Linnea Fraser

| linnfrase@gmail.com

EDUCATION

Indiana University, Bloomington, IN
Masters of Science, Geography, May 2024 (projected)
- Overall GPA: 4.0

Oberlin College, Oberlin, OH
Bachelor of Art, High Honors, Biology, Phi Beta Kappa, Sigma Xi, May 2019
- Overall GPA: 3.97, Biology GPA: 4.0

RELEVENT COURSEWORK

- Organismal Biology
- Genetics, Evolution, and Ecology
- Cellular and Molecular Biology
- Epigenetics
- Evolution
- Conservation Biology
- Plant Systematics
- Plant Biology
- Intro to Computer Science (Python)
- Introduction to GIS
- Statistics and Modeling
- Environmental Remote Sensing
- Geospatial Programming
- Spatial Statistics
- Advanced GIS (in progress)
- Urban Forest Management (in progress)

PROFESSIONAL EXPERIENCE

Research Technician *January 2022-present*
Indiana University, Justin Maxwell Lab
- Collect, mount, sand, and measure tree cores using CooRecorder
- Cross-date samples to accurately date cores using COFECHA

Lilly Dickey Woods Census Crew Member *June 2022-August 2022*
University of Florida
- Together with crew, accurately identified trees to the species level and measured DBH of over 27,000 stems
- Taught new crew members measurement techniques and species identification
- Double checked measurements for accuracy, assuring the quality of long term data

Understory Technician *May 2021-July 2021*
Overstory Technician *August 2021-December 2021*
Hardwood Ecosystem Experiment (Purdue University)
- Conducted understory vegetation surveys to examine the impact of deer browsing and logging treatments on plant diversity
- Identified plants to species level using keys and field guides
- Measured tree girth and height with accuracy
- Carefully and thoroughly entered data for use in long term studies
- Assisted with beetle and moth trapping as part of additional research projects

Research Technologist
Michigan State University, David Lowry Lab *Winter 2019-Spring 2021*

- Assisted in conducting a switchgrass (*Panicum virgatum*) drought experiment by measuring soil moisture, establishing genotype specific pressure volume curves, and measuring leaf water potential using a pressure bomb
- Measured tiller emergence and flowering time for a wide variety of genotypes
- Extracted DNA to understand the composition of the microbiome of switchgrass leaves
- Established and planted a garden of *Populus* as part of collaborative common garden experiment to understand the underlying genetics of climate adaptation
- Cared for approximately 1000 plants including watering, propagating, fertilizing, weeding, and trimming
- Maintained lab and greenhouse spaces and ordered needed supplies

Research Assistant
Oberlin College, Roger Laushman Lab *Spring 2017 – Summer 2019*

- Designed an independent Honor's research project, including thesis and oral presentation, to examine understory response to ash loss and drought
- Surveyed more than 300 *Ostrya virginiana,* collected increment cores for all trees of sufficient size within the eight-hectare site and used dendrochronology to cross-date rings and determine yearly growth of understory trees
- Mapped *Ostrya virginiana* surveyed during the project and determined severity of exposure to ash disturbance using ArcGIS
- Assisted in vegetation surveys of designated 1m research plots using the program ImageJ

Quantitative Skills Tutor
Oberlin College *Spring 2018-Spring 2019*

- Utilized quantitative problem-solving skills to help students with a wide range of subjects (chemistry, biology, statistics)
- Balanced giving help to students for individual problems with helping them develop their own problem-solving skills

Biology Teaching Assistant (Oberlin Workshop Learning Sessions Leader)
Oberlin College, Organismal Biology *Fall 2016-Fall 2018*

- Led learning workshops for 10-30 students that cultivated a collaborative learning environment
- Provided help in understanding fundamental biological concepts for both Biology majors and non-majors
- Thoroughly and accurately answered student questions

Research Assistant (Research Experience for Undergraduates)
Mountain Lake Biological Station, Laura Galloway Lab *Summer 2018*

- Conducted and designed an independent research project working with *Campanula americana*
- Categorized and observed movement of bees, collected a representative sample of bees, carried out cross-pollinations and evaluated fruit production, analyzed results for evidence of reproductive barriers
- Presented an oral talk to researchers and wrote a scientific paper detailing the results of the project

Research Assistant
Indiana University, Lynda Delph Lab *Summer 2016 and 2017*

- Carried out cross-pollinations
- Evaluated seed and pollen viability
- Performed DNA extractions, PCR, and gel electrophoresis for genotyping

- Measured cell DNA content through flow cytometry

PUBLICATIONS AND PRESENTATIONS

Papers:

- VanWallendael A, Benucci GMN, da Costa PB, **Fraser L**, Sreedasyam A, Fritschi F, et al. (2022) Host genotype controls ecological change in the leaf fungal microbiome. PLoS Biol 20(8): e3001681. https://doi.org/10.1371/journal.pbio.3001681
- Christie K, **Fraser LS**, Lowry DB. The strength of reproductive isolating barriers in seed plants: Insights from studies quantifying premating and postmating reproductive barriers over the past 15 years. Evolution. 2022 Jul 15. doi: 10.1111/evo.14565

Presentations:

- Everbach S, **Fraser LS**, Blair CJ, Laushman RH. 2019. Responses of four understory tree species to climate change and the Emerald Ash Borer in a NE Ohio forest preserve. (Equal contribution with first author) (Ecological Society of America Conference)
- Blair CJ, **Fraser LS**, Soble A, Laushman RH. 2018. Dendrochronological reconstruction of Emerald Ash Borer-induced mortality in a NE Ohio forest. (Ecological Society of America Conference)
- **Fraser LS**, Debban C, Galloway L. 2018. Mechanisms of Reinforcement in *Campanula americana.* (Mountain Lake Biological Station)

General publications:

- **Fraser, LS** (2016) Biodiversity for everyone. Evolution 70(9): 2167–2168. (Book Review)

RELEVANT SKILLS

- Proficient in Microsoft Excel and Google Sheets
- Experience with ArcGIS Pro, Google Earth Engine, ESRI, and RStudio
- Ability to work in difficult field conditions
- Ability to identify Midwestern plants

AWARDS AND HONORS

- Young Botanist Award 2019 (Botanical Society of America)
- John Frederick Oberlin Scholarship for academic merit (Oberlin College)
- National Merit Scholarship (Oberlin College)
- DIII National Champion (Oberlin College)
- Semi-professional athlete (Indy Red)