

Alexis Garretson

NSF Graduate Research Fellow
PhD Student at Tufts University & The Jackson Laboratory
alexis@garretson.net | www.alexisgarretson.com
ORCID: [0000-0002-7260-0131](https://orcid.org/0000-0002-7260-0131)

Current Positions

Predoctoral Student , The Jackson Laboratory	2020 - Present
Graduate Research Fellow , National Science Foundation	2019 - Present
Research Associate , Mohonk Preserve, Department of Conservation Science	2019 - Present
Data Stewardship Community Fellow , Earth Science Information Partners	2018 - Present

Education

Ph.D. Genetics Jackson Laboratory for Mammalian Genetics, Bar Harbor, ME & Tufts University, Boston, MA	2025 (expected)
M.S. Biology , Concentration in Evolutionary Biology George Mason University, Fairfax, Virginia Committee: Dr. Rebecca Dikow, Dr. Lorelei Crerar, and Dr. Rebecca Forkner (Chair) Thesis: Identifying and Projecting Novel and Long-Term Phenological Trends: Integrating Heterogeneous Data Sources	2020
B.S. Biology , Concentration in Environmental and Conservation Biology George Mason University, Fairfax, Virginia Cum Laude with Honors in the Major Minors: Economics, Public Health, & Applied Global Conservation Advisor: Dr. Michael von Fricken Thesis: Agent-Based Modeling of Tick-Borne Diseases in Mongolian Livestock and Herding Communities	2018

External Study

Harvard T.H. Chan School of Public Health , Boston, MA Summer Fellow in Biostatistics and Computational Biology.	2018
Ben-Gurion University of the Negev , Eilat, Israel Studied Red Sea coral reef ecosystem and geology of Israel.	2016
Smithsonian-Mason School of Conservation , Front Royal, VA Semester Program in Wildlife Ecology and Conservation Biology.	2016

Publications

1. Buffington, M.L., **Garretson, A.**, Kula, R.R., Gates, M.W., Carpenter, R., Smith, R., and Kula, A.A.R. (2020). Pan Trap Color Preference across Hymenoptera in a Forest Clearing. (Accepted at *Entomologia Experimentalis et Applicata*).
2. **Garretson, A.**, Napoli, M., Feldsine, N., Adler-Colvin, P., & Long, E. (2020). Vernal pool amphibian breeding ecology monitoring from 1931 to present: A harmonised historical and ongoing observational ecology dataset. *Biodiversity Data Journal*, 8, e50121. doi: [10.3897/BDJ.8.e50121](https://doi.org/10.3897/BDJ.8.e50121)
3. Keuler, R., **Garretson, A.**, Saunders, T. et al. Genome-scale data reveal the role of hybridization in lichen-forming fungi. *Scientific Reports* 10, 1497 (2020). doi: [10.1038/s41598-020-58279-x](https://doi.org/10.1038/s41598-020-58279-x)

4. Mayernik, M. S., Breseman, K., Downs, R. R., Duerr, R., **Garretson, A.**, Hou, C.-Y. (Sophie), & Committee, E.D.G.I. (EDGI) and E.S.I.P. (ESIP) D. S. (2020). Risk Assessment for Scientific Data. *Data Science Journal*, 19(1), 10. doi: [10.5334/dsj-2020-010](https://doi.org/10.5334/dsj-2020-010)

Data Packages

1. **Garretson, A.**, Crerar, L., Rockwood, L. 2020. Forest Community Dynamics in Hemlock Overlook, Virginia: A Ten-Year Student-Collected Forest Plot Dataset. Environmental Data Initiative: edi.405.1. doi:[10.6073/pasta/0.6073/pasta/10.6073/pasta/9c10f7834c8772ce295789133131c009](https://doi.org/10.6073/pasta/0.6073/pasta/10.6073/pasta/9c10f7834c8772ce295789133131c009)
2. **Garretson, A.** 2020. Research-Grade iNaturalist Observations Recorded by Alexis Garretson. Global Biodiversity Information Facility. doi:[10.15468/dl.ck8ck2](https://doi.org/10.15468/dl.ck8ck2)
3. Buffington, M., **Garretson, A.**, Kula, R.R., Gates, M.W., Carpenter, R., Smith, D.R., & Kula, A.A.R. 2020. Hymenoptera Species and Counts in a Maryland Forest Clearing Using Multiple Colored Pan Traps. Environmental Data Initiative: edi400. doi:[10.6073/pasta/7344f282a665e0b7555818803ed354c9](https://doi.org/10.6073/pasta/7344f282a665e0b7555818803ed354c9)
4. Mohonk Preserve, Feldsine, N., **Garretson, A.**, Kathe, J., Long, E., Montoya, A., Napoli, M., Wander, H., Citizen Science Volunteers. January 2020. Mohonk Preserve Stream Water Quality Invasive Species and Macroinvertebrate Sampling from 2017-Present. Environmental Data Initiative: edi399. doi: [10.6073/PASTA/068E4A6FA99628C6A01F4A739D5DD2D6](https://doi.org/10.6073/PASTA/068E4A6FA99628C6A01F4A739D5DD2D6)
5. Mohonk Preserve, Feldsine, N., Forester, A., **Garretson, A.**, Huth P., Long E., Napoli, N., Pierce, E., Smiley, D., Smiley, S., Thompson, J. July 2019. Mohonk Preserve Amphibian and Water Quality Monitoring Dataset at 11 Vernal Pools from 1931-Present. Environmental Data Initiative: edi398. doi: [10.6073/pasta/864aea25998b73c5d1a5b5f36cb6583e](https://doi.org/10.6073/pasta/864aea25998b73c5d1a5b5f36cb6583e)

