



# Sophie T. Breitbart

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PhD Candidate, University of Toronto  
Department of Ecology & Evolutionary Biology

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## Education

**University of Toronto**, Toronto, ON, Canada 2018-present  
PhD Candidate, Ecology & Evolutionary Biology  
Advisors: Drs. Marc Johnson and Helene Wagner

**Wesleyan University**, Middletown, CT, USA 2012-2016  
B.A., Biology, Certificate in Integrative Genomics Sciences: Informatics & Modeling

**Queen Mary, University of London**, London, UK 1-5/2015  
Study Abroad Program

## Research & Professional Experience

**Graduate Research Assistant**, University of Toronto Mississauga 2018-present  
Mississauga, ON, Canada  
PIs: Drs. Marc Johnson and Helene Wagner  
Thesis title: Effects of Urbanization on the Evolutionary Ecology & Population Genetics of Common Milkweed (*Asclepias syriaca*)

**Staff Scientist I**, Princeton Hydro 2016-2018  
South Glastonbury, CT, USA  
Devising dam removal plan sets with AutoCAD, spatial analysis and map creation with ArcGIS, watershed management plan writing.

**Aquatics Intern**, Princeton Hydro 2016  
South Glastonbury, CT, USA  
Water quality testing, aquatic plant mapping, spatial analysis with ArcGIS.

**Undergraduate Researcher**, Wesleyan University 2014-2016  
Middletown, CT, USA  
PIs: Drs. Barry Chernoff and Helen Poulos  
Dace (*Rhinichthys atratulus*, *Rhinichthys cataractae*) biogeography and phylogeography.

**Undergraduate Researcher**, Wesleyan University 2013-2014  
Middletown, CT, USA  
PI: Dr. Fred Cohan  
*Bacillus* phylogeography and speciation.

**Independent Study**, Skidmore College 2009-2011  
Saratoga Springs, NY, USA  
PI: Dr. Bernard Possidente  
Circadian locomotor activity in *Drosophila melanogaster*.

## Honors & Awards

### RESEARCH GRANTS

University of Toronto EEB PhD Research Grant (\$2,000)	2021
Centre for Urban Environments Research Grant (\$1,940)	2021
Sigma Xi Grant in Aid of Research (\$1,000)	2020
Centre for Urban Environments Workshop/Symposium Grant (\$2,500)	2020
<i>Co-applicants: L. Miles, H. Abdel Hafez.</i>	
NSERC CREATE Enviro Trainee (\$23,700)	2018-2019
<i>Primary applicants: H. Wagner, M. Johnson.</i>	
Wesleyan University College of the Environment Summer Research Fellowship (\$4,000)	2014
Wesleyan University Carol and Robert Lynch Student Research Fund Grant (\$905)	2013
Wesleyan University Howard Hughes Medical Institute Grant (\$884)	2013

### SCHOLARSHIPS & AWARDS

Society for the Study of Evolution Conference Travel Award (\$500)	2023
Zimmerman/Weis Graduate Award (\$10,950/year)	2020, 2021
International Association for Landscape Ecology Conference Travel Award (\$600)	2019
Joseph Scacalossi Scholarship (\$4,000)	2012

## Publications

### JOURNAL ARTICLES

4. **Breitbart, S.T.**, A.A. Agrawal, H.H. Wagner, M.T.J. Johnson. Urbanization and a green corridor do not impact genetic divergence in common milkweed (*Asclepias syriaca* L.). *Accepted at Scientific Reports*. [BioRxiv](#)
3. **Breitbart, S.T.**, A. Tomchyshyn, H.H. Wagner, M.T.J. Johnson. 2023. Urbanization and a Green Corridor Influence Reproductive Success and Pollinators of Common Milkweed. *Urban Ecosystems* 26:31–43. <https://doi.org/10.1007/s11252-022-01278-9>
2. Miles, L.S.\*, **S.T. Breitbart\***, H.H. Wagner, and M.T.J. Johnson. 2019. Urbanization Shapes the Ecology and Evolution of Plant-Arthropod Herbivore Interactions. *Frontiers in Ecology and Evolution* 7:1–14. <https://doi.org/10.3389/fevo.2019.00310>
1. **Breitbart, S.** and Weigel, E. February 2019, posting date. [Visualizing a Disease Outbreak Using ESRI Story Maps](#). *Teaching Issues and Experiments in Ecology*, Vol. 15: Practice #1 [online].

