

# SOPHIE BREITBART, PHD

Data Scientist, Ecologist, Evolutionary Biologist

## EDUCATION

- 2018  
|  
2024
- **University of Toronto**  
PhD in Ecology & Evolutionary Biology 📍 Toronto, Canada
    - Thesis: Effects of Urbanization on the Evolutionary Ecology and Population Genetics of Common Milkweed (*Asclepias syriaca*)
    - Advisors: Drs. Marc Johnson & Helene Wagner
  - **Wesleyan University**  
BA in Biology 📍 Middletown, Connecticut
    - Completed Integrative Genomics Sciences Certificate
    - Undergraduate researcher (2013-2016): Minnow biogeography and bacterial phylogeography

## EXPERIENCE

- 2024  
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present
- **Stock Assessment Data and Software Workflow Modeler**  
ECS, in support of NOAA Fisheries 📍 Remote
    - Design, develop, and maintain software (R packages [asar](#) and [stockplotr](#)) to streamline workflows, improve reproducibility, and enhance transparency of fisheries stock assessments
    - Collaborate with national and regional scientists to assess community needs and prioritize workflow improvements
  - **Business Consultant**  
Tech Medic 📍 Providence, Rhode Island
    - Created and updated internal documents to increase efficiency of computer consulting business
    - Identified opportunities to improve workflows and operational procedures
  - **Data Scientist & Instructor**  
University of Toronto & Blood Tribe 📍 Alberta, Canada

2023  
|  
2024

    - Collaborated with the Blood Tribe of the Kainai First Nation to co-create project assessing reservation's rangeland health
    - Co-led creation of interactive app to guide various stakeholders through the data analysis while teaching key data science concepts
  - **Data Scientist**  
University of Toronto & University Health Network 📍 Toronto, Canada

2023  
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2024

    - Cleaned, wrangled, and visualized Twitter data for “#TeamVaccine: Exploring the History of Toronto’s COVID-19 Vaccination Initiative through Social Media” project
    - Communicated with team, revising deliverables accordingly
  - **Research Assistant**  
University of Toronto 📍 Toronto, Canada

2018  
|  
2024

    - Studied how urbanization impacts reproductive success, genetic divergence, genetic diversity, and population structure of *A. syriaca*
    - Taught tutorials in data science, statistics, evolution, and ecology
  - **Staff Scientist I**  
Princeton Hydro 📍 South Glastonbury, Connecticut

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-authored watershed management plans

## CONTACT

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## SKILLS

**Languages:** R, including base & tidyverse (advanced); Bash (intermediate); Python, CSS, HTML, SQL (familiar)

**Project management & reproducibility:** Git/Github, summary reports with R Markdown, version control, reproducible examples

**Software development:** Software design, unit testing, documentation, code review

**Data analysis:** Data cleaning & wrangling, high-performance computing, SLURM, parallelization, geospatial analysis

**Statistics:** Linear and mixed models, predictive modelling, multivariate statistics

**Data visualization:** ggplot2, maps, Shiny apps, dashboards

**Communication:** Excellent oral and written communication skills including 8 invited and 14 conference presentations, 5 peer-reviewed scientific publications

Full list of publications [here](#).

## SOFTWARE

### R packages

[asar](#) (Author, contributor since 2024)  
[stockplotr](#) (Author, contributor since 2024)  
[nmfspalette](#) (Maintainer, contributor since 2025)

## FUNDING & AWARDS

Total funding: \$63,329

6 research grants; 2 awards; 2 scholarships; 2 travel grants; 1 workshop grant