Book Chapters

1. **Garretson, A.** Citizen Science Can Improve Visitor Experience and Research Outcomes in Museums and Cultural Institutions. Forthcoming invited contribution to *Digital Museums: What's new in the field?*. ed. Andrea Ledsema, Jessica BrodeFrank, Isabel Sanz.
2. **Garretson, A.** Institutional Differences in the Stewardship and Research Output of United States Herbaria. Forthcoming invited contribution to *Institutions and Incentives in Public Policy* ed. Roberta Herzberg, Rosolino Candela, Rosemarie Fike.
3. **Garretson, A.** Natural Selection and Camouflage. In *A Laboratory Manual for Biology 308: Laboratory/Field Exercises in Ecology and Evolution*. By Lorelei Crerar, Larry L. Rockwood.
4. **Garretson, A.** and Forkner, Rebecca. Phenology, Climate Change and Citizen Science. In *A Laboratory Manual for Biology 308: Laboratory/Field Exercises in Ecology and Evolution*. By Lorelei Crerar, Larry L. Rockwood.
5. **Garretson, A.** and Crerar, Lorelei. Ecological and Evolutionary Modeling. In *A Laboratory Manual for Biology 308: Laboratory/Field Exercises in Ecology and Evolution*. By Lorelei Crerar, Larry L. Rockwood.

Publications in Preparation (* indicates student co-authors)

1. **Garretson, A.**, Forkner, R. Herbarium Specimens Document Delays in the Abscission of Senesced Maple Leaves in the Northeastern United States Over the Past 150 Years. (In prep for *Frontiers in Forests and Global Change*).
2. **Garretson, A.**, Crerar, L. Moths and frogs and *E. coli*, oh my!: Agent-based Modeling of Evolutionary Systems. (Under review at *CourseSource*).
3. **Garretson, A.**, *Mohney, S., *Silarszka, R., *Cahill, M., *Griffin, L., Mohonk Preserve Stream Watch Citizen Scientists, Feldsine, N., Napoli, M., Long, E. Land Use and Basin Characteristics Associated with the Occurrence of Invasive Vegetation in the Hudson River Valley, New York. (In prep for *Invasive Plant Science and Management*).

4. **Garretson, A.**, *Cuddy, T., Forkner, R. Latitudinal Gradients in Large Milkweed Bug (Hemiptera: Lygaeidae) Reproductive Ecology and Climate Responses. (In prep for *Environmental Entomology*).
5. **Garretson, A.**, *Cuddy, T., Forkner, R., Crerar, L. Assessing the Quality of Classroom-Collected Citizen Science Data: A Case Study of the Nature's Notebook Phenology Protocols. (In prep for *Citizen Science: Theory and Practice*).
6. *Bredin, S., **Garretson, A.**, Forkner, R. Interacting Impacts of Temperature and Precipitation on Amphibian Breeding Phenology. (In prep for *Journal of Herpetology*)

Fellowships & Grants (Total awarded: \$222,145)