### BOOK CHAPTERS

1. Santangelo J.S., Miles, L.S., **Breitbart, S.T.**, Murray-Stoker, D., Rivkin, L.R., Johnson, M.T.J. and Ness, R.W., *Urban environments as a framework to study parallel evolution*. In: *Urban Evolutionary Biology*. Edited by Marta Szulkin, Jason Munshi-South and Anne Charmantier: Oxford University Press (2020). © Oxford University Press. <https://doi.org/10.1093/oso/9780198836841.003.0003>

### OTHER PUBLICATIONS

2. **Breitbart, S.** [Urban Evolution: A Brief Introduction](#). ESRI StoryMap. May 2020.
1. **Breitbart, S.**, Hildebrandt, A., Possidente, B. 2010. [Assessing Effects of Sex, Mating Status, and a White-Eye Mutation in a Co-Isogenic Background on Circadian Locomotor Activity in \*Drosophila melanogaster\*](#). *Drosophila Information Service* 93:171-175.

## Invited Presentations

8. **Breitbart, S.** *Asclepias* in the Annex: How city life impacts the ecology and evolution of common milkweed. Public Seminar. Toronto Field Naturalists Lecture Series, Toronto, Canada. 9/10/2023.
7. **Breitbart, S.** A two-way street: Eco-evolutionary dynamics of common milkweed in urban environments. Public Seminar. New York Botanical Garden Ecoflora Project Seminar Series, The Bronx, New York. 11/29/2022.
6. **Breitbart, S.,** Anurag, A., Wagner, H., Johnson, M. A two-way street: Eco-evolutionary dynamics of common milkweed in urban environments. Guest Seminar. Kennesaw State University EEOB Seminar Series, Kennesaw, Georgia. 10/6/2022.
5. **Breitbart, S.,** Anurag, A., Wagner, H., Johnson, M. Uncovering the Roots of Phenotypic Divergence in Urban Milkweed. Flash Talk. Integrating Society, Ecology, Evolution, and Plasticity (SEEP) to Advance Urban Evolutionary Ecology. Workshop, Tempe, Arizona. 5/20/2022.
4. **Breitbart, S.,** Wagner, H., Johnson, M. Urbanization Affects the Ecology and Evolution of *Asclepias syriaca* (Common Milkweed). Guest Seminar. National Center for Ecological Analysis & Synthesis (NCEAS). 1/19/2022.
3. **Breitbart, S.** Urban Evolutionary Ecology & Career Path Advice. Invited Seminar Panel. Biodiversity and the City (EEB197), Toronto, Ontario. 1/28/2020.
2. **Breitbart, S.** Urban Evolution of Common Milkweed. Guest Lecture. Temperate Field Biology (EEB 405), King City, Ontario. 5/25/2019.
1. **Breitbart, S.** Ecological Niche Modeling with Maxent. Guest Lecture. Evolutionary and Ecological Bioinformatics (BIOL 327), Middletown, Connecticut. 11/19/2015.

## Presentations

14. **Breitbart, S.,** Johnson, M., Wagner, H. How does the urban landscape affect genetic diversity and genetic differentiation in a native plant of conservation importance? Presentation. Evolution, Albuquerque, USA. 6/23/2023.
13. **Breitbart, S.,** Agrawal, A.A., Wagner, H., Johnson, M. Does Urbanization Promote Genetic Divergence of Functional Traits in *Asclepias syriaca* (Common Milkweed)? Presentation. Joint Annual Meeting of the Ecological Society of America (ESA) and Canadian Society for Ecology & Evolution (CSEE), Montreal, Canada. 8/16/2022.
12. **Breitbart, S.,** Agrawal, A., Wagner, H., Johnson, M. Urbanization Promotes Genetic Divergence of Functional Traits in *Asclepias syriaca* (Common Milkweed). Presentation. Evolution, Cleveland, USA. 6/25/2022.
11. **Breitbart, S.,** Wagner, H., Johnson, M. Testing for Genetic Clines in Phenotypic Traits Along an Urban-Rural Gradient in *Asclepias syriaca*. Presentation. Canadian Society for Ecology & Evolution (CSEE), Virtual Conference. 8/18/2021.
10. **Breitbart, S.,** Wagner, H., Johnson, M. Testing for Genetic Clines in Phenotypic Traits Along an Urban-Rural Gradient in *Asclepias syriaca*. Presentation. Evolution, Virtual Conference. 6/21/2021.

