



# 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

|   |            |
|---|------------|
| 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

### 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. DOI: [10.1093/oso/9780198836841.003.0003](https://doi.org/10.1093/oso/9780198836841.003.0003)

### JOURNAL ARTICLES

3. **Breitbart, S.**, A. Tomchyshyn, M. Johnson, and H. Wagner. 2022. Urbanization and a Green Corridor Influence Reproductive Success and Pollinators of Common Milkweed. *In press, Urban Ecosystems*. [Preprint](#)
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. DOI: [10.3389/fevo.2019.00310](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]. [https://tiee.esa.org/vol/v15/issues/data\\_sets/breitbart/abstract.html](https://tiee.esa.org/vol/v15/issues/data_sets/breitbart/abstract.html)

### OTHER PUBLICATIONS

2. **Breitbart, S.** Urban Evolution: A Brief Introduction. ESRI StoryMap. May 2020. <https://storymaps.arcgis.com/stories/446efee44f8d49578d3c62bfe2c25fc1>
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

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). 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

13. **Breitbart, S.**, Agrawal, 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., Kraczkowski, 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., Kraczkowski, 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

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/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

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| <b>Teaching Assistant</b> , Evolutionary Biology (BIO342)                              | 2021, 2022       |
| <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

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|---|------|
| <b>Intern Manager</b> , New England Regional Office | 2017 |
|---|------|

#### Wesleyan University

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

### REVIEWER FOR

*Ecology & Evolution, Functional Ecology, Journal of Urban Ecology*

### DEPARTMENTAL SERVICE

|   |              |
|---|--------------|
| <b>UTM Representative</b> (elected), EEB Graduate Student Association                       | 2021-present |
| <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

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|--|-----------|
| <b>Symposium Co-organizer</b> , "Landscape Genetics as a Tool for Managing Human-Impacted Landscapes". 2020 IALE-North America Conference. <i>Co-organizers: L. Miles, H. Abdel Hafez.</i> | 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  | 2018-2022    |

### SCIENCE COMMUNICATION

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|---|--------------|
| <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> (Top 3 Contributor), <a href="http://www.urbanevolution-litc.com">Life in the City Urban Evolution Blog</a><br><a href="http://www.urbanevolution-litc.com">www.urbanevolution-litc.com</a> | 2018-present |