Don Lavoie Fellowship , Mercatus Center at George Mason University (\$1,250)	2020
Loewy-Mohonk Preserve Liaison Fellowship , Mohonk Preserve & Loewy Family Foundation (\$7,000)	2020
Oskar Morgenstern Fellowship , Mercatus Center at George Mason University (<i>cancelled due to COVID</i>)	2020
Museum Computer Network Scholar , Museum Computer Network & Kress Foundation (\$800)	2020
FUNDing Friday , Earth Science Information Partners Lab Funding (\$3,000)	2020
Community Science Fellow: Science, Policy, and Engagement Cohort , American Geophysical Union & Gordon and Betty Moore Foundation	2020
Graduate Supplemental Scholarship , Provost Graduate Education Awards, George Mason University (\$2,500)	2020
American Alpine Club Researcher , American Alpine Club (\$1,500)	2020
Global Discovery Scholarship , Global Education Office, George Mason University (\$1,100)	2020
Dan Searle Fellow , Institute for Humane Studies (\$3,000)	2020
Data Stewardship Community Fellow (Returning) , Earth Science Information Partners (\$6,000)	2019 - 2020
ACTIVATE AI and Search: Diversity & Inclusion Scholar , Lucidworks & Salesforce (\$2,595)	2019
Graduate Research Fellow , National Science Foundation (\$138,000)	2019 - Present
Environmental Data Initiative Summer Fellow , Environmental Data Initiative & Mohonk Preserve (\$5,000)	2019
Frédéric Bastiat Research Sequence Fellow , Mercatus Center at George Mason University (\$5,000)	2019 - 2020
Ryan Kelley Memorial Research Fellowship , International Women's Fishing Association Scholarship Trust (\$1,000)	2019
Science Ambassador , Science Gateways Community Institute (\$1,500)	2019 - 2020
Olami Inspire Online Fellow , Olami (\$1,700)	2019
Data Stewardship and Research Object Citation Community Fellow , Earth Science Information Partners (\$5,000)	2018 - 2019
Kennedy Research Fellowship , David M. Kennedy Center for International Studies (\$1,000)	2018
Ocean Discovery Fellowship , MIT Media Lab & All Hands on Deck (\$750)	2018
Frédéric Bastiat Fellow , Mercatus Center at George Mason University (\$5,000)	2018 - 2019
Ridge to Reef Summer Trainee , Climate and Life Summer Institute, UC Davis and NSF (Research Traineeship in Urban Ecosystem Management) (\$850)	2018
Post-Baccalaureate Internship , Harvard T.H. Chan School of Public Health, Department of Biostatistics (\$5,100)	2018
Joseph Schumpeter Fellow , Mercatus Center at George Mason University (\$3,000)	2016 - 2018

Undergraduate Research Scholars Program (Traditional) , George Mason University (\$1,500)	2018 - 2018
Sinai Scholar , Sinai Scholars Society (\$500)	2017 - 2018
Research Semester Cohort , George Mason University, Department of Biology (\$2,000)	2017
Undergraduate Research Scholars Program (Intensive) , George Mason University (\$5,000)	2017
Undergraduate Research Scholars Program (Traditional) , George Mason University (\$1,500)	2016
G92 Fellow , World Vision International	2015 - 2016
Leading for Life: Urban Youth Workers Cohort , The Richard and Helen DeVos Family Foundation	2014 - 2015
City Vision Fellow , Lake Avenue Community Foundation	2013 - 2014
National Security Language Initiative for Youth , US State Department (\$10,000)	2012

Awards & Honors

Biodiversity Open Data Ambassador , Global Biodiversity Information Facility	2020 - Present
Champion , National Microbiome Data Collaborative	2020 - Present
Data and Software Carpentry Instructor , The Carpentries	2020 - Present
CourseSource Writing Studio Writing Fellow , CourseSource & Society for the Advancement of Biology Education Research	2020
Finalist - Westarctica Conservation Scholarship , Westarctica Inc.	2020
Open Access Publishing Fund , George Mason University (€90)	2020
Attendance Funding: American Geophysical Union 2019 , Earth Science Information Partners, Data Stewardship Committee (\$2,000)	2019
Attendance Funding: Evolutionary Dynamics of Cancer , Mathematical Biosciences Institute & National Institute of Statistical Sciences (\$375)	2019
2018 Science Alliance Leadership Training Fellow , New York Academy of Sciences	2018
Virtual Student Federal Service , USGS and Northeast Climate Science Center	2018 - 2019
Affiliate Researcher , Children's Hospital Boston	2018 - 2019
Ridge to Reef Travel Award & Scholarship , UC Davis and NSF Traineeship (\$700)	2018
Departmental Honors , Department of Biology, George Mason University	2018
Senior Award , Department of Biology, George Mason University (\$250)	2018
OSCAR Student Excellence Award: Research and Scholarship , The Mason Impact Leadership Council (\$500)	2018
The Biology Writing Award , Department of Biology, George Mason University (\$500)	2018
F.A. Hayek Award , F.A. Hayek Program for Advanced Study in Philosophy, Politics, and Economics at the Mercatus Center at George Mason University (\$500)	2018
F.A. Hayek Essay Contest First-Place Winner , Department of Economics, George Mason University (\$500)	2018
Best Paper Award , Sinai Scholars Society - George Mason University (\$150)	2018
Arctic Summer College Fellow , Ecologic Institute	2018 - 2018
OSCAR Fellow , Office of Undergraduate Research George Mason University	2017 - 2018
Yeshiva Travel Scholarship , Chabad on Campus (\$1,500)	2017
Jeff Seidel Scholarship , Jeff Seidel Jewish Student Centers (\$500)	2017
Undergraduate Student Travel Fund , George Mason University (\$500)	2017

