(6):e70161.
13. **Brimacombe C**, Bodner K, Gravel D, Leroux SJ, Poisot T, Fortin M-J. *Publication-driven consistency in food web structures: Implications for comparative ecology.* Ecology, 2025, 106(1):e4467.
12. **Brimacombe C**, Bodner K, Fortin M-J. *Applying a method before its proof-of-concept: A cautionary tale using inferred food webs.* Global Change Biology, 2024, 30(6):e17360.
11. Gelmi-Candusso TA, **Brimacombe C**, Ménard GC, Fortin M-J. *Building urban predator-prey networks using camera traps.* Food Webs, 2023, 37:e00305.
10. **Brimacombe C**, Corless RM, Zamir M. *Elliptic cross sections in blood flow regulation.* AIMS Mathematics, 2023, 8(10):23108–23145.
9. **Brimacombe C**, Bodner K, Michalska-Smith M, Poisot T, Fortin M-J. *Shortcomings of reusing species interaction networks created by different sets of researchers.* PLOS Biology, 2023, 21(4):e3002068.
8. **Brimacombe C**, Bodner K, Michalska-Smith MJ, Gravel D, Fortin M-J. *No strong evidence that modularity, specialization, or nestedness are linked to seasonal climatic variability in empirical bipartite networks.* Global Ecology and Biogeography, 2022, 31(12):2510–2523.
7. **Brimacombe C**, Bodner K, Fortin M-J. *How network size strongly determines trophic specialization: A technical comment on Luna et al. (2022).* Ecology Letters, 2022, 25(8):1914–1916.
6. Bodner K, **Brimacombe C**, Fortin M-J, Molnár P. *Why body size matters: How larger fish ontogeny shapes ecological network topology.* Oikos, 2022, 2022(3):e08569.

5. **Brimacombe C**, Corless RM, Zamir M. *Computation and applications of Mathieu functions: A historical perspective.* SIAM Review, 2021, 63(4):653–720.
4. Fortin M-J, Dale MRT, **Brimacombe C**. *Network ecology in dynamic landscapes.* Proceedings of the Royal Society B, 2021, 288(1949):20201889.
3. **Brimacombe C**, Bodner K, Fortin M-J. *Inferred seasonal interaction rewiring of a freshwater stream fish network.* Ecography, 2021, 44(2):219–230.
2. Bodner K, **Brimacombe C**, Chenery ES, Greiner A, McLeod AM, Penk SR, Vargas Soto JS. *Ten simple rules for tackling your first mathematical models: A guide for graduate students by graduate students.* PLOS Computational Biology, 2021, 17(1):e1008539.
1. Leroux SJ, **Brimacombe C**, Khair S, Benidickson J, Findlay CS. *Legislative correlates of the size and number of protected areas in Canadian jurisdictions.* Biological Conservation, 2015, 191:375–382.

Non-Peer Reviewed Articles

2. Bodner K, **Brimacombe C**, Fortin M-J. *Re-examining evidence for birds optimizing fruit size near their geographic limits.* Science eLetter. 2024. https://www.science.org/doi/10.1126/science.adj1856#elettersSection.
1. **Brimacombe C**. *PLOS Biology's behind the paper: Why we cannot tell different types of species interaction networks apart.* 2024. https://biologue.plos.org/2024/04/22/behind-the-paper-why-we-cannot-tell-different-types-of-species-interaction-networks-apart.

Book Chapters

1. Filotas É, Aquilué N, **Brimacombe C**, Drapeau P, Keeton W, Kneeshaw D, Messier C, Witté I, Fortin M-J. Editors: Girona MM, Morin H, Gauthier S, Bergeron Y. In *Boreal forests in the face of climate change. Network framework for forest ecology and management.* pp. 685–717. Springer, 2023.

PhD Thesis

1. **Brimacombe C**. On the effectiveness of analysing ecological communities as networks. University of Toronto. 2025.

