

# Chris Brimacombe

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## Current Position

University of Guelph  
Dept. Integrative Biology  
NSERC Postdoctoral Fellow  
Supervisor: McCann KS

2025–

## Education

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

2019–2024

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

2015–2018

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

2008–2012

## Publications

14. Banville F, Strydom T, Blyth P, **Brimacombe C**, Catchen MD, Dansereau G, Higinio G, Malpas T, Mayall H, Norman K, Gravel D, Poisot T. *Deciphering probabilistic species interaction networks*. Ecology Letters, 2025.
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

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| 11. <i>On the nature of structure in collections of freely available food webs</i><br><b>Brimacombe C</b><br>Atwood Graduate Research Conference, Toronto, Ontario  | 2024         |
| 10. <i>Shortcomings of reusing species interaction networks created by different sets of researchers</i><br><b>Brimacombe C</b> , Bodner K, Michalska-Smith M, Poisot T, Fortin M-J<br>Ecological Society of America, Portland, Oregon          | 2023         |
| 9. <i>Seasonal interactions and rewiring in freshwater stream fish networks</i><br><b>Brimacombe C</b> , Bodner K, Fortin M-J<br>Gordon Conference, Easton, Massachusetts   | 2023         |
| 8. <i>Shortcomings of reusing species interaction networks created by different sets of researchers</i><br><b>Brimacombe C</b> , Bodner K, Michalska-Smith M, Poisot T, Fortin M-J<br>Species Interaction Journal Club (UofT), Toronto, Ontario | 2023         |
| 7. <i>Empirical networks are messy: Inferential networks and their use across space and time</i><br><b>Brimacombe C</b><br>Ecological Society of America, Montréal, Québec  | Invited—2022 |

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
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## Workshops

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

## Skills

Programming: Maple, R, MATLAB, and Python  
Document presentation: Microsoft Office,  $\text{\LaTeX}$ , and the Adobe Suite