Elena M. Meyer
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RESEARCH INTERESTS

Evolutionary biology, plant reproductive biology, sexual system evolution, phylogenetic comparative methods, field botany, population genetics, herbarium curation, fire ecology, life sciences, science communication, science policy, programing in R, data science.

PROFILE

- PhD in Integrative Life Science (Exp. 2025) focused on plant evolutionary genetics.
- Experienced laboratory instructor and lecturer at the undergraduate level.
- Comfortable managing, analyzing, and visualizing large datasets in R or R Studio.
- Experienced in science policy and science communication.
- Highly proficient in botanical field identification and herbarium management.

EDUCATION

Virginia Commonwealth University, Richmond, VA **Expected: May 2025**
PhD in Integrative Life Sciences**,**
Area of Concentration: Evolutionary Genetics
Thesis Advisor: Andrew J. Eckert, PhD
Dissertation: *"Sex in plants: birth, death, and trying to survive in changing climates."*

New College of Florida, Sarasota, FL **May 2019**
Bachelor of Arts in Biology
Minor in Chinese Language and Culture
Thesis Advisor: Brad Oberle, PhD
Honors thesis: *"Dynamics of outcrossing, selfing, and inbreeding depression in conjunction with species rarity in* Polygala lewtonii*, an endangered Florida scrub endemic."*

PROFESSIONAL EXPERIENCE

Graduate Research Assistant **August 2019 - Present**
Virginia Commonwealth University, Richmond, VA

- As a GRA, I am a member of Andrew Eckert's evolutionary genetics and genomics laboratory at VCU.
- My research focuses on plant reproductive biology and how mating and sexual systems in plants impact their evolution.
- In the lab, I have assisted with mentoring undergraduate and master's level students, including individually mentoring an undergraduate in data management and introductory programming in R and R Studio.

Teaching Assistant **August 2021 – Present**
Virginia Commonwealth University, Richmond, VA

- I am a teaching assistant instructor for introductory biology laboratories, typically teaching 40-60 undergraduates per semester.
- I independently lead laboratory sections and introduce students of diverse backgrounds to key biological concepts.

- During the COVID-19 pandemic, I implemented a hybrid curriculum to continue engaging students outside the classroom.

Master's Program Revision **June 2023-Present**
Virginia Commonwealth University, Richmond, VA

- In this role, I worked as part of a team with the Director of Graduate Studies to implement revision to the VCU Biology M.S. program.
- I compiled a new student handbook for the M.S. program to reflect revisions to the program, created graphics and logos to advertise the program, assisted with social media management, and worked collaboratively with staff, faculty, and students to facilitate ongoing changes to the program.

COVES Science Policy Fellow **Jun. 2022 – Aug 2022**
Virginia Department of Environmental Quality, Richmond, VA

- As a science policy fellow in the Commonwealth of Virginia Engineering and Science Fellowship (COVES) program, I was trained in science policy and placed with the Virginia Department of Environmental Quality (DEQ).
- At DEQ, I worked on the House Bill 206 stakeholder Regulatory Advisory Panel (RAP) for HB 206 ("Small renewable energy projects; impact on natural resources, report.)"
- I prepared scientific briefings for policy stakeholders and coordinated with the external facilitation team and DEQ to manage research needs throughout the project.

Integrative Life Science Student Association (ILSSO) **January 2020 – August 2022**
Virginia Commonwealth University, Richmond VA

- Served in a student-elected position as president of the Integrative Life Science Student association (2019-20), and as member-at-large (2021-22).
- As President, I organized a virtual research symposium with talks and research posters representing the research of ILS members, with an attendance of ~70 individuals.
- Additionally, I organized activities for a group of ~50 graduate students in the Integrative Life Science program, including drafting budgets and allocating funds (>$1000), collaborating with other student organizations, and managing social media and publicity for the organization.

Field Technician
University of Florida, Gainesville FL

- Member of field team based out of University of Florida working on a multi-university research project funded by the Department of Defense's Strategic Environmental Research and Development Program (SERDP)
- I identified plant species in the field to aid in our study of the dynamics of tick-borne disease risk, invasion by exotic species, fire management, and climate change.

NSF-REU Student **June 2017 – August 2017**
Missouri Botanical Garden, St. Louis, MO.

- Worked in the CCSD's conservation genetics lab examining the effects of fire on the genetic structure of *Polygala lewtonii*, an endangered Florida endemic.

- Experience included lab work (gel electrophoresis, DNA extraction, and PCR), data analysis, and scientific writing, eventually analyzing data from and genotyping over 200 individuals.

Environmental Surveyor
Independent Contractor, Woodbridge, VA. **June - July 2013, July 2016**

- Worked under my mentor from the Smithsonian NMNH to assist in field survey work for environmental impact assessments focusing on *Isotria medeoloides,* or the small whorled pogonia, a threatened native orchid species in Virginia.
- This project spanned over several weeks each summer during the growing season for *I. medeoloides* and included surveys at multiple sites.