Best Overall Research and Scholarship Poster Presentation , College of Humanities and Social Sciences (\$500)	2017
Federal Supplemental Educational Opportunity Grant , George Mason University (\$1,400)	2016-2018
Virginia Commonwealth Award , George Mason University (\$6,000)	2016-2018

Conference Presentations (* indicates presenting author, if not AG)

Oral Presentations:

1. **Garretson, A.** (2020, August). Do you see what I see? Harmonizing data from multiple repositories. Talk presented at the Ecological Society of America Conference. Virtual.
2. **Garretson, A.** (2020, June). Extracting phenology and life history data from digitized specimens. Talk presented at the 4th Annual Digital Data Conference, Indiana University. Virtual.
3. **Garretson, A.** (2020, January). Citizen Science in the Earth Sciences: Challenges and Opportunities. Session organized at the Earth Science Information Partners Winter Meeting, Bethesda, MD.
4. **Garretson, A.** (2020, January). Do You See What I See? Citizen Science Data Coverage. Talk presented at the Earth Science Information Partners Winter Meeting, Bethesda, MD.
5. **Garretson, A.** (2019, July). The Unique Challenges of Long-Term Physical Collections: An Implementation of the Data Risk Matrix at the Mohonk Preserve. Talk presented at the Earth Science Information Partners Summer Meeting, Tacoma, WA.
6. *Keuler, R., **Garretson, A.**, Saunders, T., Erickson, R., St. Andre, N., Grewe, F., Smith, H., Lumbsch, T. H., St. Clair, L. L., Leavitt, S. D (2019, July). Potential role of hybrid speciation in lichen-forming fungi. Talk presented at Botany Conference, Tucson, AZ.
7. **Garretson, A.** (2019, January). Using Science Gateways in Phenological Research. Talk presented to the Science Gateways Community Institute Board. Virtual.
8. *Davies, H., **Garretson, A.**, Hogan, K., Vodzak, M., Zimmerman, D., Valitutto, M., Aguirre, A., von Fricken, M. (2018, July). Regional-scale analysis of bat-virus associations in Tropical Asia to support One Health surveillance. Oral presentation at the 55th annual Association of Tropical Biology and Conservation Meeting, Sarawak, Malaysia.
9. **Garretson, A.** (2018, July). Effects of Gestational Age and Birth Weight on Neurodevelopmental and Psychiatric Outcomes in Adolescents after Pediatric Cardiac Surgery. Talk presented at the Harvard Pipelines to Biostatistics Symposium, Boston, MA.
10. **Garretson, A.** (2018, July). Arctic Vegetation: Avenues for Herbarium-Driven Research. Talk presented to the Arctic Summer College. Virtual.
11. **Garretson, A.** (2018, February). Polycentricity and Collective Action in Religious Communities: A Case Study of the Chabad-Lubavitcher Sect. Talk presented at the Austrian Student Scholars Conference, Grove City, PA.
12. **Garretson, A.** (2017, March). The Perception Problem: Migration and the Commons. Talk presented at the Austrian Student Scholars Conference, Grove City, PA.
13. **Garretson, A.** (2016, December). Natural Lands in Virginia. Talk presented at the Celebration of Student Scholarship, Fairfax, VA.
14. **Garretson, A.**, Reid, A., Shumaker, P. (2016, May). Coyote Activity at the Smithsonian Conservation Biology Institute. Talk presented publicly at the Smithsonian-Mason School of Conservation, Front Royal, VA.
15. **Garretson, A.** (2016, May). Quantitative Analysis and Nutritional Optimization of Amazonian Fish Diet Mix. Talk presented to Amazonia keepers at the Smithsonian's National Zoo, Washington, DC.

Poster Presentations:

