Alexis Garretson

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Current Positions

Graduate Research Fellow, National Science Foundation 2019 - Present
Graduate Research Assistant, George Mason University 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, Starting 2020
Jackson Laboratory for Mammalian Genetics, Bar Harbor, ME &
Tufts University, Boston, MA

M.S. Biology, Concentration in Evolutionary Biology 2020
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

B.S. Biology, Concentration in Environmental and Conservation Biology 2018
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

External Study

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

Publications

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

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

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

Data Packages

Buffington, M., **Garretson, A.**, Kula, R.R., Gates, M.W., Carpenter, R., Smith, D.R., & Kula, A.A.R. Hymenoptera Species and Counts in a Maryland Forest Clearing Using Multiple Colored Pan Traps. Environmental Data Initiative: edi400. doi:10.6073/pasta/7344f282a665e0b7555818803ed354c9

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

Mohonk Preserve, Feldsine, N., **Garretson, A.**, Kathe, J., Long, E., Montoya, A., Napoli, M., Wander, H., Citizen Science Volunteers. January 2019. Mohonk Preserve Stream Water Quality Invasive Species and Macroinvertebrate Sampling from 2015-Present. Environmental Data Initiative: edi399. doi: 10.6073/PASTA/068E4A6FA99628C6A01F4A739D5DD2D6

Garretson, A. 2019. Research-Grade iNaturalist Observations Recorded by Alexis Garretson. Global Biodiversity Information Facility. doi: 10.15468/DL.HZ5K6T

Book Chapters

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.

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.

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

Garretson. A., Crerar, L. Moths and frogs and *E. coli*, oh my!: Agent-based Modeling of Evolutionary Systems. (In submission at *CourseSource*).

Buffington, M.L., **Garretson, A.**, Kula, R.R., Gates, M.W., Carpenter, R., Smith, R., and Kula, A.A.R. Panning for Gold: Hymenopteran Trap Color Preference in a Forest Clearing. (In submission at *Entomologia Experimentalis et Applicata*).

Garretson. A. Institutional Differences in the Stewardship and Research Output of United States Herbaria. (Under review at *Institution and Incentives in Public Policy* ed. Roberta Herzberg, Rosolino Candela, Rosemarie Fike).

Garretson, A., 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*).

Fellowships & Grants (Total awarded: $213,895)

Museum Computer Network Scholar, Museum Computer Network 2020 ($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**

Humane Studies Fellowship, Institute for Humane Studies ($3,000) **2020**

Data Stewardship Community Fellow (Returning), Earth Science Information Partners ($6,000) **2019 - Present**

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 - Present**

Ryan Kelley Memorial Research Fellowship, International Women's Fishing Association Scholarship Trust ($1,000) **2019**

Science Ambassador, Science Gateways Community Institute ($1,500) **2019 - Present**

Olami Inspire Online Fellow, Olami ($1,700) **2019 - 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**

National Security Language Initiative for Youth, US State Department ($10,000) **2012**

Awards & Honors

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**

Biodiversity Open Data Ambassador, Global Biodiversity Information Facility **2020 - Present**

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**

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

Oral Presentations:

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.

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.

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.

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.

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.

*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.

Garretson, A. (2019, January). Using Science Gateways in Phenological Research. Talk presented to the Science Gateways Community Institute Board. Virtual.

*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.

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.

Garretson, A. (2018, July). Arctic Vegetation: Avenues for Herbarium-Driven Research. Talk presented to the Arctic Summer College. Virtual.

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.

Garretson, A. (2017, March). The Perception Problem: Migration and the Commons. Talk presented at the Austrian Student Scholars Conference, Grove City, PA.

Garretson, A. (2016, December). Natural Lands in Virginia. Talk presented at the Celebration of Student Scholarship, Fairfax, VA.

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.

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:

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.

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.

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.

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.

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.

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.

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.

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.

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.

*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.

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.

*Ullah, O., Frelier, 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.

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.

Garretson, A., Crerar, L., Garretson, L. (2018, April). Utilizing Agent-Based Modeling in Natural Selection and Evolution Education. College of Science Celebration, Fairfax, VA.

Garretson, A., Forkner, R, Ingram, K. (2018, April). Aseasonal Leaf Production and Coloration in Mid-Atlantic Maples. College of Science Celebration, Fairfax, VA.

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.

Garretson, A. (2017, October). Analysis of coyote activity around composting sites. Poster presented at the Student Conference on Conservation Science, New York City, NY.

Garretson, A. (2017, August). Recovery in Vulnerable Populations After Hurricane Katrina. Poster Presented at the OSCAR Summer Celebration of Student Scholarship, Fairfax, VA.

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.

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.

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.

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.

Research Work Experience

Graduate Research Fellow, Forkner Lab **Aug. 2019- Present**

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.

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.

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.

Graduate Research Assistant, The Griffen Lab **Apr. 2019 - 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.