9. **Breitbart, S.** Applying to and Succeeding in Graduate School. Seminar Panel. Honors Biology Thesis Course (BIO481), Virtual Seminar. 11/27/2020.
8. **Breitbart, S.,** Wagner, H., Johnson, M. Effects of Urbanization on Reproductive Success in Common Milkweed. Presentation. University of Toronto Mississauga Graduate Research Colloquium, Virtual Conference. 5/27/2020.
7. **Breitbart, S.,** Wagner, H., Johnson, M. Effects of Urbanization on Reproductive Success in Common Milkweed. Presentation. Annual Meeting of the North American Regional Association of the International Association for Landscape Ecology, Virtual Conference. 5/11/2020.
6. **Breitbart, S.,** Wagner, H., Johnson, M. Effects of Urbanization on Reproductive Success in Common Milkweed. Seminar Presentation. Swiss Federal Institute for Forest, Snow and Landscape Research, Birmensdorf, Switzerland. 7/10/2019.
5. **Breitbart, S.,** Wagner, H., Johnson, M. Effects of Urbanization on Reproductive Success in Common Milkweed. Flash Talk. International Association for Landscape Ecology World Congress, Milan, Italy. 7/2/2019.
4. **Breitbart, S.** Elevator Pitch. Atwood Colloquium, Toronto, Ontario. 4/13/2019.
3. **Breitbart, S.,** Poulos, H., Krackowski, M., Chernoff, B. (2016). Using GIS to Predict Effects of Landscape Metrics on Genetic Diversity in *R. atratulus*. Poster Presentation. Northeast Arc Users Group Spring Spatial Technologies Conference, Amherst, Massachusetts. 5/9/2016.
2. Chernoff, B., Krackowski, M., Angel, J., Meyer, A., Nash, C., Roman-Johnston, N., **Breitbart, S.** Over the Falls: Population Differentiation of Blacknose and Longnose Dace, *Rhinichthys atratulus* and *R. cataractae*, in Connecticut. Poster Presentation. Wesleyan Summer Research Symposium, Middletown, Connecticut. 7/31/2014.
1. **Breitbart, S.,** Hildebrandt, A., Possidente, B. (2010). Assessing Effects of Sex, Mating Status, and a White-Eye Mutation in a Co-Isogenic Background on Circadian Locomotor Activity in *Drosophila melanogaster*. University at Albany Undergraduate Research Symposium, Albany, New York. 4/29/2011.

## Workshops

6. **Breitbart, S.,** Filazzola, A. (2022). An Ecologist's Introduction to Data Science. Society for Open, Reliable, and Transparent Ecology and Evolutionary Biology (SORTEE) Webinar Series. [https://sbreitbart.github.io/DataSci\\_for\\_Ecologists/](https://sbreitbart.github.io/DataSci_for_Ecologists/)
5. **Breitbart, S.,** Filazzola, A. (2022). An Ecologist's Introduction to Data Science. Joint Annual Meeting of the Ecological Society of America (ESA) and Canadian Society for Ecology & Evolution (CSEE). [https://sbreitbart.github.io/DataSci\\_for\\_Ecologists/](https://sbreitbart.github.io/DataSci_for_Ecologists/)
4. **Breitbart, S.,** Filazzola, A. (2021). BGSS Fall Retreat 2021 Coding Workshop. University of Toronto Mississauga Biology Graduate Student Society Fall Retreat. [https://sbreitbart.github.io/BGSS\\_Retreat\\_2021\\_Workshop/](https://sbreitbart.github.io/BGSS_Retreat_2021_Workshop/)
3. Filazzola, A., **Breitbart, S.** (2021). Fast-R: Improving the Reproducibility and Efficiency of your Coding. Santa Barbara R Meetup. <https://afilazzola.github.io/SBMeetup2021-FastR/>
2. Filazzola, A., **Breitbart, S.** (2021). Fast-R: Making R Work Hard So That You Don't Have To. Canadian Society for Ecology & Evolution (CSEE) Annual Meeting. <https://afilazzola.github.io>

[io/FastR/](https://afilazzola.github.io/FastR/)

1. Filazzola, A., **Breitbart, S.** (2021). Fast-R: Making R Work Hard So That You Don't Have To. Society for Open, Reliable, and Transparent Ecology and Evolutionary Biology (SORTEE) Annual Meeting. <https://afilazzola.github.io/FastR/>