1. **Garretson, A.**, Forkner, R. (2020, June). Digitized herbarium specimens document changes in phenophases and pathogen damage in Eastern United States maples. Poster presented at the Ecological Society of America Conference. Virtual.
2. **Garretson, A.** *Cuddy, T., Forkner, R. (2020, June). Observational biodiversity occurrence data reveal spatiotemporal trends in large milkweed bugs. Poster presented at the Ecological Society of America Conference. Virtual.
3. **Garretson, A.**, Forkner, R. (2020, June). Digitized herbarium specimens document changes in phenophases and pathogen damage in Eastern United States maples. Poster presented at the 4th Annual Digital Data Conference, Indiana University. Virtual.
4. **Garretson, A.** *Cuddy, T., Forkner, R. (2020, June). Extracting life stage and behavioral data from observational biodiversity occurrence data reveals spatiotemporal trends in large milkweed bugs. Poster presented at the 4th Annual Digital Data Conference, Indiana University. Virtual.
5. **Garretson, A.** Crerar, L. (2019, Nov.) Agent-Based Modeling in Evolution Education: Impacts on Student Understandings of Evolutionary Processes. Poster presented at the Mathematical Biosciences Institute Evolutionary Dynamics of Cancer Workshop. Columbus, OH.
6. **Garretson, A.**, Blumberg, K., O'Brien, M. (2019, July). Research, Reuse, and Re-Search: Harmonizing ecocomDP and DarwinCore. Poster presented at the Earth Science Information Partners Summer Meeting 2019, Tacoma, WA.
7. **Garretson, A.**, Napoli, M., Feldsine, N., Adler-Colvin, P., Long, E. (2019, July). Vernal Pool Amphibian Breeding Ecology Monitoring from 1931 to Present: A Harmonized Historical and Ongoing Observational Ecology Dataset. Poster presented at the Earth Science Information Partners Summer Meeting 2019, Tacoma, WA.
8. **Garretson, A.**, Forkner, R. (2019, Jan.). Automated Classification of Herbarium Specimens in Phenological Research: Preliminary Results and Future Directions. Earth Science Information Partners Winter Meeting 2019. Bethesda, MD.
9. **Garretson, A.**, von Fricken, M. (2018, Oct.). Agent-Based Modeling of Tick-Borne Disease Exposure in Mongolian Livestock and Herders. American Society of Tropical Medicine and Hygiene Annual Meeting 2018. New Orleans, LA.
10. *Davies, H., **Garretson, A.**, Hogan, K., Naimi, F., Vodzak, M., Zimmerman, D., Valitutto, M., Aguirre, A., von Fricken, M. (2018, Oct.) Characterizing the risk of bat-borne virus exposure at popular cave destinations in Southeast Asia for prevention and response. American Society of Tropical Medicine and Hygiene Annual Meeting 2018. New Orleans, LA.
11. **Garretson, A.**, Forkner, R. (2018, August). Comparison of Herbaria-Derived Measures with Direct Observation of Phenological Trends. Ridge to Reef: Climate and Life Summer Institute, Irvine, CA.
12. *Ullah, O., Frelief, J.M., **Garretson, A.**, Bleich, S.N. (2018, July). Fast Food Pricing In Metropolitan Areas. Poster Presented at the FACETS Summer Poster Session at Harvard University. Boston, MA.
13. **Garretson, A.**, von Fricken, M. (2018, May). Agent-Based Modelling of Tick-Borne Disease Exposure in Mongolian Livestock and Herders. OSCAR Celebration of Student Scholarship, Fairfax, VA.
14. **Garretson, A.**, Crerar, L., Garretson, L. (2018, April). Utilizing Agent-Based Modeling in Natural Selection and Evolution Education. College of Science Celebration, Fairfax, VA.
15. **Garretson, A.**, Forkner, R, Ingram, K. (2018, April). Aseasonal Leaf Production and Coloration in Mid-Atlantic Maples. College of Science Celebration, Fairfax, VA.
16. **Garretson, A.**, Forkner, R., Crerar, L. (2017, December). Assessing the Accuracy of Student Phenological Data Collection. Poster Presented at the Biology Research Celebration, Fairfax, VA.
17. **Garretson, A.** (2017, October). Analysis of coyote activity around composting sites. Poster presented at the Student Conference on Conservation Science, New York City, NY.

18. **Garretson, A.** (2017, August). Recovery in Vulnerable Populations After Hurricane Katrina. Poster Presented at the OSCAR Summer Celebration of Student Scholarship, Fairfax, VA.
19. **Garretson, A.,** Shefy, D., Greshin, P., Slonin, G. (2017, May). Assessing White Syndrome Dispersion in the Red Sea Fringing Reef. Poster presented at Celebration of Student Scholarship, Fairfax, VA.
20. **Garretson, A.,** Reid, A. (2017, April). Analysis of coyote activity around waste disposal site and management implications. Poster presented at College of Humanities and Social Sciences Undergraduate Research Symposium, Fairfax, VA.
21. **Garretson, A.** (2017, April). The Politics of Addiction: Innovative Strategies for Combating Heroin Addiction in New Jersey. Poster at the National Conference for Undergraduate Research, Memphis, TN.
22. **Garretson, A.,** *Reid, A. (2017, April). Analysis of coyote activity around waste disposal site and management implications. Poster presented at the National Conference for Undergraduate Research, Memphis, TN.

