Sophie Breitbart

DATA SCIENTIST, EVOLUTIONARY BIOLOGIST, ECOLOGIST

Toronto, Canada

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Education

University of Toronto   *Toronto, Canada*

PHD IN ECOLOGY & EVOLUTIONARY BIOLOGY   *2018 - present*

- Thesis: Effects of Urbanization on the Evolutionary Ecology and Population Genetics of Common Milkweed
- Advisors: Drs. Marc Johnson and Helene Wagner

Wesleyan University   *Middletown, Connecticut*

BA IN BIOLOGY, CERTIFICATE IN INTEGRATIVE GENOMICS SCIENCES: INFORMATICS AND MODELING   *2012 - 2016*

- Undergraduate researcher (2013-2016): Minnow biogeography and bacterial phylogeography

Experience

University of Toronto and University Health Network   *Toronto, Canada*

DATA SCIENTIST   *2023 - Present*

- Cleaned, wrangled, and visualized Twitter data for "#Team Vaccine: Exploring the History of Toronto's COVID-19 Vaccination Initiative through Social Media" project

University of Toronto   *Toronto, Canada*

RESEARCH ASSISTANT   *2018 - Present*

- Used linear mixed models and multivariate analyses to estimate the impacts of urbanization on reproductive success and genetic divergence in a native plant
- Quantified how urbanization shapes genetic diversity and population structure of a native plant
- Taught tutorials in data science, biostatistics, evolutionary biology, ecology, and molecular genetics

Princeton Hydro   *South Glastonbury, Connecticut*

STAFF SCIENTIST I   *2016 - 2018*

- Designed detailed dam removal engineering plan sets with AutoCAD
- Analyzed geospatial data and generated maps using ArcGIS
- Assisted developing strategies for protecting water resources and co-authoring watershed management plans

Princeton Hydro   *South Glastonbury, Connecticut*

AQUATICS INTERN   *2016*

- Assisted in lake and landfill water quality assessments
- Helped conduct biological surveys of fish and invasive plant communities in various lakes

Selected Publications

Full list of publications here.

1. Breitbart, S., Tomchyshyn, A., Wagner, H. H., & Johnson, M. T. J. (2023). Urbanization and a green corridor influence reproductive success and pollinators of common milkweed. *Urban Ecosyst.*, *26*, 31–43. https://doi.org/10.1007/s11252-022-01278-9

2. Miles, L. S., Breitbart, S. T., Wagner, H. H., & Johnson, M. T. J. (2019). Urbanization shapes the ecology and evolution of plant-arthropod herbivore interactions. *Front. Ecol. Evol.*, 7, 1–14. https://doi.org/10.3389/fevo.2019.00310

3. Santangelo, J. S., Miles, L. S., Breitbart, S. T., Murray-Stoker, D., Rivkin, L. R., Johnson, M. T. J., & Ness, R. W. (2020). Urban environments as a framework to study parallel evolution. In J. M.-S. Marta Szulkin & A. Charmantier (Eds.), *Urban evolutionary biology*. Oxford University Press. https://doi.org/10.1093/oso/9780198836841.003.0003

Funding & Awards

2021	Zimmerman/Weis Graduate Award ($10,950)	*University of Toronto*
2021	EEB PhD Research Grant ($2,000)	*University of Toronto*
2021	Centre for Urban Environments Research Grant ($1,940)	*University of Toronto*
2020	Zimmerman/Weis Graduate Award ($10,950)	*University of Toronto*
2020	Grant in Aid of Research ($1,000)	*Sigma Xi*
2020	Centre for Urban Environments Workshop/Symposium Grant ($2,500)	*University of Toronto*
2018	CREATE Enviro Trainee ($23,700)	*NSERC*
2014	College of the Environment Summer Research Fellowship ($4,000)	*Wesleyan University*
2013	Carol and Robert Lynch Student Research Fund Grant ($905)	*Wesleyan University*
2013	Howard Hughes Medical Institute Grant ($884)	*Wesleyan University*
2012	Joseph Scacalossi Scholarship ($4,000)	*Public Employees Federation*

Skills

Code	**ETC3550/ETC5550**: Applied forecasting (Monash Clayton)
2021 S2	**ETC5523**: Communicating with Data (Monash Clayton)

Teaching experience

Jan. 2020 **Tidy Time Series and Forecasting in R**: Teaching assistant (rstudio::conf, USA)
Two day workshop with Rob Hyndman on forecasting using tidyverse workflows.

Nov. 2019 **Interactive documents with Shiny**: Instructor (CSIRO, Australia)
Two day intermediate workshop on developing of shiny applications.

Sep. 2019 **Data Wrangling**: Instructor (Monash University, Australia)
A short workshop in the 'R Workshops for Beginners' series on using tidyr and dplyr to wrangle data.

Jul. 2019 **Tidyverse developer day**: Helper (RStudio, France)
A one day developer day where I helped R users resolve issues on tidyverse packages.

Aug. 2019 **High-dimensional time series analysis**: Teaching assistant (ISI WSC, Malaysia)
One day short course with Rob Hyndman for analysing and forecasting large collections of time series.

Mar. 2019 **The grammar of animation**: Instructor (Monash University, Australia)
A short workshop for NUMBAT group on creating animated graphics in R with the gganimate package.

Dec. 2016 **Master R Developer Workshop**: Teaching assistant (RStudio, Australia)
A two day workshop with Hadley Wicham on programming with R and developing R packages.

Research output

Presentations

2020 **Forecasting with multiple seasonality**: Methods and techniques to multiple seasonal forecasting in R
`https://slides.mitchelloharawild.com/nhs2020/`

2020 **Probabilistic cross-temporal hierarchies**: Recent developments of temporal reconciliation in fable.
`https://slides.mitchelloharawild.com/isf2020/`