## Teaching & Supervisory Experience

### TEACHING

*University of Toronto Mississauga*

<b>Teaching Assistant</b> , Evolutionary Biology (BIO342)	2021, 2022, 2023
<b>Teaching Assistant</b> , Biometrics (BIO360)	2019, 2020, 2021
<b>Teaching Assistant</b> , Introduction to Evolution & Evolutionary Genetics (BIO152)	2019
<b>Teaching Assistant</b> , Ecology (BIO205)	2018

*Princeton Hydro*

<b>Intern Manager</b> , New England Regional Office	2017
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*Wesleyan University*

<b>Professorial Assistant, Peer Tutor, Cartographer</b> , GIS Assistant Program	2015-2016
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## Community Involvement

### REVIEWER FOR

*Ecology & Evolution, Functional Ecology, Proceedings of the Royal Society B: Biological Sciences, Journal of Urban Ecology*

### DEPARTMENTAL SERVICE

<b>UTM Representative</b> (elected), EEB Graduate Student Association	2021-2023
<b>Fundraising Representative</b> (elected), EEB Graduate Student Association	2020-2021
<b>Treasurer</b> , UTM Biology Graduate Student Society	2020-2021
<b>Undergraduate Mentor</b> , Grad Connect Mentorship Program	2020-2021
<b>Volunteer</b> , School of Graduate Studies Listening Sessions for Women in STEM	2020
<b>Organizer &amp; Guide</b> , Greenhouse Tour (Wellness Event for UTM Grads)	2019
<b>Peer Mentor</b> , EEB Mentorship Program	2019-present
<b>Volunteer</b> , "Biodiversity in the City" Public Panel Discussion, Royal Ontario Museum	2019
<b>Volunteer</b> , Alumni and Friends Family Day at the Koffler Scientific Reserve	2019
<b>Member</b> , UTM Biology Graduate Student Society	2018-present

### ACADEMIC SERVICE

<b>Data Scientist &amp; Instructor</b> , NSERC Alliance Knowledge Translation Project: "Implementing Landscape Connectivity Assessment for Biodiversity Management and Land-use Planning in Alberta"	2023-present
<b>Workshop Co-organizer</b> , "Getting to Know Open Science: How to Engage and Flourish in the Growing Open Science Community". 2023 Ecological Society of America (ESA) Conference	2023
<b>Data Scientist</b> , University of Toronto & University Health Network Project: "#Team Vaccine: Exploring the History of Toronto's COVID-19 Vaccination Initiative through Social Media"	2023
<b>Executive Committee Member</b> , University of Toronto Coders	2022-present
<b>Symposium Co-organizer</b> , "Landscape Genetics as a Tool for Managing Human-Impacted Landscapes". 2020 IALE-North America Conference	2019-2020

<b>Mentor</b> , MentorNet	2019
<b>Steering Committee Member</b> , Wesleyan Women in Science	2013-2016
<b>Panelist</b> , Wesleyan Women in Science Summer STEM Internship Info Session	2016
<b>Science Facilities Tour Guide</b> , WesFest (Wesleyan's Admitted Students Recruitment Event)	2014
<b>Member</b> , Wesleyan Women in Science	2012-2013

#### ORGANIZATIONS & MEMBERSHIPS

<b>Certified Instructor</b> , The Carpentries	2021-present
<b>Member</b> , Society for the Study of Evolution (SSE)	2021-present
<b>Member</b> , Sigma Xi: The Scientific Research Honor Society	2021-present
<b>Chapter Coordinator</b> , Canadian Association for Girls in Science- Toronto Chapter	2020-2022
<b>Volunteer</b> , Canadian Association for Girls in Science- Toronto Chapter	2019-2020
<b>Founder &amp; Leader</b> , Walking in the Woods with Words (Forest Bathing Club)	2019-2020
<b>Member</b> , Canadian Society of Ecology and Evolution (CSEE)	2018-present
<b>Volunteer</b> , High Park Nature Stewards	2018-2020

#### SCIENCE COMMUNICATION

<b>Volunteer</b> , Skype a Scientist (3 classes)	2020-2021
<b>Interviewee</b> , "Scientific Names", <i>Toronto Nature Now</i> Radio Show	2020
<b>Writer</b> , <a href="http://www.urbanevolution-litc.com">Life in the City Urban Evolution Blog</a> , <a href="http://www.urbanevolution-litc.com">www.urbanevolution-litc.com</a>	2018-present