Teaching Experience

- Computer Vision for Ecology** (Special Problems in Biology). Lead Instructor. **Summer 2020**
George Mason University, Department of Biology.
- Bioinformatics & Data Analysis II** (BIO 665). Teaching Assistant. Brigham Young **Spring 2019**
University, Department of Biology. Course Instructor: **Student Review: 4.88/5**
Dr. Stephen Piccolo.
- Introduction to Bioinformatics** (BIO 165). Teaching Assistant. Brigham Young **Spring 2019**
University, Department of Biology. Course Instructor: Dr. Stephen Piccolo.
- Principles of Biology for Non-Majors** (BIO 100). Teaching Assistant. Brigham **Fall 2018**
Young University, Department of Biology. Course Instructor: **Student Review: 4.66/5**
Dr. Seth Bybee.
- Applied Ecology** (BIO 344/EVPP 344). Learning Assistant. George Mason University, **Spring 2018**
Department of Biology and Department of Environmental Science **Student Review: 8.98/10**
and Policy. Course Instructor: Dr. Lorelei Crerar.
- Foundations of Ecology & Evolution** (BIO 308/EVPP 308). Learning Assistant. **Fall 2017 - Fall 2018**
George Mason University, Department of Biology and Department of **Student Review: 9.55/10**
Environmental Science and Policy. Course Instructor: Dr. Lorelei Crerar.

Invited Classroom Lectures

- Model Selection in Ecology.** Guest Lecturer - Bioinformatics & Data Analysis II, **2019**
Brigham Young University
- Introduction to Regression Modeling in R.** Guest Lecturer - Bioinformatics & Data Analysis II, **2019**
Brigham Young University
- Modeling Hardy-Weinberg Equilibrium.** Guest Lecturer - Principles of Biology, Brigham **2018**
Young University
- Evolution and Math.** Guest Lecturer - Introduction to Biology for Non-Majors, Brigham **2018**
Young University
- The Genetics of Small Groups - Ashkenazi Jews and Utah Mormons.** Guest Lecturer - **2018**
Introduction to Biology for Non-Majors, Brigham Young University.
- Web Scraping in R.** Guest Lecturer - Biostatistics Summer Program, Harvard T.H. Chan **2018**
School of Public Health
- Ecological and Evolutionary Modeling.** Guest Lecturer - Ecology and Evolution **2018**
Laboratory, George Mason University.

Phenology and Climate Change. Guest Lecturer - Ecology and Evolution Laboratory, George Mason University.	2017
Speciation and Coyote/Wolf Hybrids. David M. Brown Planetarium, Darwin Day 2017.	2017
HIV 101. Guest Lecturer - Introduction to Public Health, George Mason.	2014
Intimate Partner Violence. Guest Lecturer - Introduction to Personal Health, Case Western Reserve University.	2012

Mentorship (* indicates students underrepresented in medicine or earth & environmental sciences)

1. **Stephen Bredin**, Recent graduate. George Mason University. Summer 2020. Supervised summer research project in amphibian breeding ecology.
2. ***Amber Jackson**, B.S. student. George Mason University. Summer 2020. Supervised summer research project in ethnobotany and natural history collections.
3. ***Elizabeth Elliot**, B.S. student. George Mason University. Summer 2020. Supervised summer research project in ethnobotany and natural history collections.
4. ***Morgan Cahill**, B.S. student. George Mason University. Summer 2020. Supervised summer research project in water quality and citizen science.
5. ***Rachel Silarszka**, B.S. student. George Mason University. Summer 2020. Supervised summer research project in water quality and citizen science.
6. ***Laurel Griffin**, B.S. student. George Mason University. Summer 2020. Supervised summer research project in water quality and citizen science.
7. ***Mary Beth Armstrong**, B.S. student. George Mason University. Summer 2020. Supervised summer research project in data science and air quality indicators.
8. ***Rinad Chowdhury**, B.S. student. George Mason University. Summer 2020. Supervised summer research project in data science and air quality indicators.
9. ***Amy Guillen**, B.S. student. George Mason University. Summer 2020. Supervised summer research project in data science and air quality indicators.
10. ***Preeti Joginapalli**, B.S. student. George Mason University. Summer 2020. Supervised summer research project in machine learning and image processing.
11. ***Isaac Richards**, B.S. student. George Mason University. Summer 2020. Supervised summer research project in machine learning and image processing.
12. **Wakil Nooristany**, B.S. student. George Mason University. Summer 2020. Supervised summer research project in machine learning and image processing.
13. ***Tedra Cuddy**, B.S. student. George Mason University. Fall 2019. Supervised federal work-study research student in data collection and statistical analysis in R and python.
14. **Lars Anderson**, B.S. student. Brigham Young University. Summer 2019. Supervised in field data collection for *Hemigrapsus sanguineus*.
15. ***Eleanor DiNuzzo**, B.S. student. Brigham Young University. Spring 2019. Provided field research oversight and mentorship, supported model development, analysis, R programming, and NetLogo Programming for independent research.
16. ***Jade Carver**, B.S. student. Brigham Young University. Spring 2019. Trained in statistical analysis, graphics in R, graduate school applications.
17. ***Kylie Perkins**, B.S. student. Brigham Young University. Spring 2019. Mentored in statistical analysis, graduate school applications, and provided career development advice.
18. ***Catherine Ferarri**, M.A. student. SUNY New Paltz. Summer 2019. Trained in using R, data cleaning and data publishing.
19. ***Penelope Adler-Colvin**, Recent graduate. SUNY New Paltz. Summer 2019. Trained in using R, data analysis and presentation, and publishing.

