



Sophie T. Breitbart

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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

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| 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. 2023. Urbanization and a green corridor do not impact genetic divergence in common milkweed (*Asclepias syriaca* L.). *Scientific Reports* 13:20437. <https://doi.org/10.1038/s41598-023-47524-8>
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/
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/
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/
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

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

Princeton Hydro

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| Intern Manager , New England Regional Office | 2017 |
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Wesleyan University

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| Professorial Assistant, Peer Tutor, Cartographer , 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

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

ACADEMIC SERVICE

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

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

ORGANIZATIONS & MEMBERSHIPS

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

SCIENCE COMMUNICATION

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