Presentations

11. *On the nature of structure in collections of freely available food webs* 2024
Brimacombe C
Atwood Graduate Research Conference, Toronto, Ontario
10. *Shortcomings of reusing species interaction networks created by different sets of researchers* 2023
Brimacombe C, Bodner K, Michalska-Smith M, Poisot T, Fortin M-J
Ecological Society of America, Portland, Oregon
9. *Seasonal interactions and rewiring in freshwater stream fish networks* 2023
Brimacombe C, Bodner K, Fortin M-J
Gordon Conference, Easton, Massachusetts
8. *Shortcomings of reusing species interaction networks created by different sets of researchers* 2023
Brimacombe C, Bodner K, Michalska-Smith M, Poisot T, Fortin M-J
Species Interaction Journal Club (UofT), Toronto, Ontario

7. *Empirical networks are messy: Inferential networks and their use across space and time* Invited—2022
   Brimacombe C
   Ecological Society of America, Montréal, Québec
6. *Are modularity, specialization, or nestedness linked to seasonal climatic variability in bipartite networks across large spatial extents?* 2022
   Brimacombe C, Bodner K, Michalska-Smith MJ, Gravel D, Fortin M-J
   Ecological Society of America, Montréal, Québec
5. *Do bipartite networks exhibit structural patterns across large spatial extents?* 2021
   Brimacombe C, Bodner K, Michalska-Smith MJ, Gravel D, Fortin M-J
   Canadian Society for Ecology and Evolution Annual Meeting, Online
4. *The importance of ecological networks* 2021
   Brimacombe C
   Atwood Graduate Research Conference, Toronto, Ontario
3. *Seasonal interactions and rewiring in freshwater stream fish networks* 2020
   Brimacombe C, Bodner K, Fortin M-J
   Ecological Society of America, Online
2. *Blood flow in tubes of elliptic cross section* 2018
   Brimacombe C, Corless RM, Zamir M
   UWO Undergraduate Applied Math Research Conference, London, Ontario
1. *Blood flow in tubes of elliptic cross section* 2017
   Brimacombe C, Corless RM, Zamir M
   UWO Undergraduate Applied Math Research Conference, London, Ontario

Honours and Awards

NSERC Postdoctoral Fellowship ($140,000)	2025-2027
Ontario Graduate Scholarship ($15,000)	2024
Peter Abrams Prize ($500)	2023
Ontario Graduate Scholarship ($15,000)	2023
School of Graduate Studies Conference Grant ($460)	2022
Queen Elizabeth II Graduate Scholarship ($15,000)	2022
Ontario Graduate Scholarship ($15,000)	2021
NSERC Canada Graduate Scholarship-Master's ($22,333)	2020
Best poster at Undergraduate Applied Math Research Conference	2018
UWO Science undergraduate pre-thesis award ($4,500)	2016

Invited Working Group

Predicting Networks Over Space (Université de Montréal) 2022

Workshops

Complex Networks Winter Workshop (University of Vermont @ Québec City) 2019

Teaching (TA)

EEB365H1 S: Topics in Applied Conservation Biology (UofT)	2019–2023
EEB430H: Modeling in Ecology and Evolutionary Biology (UofT)	Fall 2019
BIO2244: Analysis and Interpretation of Biological Data (UWO)	2014–2015

Volunteer Service

Elected committee member for the Canadian Ecological Forecasting Initiative	2025-
Organizer for the short course on forecasting and decision-making (UofT)	Summer 2023
Health and safety representative (UofT)	2020–2021
Representative of the undergraduate society of applied math (UWO)	2016–2018

Reviewer

Methods in Ecology and Evolution	Ecology Letters
Global Ecology and Biogeography	Communications Biology
Food Webs	Oecologia
Arthropod-Plant Interactions	Basic and Applied Ecology
Ecography	

Skills

Programming: Maple, R, MATLAB, and Python
Document presentation: Microsoft Office, LaTeX, and the Adobe Suite