Teaching & Education Work Experience

Graduate Teaching Assistant, Bioinformatics and Data Analysis II & Intro to Biology Sep. 2018 - Apr. 2019

Brigham Young University, Department of Biology

- Provided instruction to graduate and undergraduate students in bioinformatics and machine learning.
- Created teaching modules in R, python, and using publically-available data.
- Met and consulted with students one-on-one to support conceptual understanding and to provide feedback on independent research.
- Evaluated and provided feedback on student essays, projects, labs, tests and other assessments.

Learning Assistant, Ecology and Evolution & Applied Ecology

Aug. 2017 - May 2018

George Mason University STEM Accelerator - Fairfax, VA

- Facilitated student learning through review sessions, individual tutoring, and in-class assistance.
- Optimized curriculum through the integration of basic python & R training and inclusion of teaching models to demonstrate evolutionary processes.

STARS Fellow, Students and Tutors Achieving Success

Aug. 2013 - Aug. 2014

STARS (Formerly The Lake Avenue Community Foundation) - Pasadena, CA

- Supported and administered K-12 educational achievement program preparing enrichment activities, tutoring, and fostering emotional development for students from vulnerable communities.
- Developed and implemented curriculum to support educational goals.

Exhibit Interpreter, Guest Services Department

Oct. 2012 - May 2013

The Children's Museum of Cleveland - Cleveland, OH

- Presented to and assisted museum guests, lead school tours and assisted with special events.
- Planned and facilitated educational programming for school-aged students in atmospheric science, oceanography, paleontology, biology, and nutrition.

Research Work Experience

Rotation Student, Carter Lab

Dec. 2020-Present

The Jackson Laboratory - Bar Harbor, ME

- Comparing the sex-specific gene expression between human Alzheimers brain tissue and gene expression in mouse models of Alzheimers.
- Investigating the role of hormone-related transcription factors and disease-related enrichments in sex-specific gene expression differences in Alzhemier and mouse models.

Rotation Student, Churchill Lab

Aug. 2020-Dec.2020

The Jackson Laboratory - Bar Harbor, ME

- Determined the sex-specific gene expression patterns between tissues and assessing hormonal drivers.
- Assessed the differences in eQTL and gene expression signatures between the heart, liver, and kidney tissues in collaborative cross mice.

Graduate Research Fellow, Forkner Lab

Aug. 2019-Aug. 2020

George Mason University - Fairfax, VA

- Develop methods for data acquisition, cleaning, and analysis for image-based ecological research, particularly methods for harmonizing data across multiple sources.
- Utilize museum specimens and citizen science products to assess changes in the phenology of insect and deciduous tree species over time.

Research Associate, Department of Conservation Science **Aug. 2019- Present**

Mohonk Preserve - New Paltz, NY

- Providing information management support to the ongoing ecological monitoring programs, including stream analyses, phenology observations, and vegetation monitoring.
- Investigating longitudinal and climate-driven changes in phenology and biodiversity of the preserve.

Environmental Data Fellow, Environmental Data Initiative & Mohonk Preserve **June 2019 - Aug. 2019**

Mohonk Preserve - New Paltz, NY

- Curated data packages and create structured metadata (EML) for publication in the EDI repository.
- Expanded and implemented a long-term data management and rescue strategy for the archive holdings.

Community Fellow, Data Stewardship Committee **Dec. 2018- Present**

Earth Science Information Partners - Virtual

- Support the members and leadership of the Data Stewardship Committee, including attending meetings, organizing agendas, and providing input.
- Assisting in the development of a data rescue evaluation matrix and other ad hoc committee projects.

Graduate Research Assistant, The Griffen Lab **Sep. 2018 - Aug. 2019**

Brigham Young University, Department of Biology - Provo, UT

- Developed models of intertidal crab movement and implemented them in an HPC environment.
- Analyzed and compared model outputs using python and R.

Volunteer Field Technician, The Leavitt Lichen Lab **Apr. 2019**

Brigham Young University, Department of Biology - Provo, UT

- Performed surveys for lichen diversity and collecting herbarium specimen in the Mojave Desert region.
- Assisted in planning and carrying out sampling trips.