Summer Intern **May-August 2013**
Smithsonian National Museum of Natural History, Department of Botany, Washington D.C.

- Worked on a multi-year project cataloguing, organizing, and databasing the bamboo specimen collection in the U.S National Herbarium, with a focus on specimens donated from China.

PUBLICATIONS

bioRxiv 2024: Meyer, Elena; Galloway, Laura; Eckert, Andrew. The evolutionary dynamics of plant mating systems: how bias for studying′ interesting′ plant reproductive systems could backfire, bioRxiv 2024.06.18.599380; doi: https://doi.org/10.1101/2024.06.18.599380

AoB PLANTS 2021: Meyer, Elena; Swift, Joel; Bassüner, Burgund; Smith, Stacy; Menges, Eric; Oberle, Brad; Edwards, Christine. Understanding how an amphicarpic species with a mixed mating system responds to fire: a population genetic approach *AoB PLANTS*, Volume 13, Issue 6, December 2021, plab067, https://doi.org/10.1093/aobpla/plab067

PRESENTATIONS

Conference Presentation, Botany 2024: Meyer, Elena; Eckert, Andrew. Using phylogenetic comparative methods to understand the impact of mating and sexual systems on diversification rates: a multi-family approach.

Conference Poster, Botany 2024: Meyer, Elena; Eckert, Andrew. Selfing in flowering plants: Bias against outcrossing species, dioecious sexual systems, and disproportionate focus on a limited number of families.

Conference Presentation, Evolution 2023: Meyer, Elena; Rosenberg, Michael; Eckert, Andrew, Understanding the evolutionary dynamics of plant mating systems: how bias for studying 'interesting' plant reproductive systems could backfire.

Conference Presentation, Botany 2022: Meyer, Elena; Eckert, Andrew. How do sampling methods impact our understanding of mating system distribution in angiosperms?

Conference Presentation, Botany 2019: Meyer, Elena; Edwards, Christine; Oberle, Brad. Patterns of genetic structure and reproductive allocation after fire in *Polygala lewtonii,* a federally endangered Florida endemic plant.

Poster Presentation, Botany 2018: Meyer, Elena; Swift, Joel; Smith, Stacy; Bassüner, Burgund; Menges, Eric; Edwards, Christine. The trajectory of the mating system and factors affecting selfing and outcrossing rates in an amphicarpic species with a mixed mating system, *Polygala lewtonii.*

Calusa Prize Symposium, Marie Selby Botanical Gardens, 2017: Field guide to the fern genus Elaphoglossum of Belize. Public presentation.

AWARDS, HONORS and FUNDING

Infographics Conference Travel Funding, Virginian Commonwealth University, 2024
Travel support for Botany 2024 was provided by a VCU Quest grant awarded to C.M Hulshof. This support was provided to students who previously completed a graduate-level infographics course and who participated in data collection on research posters created by students.

Integrative Life Sciences Travel Funding, Virginia Commonwealth University, 2022-2024
Received travel support for conference travel from my program to support travel to Botany 2024, Evolution 2023, and registration for Botany 2022.

Student Travel and Research Grant, New College of Florida, 2018
A highly competitive research and travel grant for New College students funded by the New College Foundation, which I used to find my attendance of Botany 2018.

Council of Academic Affairs (CAA) Allocation, New College of Florida, 2018
Finding received from the New College CAA to fund fieldwork at Archbold Biological Station and surrounding properties to collect data for my senior thesis.

Calusa Prize, Marie Selby Botanical Gardens, 2017
A privately funded research prize for students rewarding research and collaboration between Marie Selby Botanical Gardens and New College of Florida, in which students work with Selby Gardens professional staff on plant science, conservation and public outreach. SRQ Magazine article.

Isermann Medal, New College of Florida, 2015
An award for academically talented first-year students from outside the state of Florida, Isermann Medal award winners are paired with a New College faculty member for collaborative research during their first year in college.

CITIZEN SCIENCE and COMMUNITY SERVICE

Skype a Scientist, 2020-Present: Participated in science outreach to classrooms through the Skype a Scientist program (https://www.skypeascientist.com/), discussing my research and basic concepts in biology and in botany.

Audubon of Northern Virginia, 2012 – 2015, Seasonally: I worked as part of a team taking weekly citizen science surveys to identify plants and insects in the Occoquan Bay area of Virginia (primarily during the spring/summer). These weekly surveys have been taking place in the Occoquan Bay area for over 30 years, and generate data on insect, plant, bird, and mammal species.

SKILLS AND PROFICIENCES

Programs: Microsoft Office Suite, R and RStudio, Adobe Illustrator, ArcGIS, Tableau, Slack
Social media: Facebook, LinkedIn, Twitter/X, Bluesky, Mastodon, others as needed
Languages: English (native speaker), Chinese (conversational)