Teaching Experience

Data Science for Biologists (Special Problems in Microbiology). Lead Instructor. George Mason University, Department of Biology. **Summer 2020**

Computer Vision for Ecology (Special Problems in Biology). Lead Instructor. George Mason University, Department of Biology. **Summer 2020**

Bioinformatics & Data Analysis II (BIO 665). Teaching Assistant. Brigham Young University, Department of Biology. Course Instructor: Dr. Stephen Piccolo. **Spring 2019** **Student Review: 4.88/5**

Introduction to Bioinformatics (BIO 165). Teaching Assistant. Brigham Young University, Department of Biology. Course Instructor: Dr. Stephen Piccolo. **Spring 2019**

Principles of Biology for Non-Majors (BIO 100). Teaching Assistant. Brigham Young University, Department of Biology. Course Instructor: Dr. Seth Bybee. **Fall 2018** **Student Review: 4.66/5**

Applied Ecology (BIO 344/EVPP 344). Learning Assistant. George Mason University, Department of Biology and Department of Environmental Science and Policy. Course Instructor: Dr. Lorelei Crerar. **Spring 2018** **Student Review: 8.98/10**

Foundations of Ecology & Evolution (BIO 308/EVPP 308). Learning Assistant. George Mason University, Department of Biology and Department of Environmental Science and Policy. Course Instructor: Dr. Lorelei Crerar. **Fall 2017 - Fall 2018** **Student Review: 9.55/10**

Mentorship

Undergraduate Students

Amber Jackson, B.S. student. George Mason University. Summer 2020. Supervised summer research project in ethobotany and natural history collections.

Elizabeth Elliot, B.S. student. George Mason University. Summer 2020. Supervised summer research project in ethobotany and natural history collections.

Morgan Cahill, B.S. student. George Mason University. Summer 2020. Supervised summer research project in water quality and citizen science.

Rachel Silarszka, B.S. student. George Mason University. Summer 2020. Supervised summer research project in water quality and citizen science.

Laurel Griffin, B.S. student. George Mason University. Summer 2020. Supervised summer research project in water quality and citizen science.

Mary Beth Armstrong, B.S. student. George Mason University. Summer 2020. Supervised summer research project in data science and air quality indicators.

Rinad Chowdhury, B.S. student. George Mason University. Summer 2020. Supervised summer research project in data science and air quality indicators.

Amy Guillen, B.S. student. George Mason University. Summer 2020. Supervised summer research project in data science and air quality indicators.

Preeti Joginapalli, B.S. student. George Mason University. Summer 2020. Supervised summer research project in machine learning and image processing.

Isaac Richards, B.S. student. George Mason University. Summer 2020. Supervised summer research project in machine learning and image processing.

Wakil Nooristany, B.S. student. George Mason University. Summer 2020. Supervised summer research project in machine learning and image processing.

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.

Renae Bitor, B.S. student. George Mason University. Fall 2019. Supervised in data entry and analysis.
Lars Anderson, B.S. student. Brigham Young University. Summer 2019. Supervised in field data collection for *Hemigrapsus sanguineus*.
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.
Jade Carver, B.S. student. Brigham Young University. Spring 2019. Trained in statistical analysis, graphics in R, graduate school applications.
Kylie Perkins, B.S. student. Brigham Young University. Spring 2019. Mentored in statistical analysis, graduate school applications, and provided career development advice.

Graduate Students

Catherine Ferarri, M.A. student. SUNY New Paltz. Summer 2019. Trained in using R, data cleaning and data publishing.
Penelope Adler-Colvin, Recent graduate. SUNY New Paltz. Summer 2019. Trained in using R, data analysis and presentation, and publishing.
Kaitlyn Golden, M.S. student. Brigham Young University. Fall 2018 - Spring 2019. Trained in R programming and data analysis, NetLogo programming, and ecological modeling best practices, and collaborated on independent research.
Alexandra Duffy, Ph.D. student. Brigham Young University. Fall 2018 - Spring 2019. Trained in R programming and data analysis, NetLogo programming, and ecological modeling best practices, and collaborated on independent research.

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.

Professional Experience

Resident and Hotel Assistant, Conference and Student Services Department **Jan. 2016 - May 2016**
Smithsonian-Mason School of Conservation - Front Royal, VA
- Developed and led student centered hall programs to promote social and educational growth.
- Fostered a positive living environment designed to link community, often resolving conflict.

Social Media Content Coordinator, Marketing Department **Oct. 2015 - Oct. 2016**
Independent Institute - Oakland, CA
- Created engaging, visually appealing infographics using a variety of in-house data sources.
- Developed a coherent social media marketing strategy and coordinated content across networks.
- Prepared detailed weekly progress reports using social media interactions data from multiple sources.

Development Fellow, Development Department **June 2015 - Aug. 2015**
Independent Institute - Oakland,CA
- Assisted the development director with donor outreach, donor appreciation, donation processing, direct mail copywriting, fundraising campaign management, and donation data visualization.
- Visualized donation data to create a comprehensive idea of Independent's donor pipeline and built a giving society proposal tailored to Independent's needs.

Professional Development & Continuing Education

Ecology:

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
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