Virtual Student Federal Service, Northeast Climate Adaptation Science Center **Sep. 2018 - May 2019**

United States Geological Survey - Virtual

- Synthesized the results of the National Parks centennial BioBlitz program with respect to new species discoveries, range expansion, and checklisting.
- Analyzed the impact of citizen science collector characteristics on the scientific outputs and data quality.

Research Collections Volunteer, Stanley L. Welsh Herbarium **Sep. 2018 - Jan. 2019**

Monte L. Bean Life Science Museum, Brigham Young University - Provo, UT

- Supported collection digitization and databasing projects.
- Created, cleaned, and checked database records for collection specimens.

Post-Baccalaureate Intern, Dr. David Wypij **June 2018 - Sep. 2018**

Harvard T.H. Chan School of Public Health - Boston, MA

- Developed web-scraping applications to support the data acquisition needs of public health researchers.
- Investigated the impact of pediatric cardiac surgery on long-term neurodevelopment.

Intern, Systematic Entomology Laboratory **Mar. 2018 - June 2018**

The National Museum of Natural History and the USDA - Washington, DC

- Implemented a pipeline for digitizing, auto-translating, and classifying legacy literature on the identification of old-world Hymenopteran.
- Analyzed field-collected specimens and biodiversity data and prepared results for publication.
- Supported curatorial goals through indexing, mounting, and cataloguing specimens.

Undergraduate Field Work Volunteer, River Herring Survey **Feb. 2017 - May 2018**

Potomac Environmental Research and Education Center (PEREC) - Woodbridge, VA

- Assisted in field data collection at stream sites including water quality testing and stream assessment.
- Performed biodiversity assessments through trap deployment, and specimen evaluation & identification.

Undergraduate Research Assistant, Department of Biology **Jan. 2017 - May 2018**

George Mason University Department of Biology - Fairfax, VA

- Directed web-based data acquisition, data entry, metadata creation, and quality control on National Park visitation rates, changes in local climate, and variation in autumn color change over several decades.
- Analyzed data with machine learning methods, regression modeling, and time series analysis.
- Trained, mentored, and supervised incoming students on the project.

Research Practicum Student, The Nutrition Department **Jan. 2016 - May 2016**

Smithsonian's National Zoo - Washington, DC

- Optimized Amazonian Fish exhibit diets using literature values and energetics modeling approaches.
- Ran nutritional assays for fat, fiber, dry matter values, bomb calorimetry, protein, and ash.

Professional Development & Continuing Education

- | | |
|-----------|--------------------------------------------------------------------------------------------------------------------------|
| Nov. 2020 | Life Sciences Consulting Short Course , Tufts Biomedical Business Club |
| Oct. 2020 | Containerization with Singularity , The Jackson Laboratory |
| Sep. 2020 | Introduction to HPC , The Jackson Laboratory |
| Apr. 2020 | Data Science Instructor Training , The Carpentries |
| Oct. 2019 | Bioinformatics for Conservation Genomics , Smithsonian-Mason School of Conservation |
| Nov. 2019 | Evolutionary Dynamics in Cancer , Mathematical Biosciences Institute & National Institute of Statistical Sciences |
| June 2019 | Data Publishing Workshop , Environmental Data Initiative |
| Jan. 2019 | Innovation in Healthcare and Medicine , The Mercatus Center at George Mason University |
| Sep. 2018 | Collective Behavior and Emergent Phenomena in Biology , Mathematical Biosciences Institute |
| Aug. 2018 | Ridge to Reef Summer Institute , UC Irvine and NSF |
| July 2018 | Introduction to Epidemiology , Department of Biostatistics, Harvard T.H. Chan School of Public Health |
| June 2018 | Biostatistics 101 , Department of Biostatistics, Harvard T.H. Chan School of Public Health |
| June 2018 | Programming in R , Department of Biostatistics, Harvard T.H. Chan School of Public Health |
| Apr. 2018 | Geospatial Data Analysis Short Course , The National Socio-Environmental Synthesis Center |
| Oct. 2017 | Designing, Applying, and Interpreting Conservation Genetics Studies , American Museum of Natural History |
| Oct. 2017 | Spatial Analysis in R , American Museum of Natural History |
| May 2016 | Environmentalism, Property Rights, and Markets , Property and Environment Research Center Student Colloquium |
| Mar. 2016 | Practical Zoo Nutrition Management Smithsonian-Mason School of Conservation Continuing Education |

Professional Membership

- Delta Alpha Pi, International Honor Society for Students with Disabilities
- Sigma Xi, The Scientific Research Honor Society
- Virginia Academy of Science
- Next Generation Global Health Security Network