

Sarah E. McGrath-Blaser, Ph.D.

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EDUCATION

[2019–2023]

Doctor of Philosophy in Zoology

University of Florida, Gainesville, FL

Advisor: Ana V. Longo

[2016–2018]

Masters of Science in Biology

James Madison University, Harrisonburg, VA

Advisor: David S. McLeod

[2009–2013]

Bachelor of Science in Zoology

North Carolina State University, Raleigh, NC

PUBLICATIONS

* — denotes student mentee

PEER-REVIEWED MANUSCRIPTS

McGrath-Blaser, S.E., Grafe, U., Torres-Sánchez, M., McLeod, D.S., Stuart, B.L. 2025. Cutaneous bacterial microbiome description and new locality record of the poorly known striped caecilian *Ichthyophis asplenus* Taylor, 1965 in Bruneian Borneo. *Journal of Natural History* 59(1-4):29-43.

Hartmann, A., Sash, K., Hill, E.P., Claunch, N., Maddox, M., **McGrath-Blaser, S.**, McKinstry, C., Ossiboff, R., Longo, A.V. 2024. Partitioning the influence of host specificity in amphibian populations threatened by multiple emerging infectious diseases. *Biological Conservation* 296: 110685.

Hopkins, C., Lesbarrères, D., Claunch, N., Emmenegger, E., Hardy, B., Torres-Sánchez, M., Stark, T., Julian, A., **McGrath-Blaser, S.**, Parker-Graham, C.A., Haman, K., Morgan, A., Miller, D.L. 2024. Balancing the scales: Including under-represented herptile species in a One Health approach. *Research Directions: One Health* 2:e17.

McGrath-Blaser, S.E., McGathey, N. *, Pardon, A. *, Hartmann, A., and Longo, A.V. 2023. Invasibility of a North American soil ecosystem to amphibian-killing fungal pathogens. *Proceedings of the Royal Society B* 291(2021):20232658.

Hartmann, A., **McGrath-Blaser, S.E.**, Colón-Piñeiro, Z., and Longo, A.V. 2023. Ontogeny drives shifts in skin bacterial communities in facultatively paedomorphic salamanders. *Microbiology* 169(10):001399.

Torres-Sánchez, M., Villate, J., **McGrath-Blaser, S.**, and Longo, A. V. 2022. Panzootic chytrid fungus exploits diverse amphibian host environments through plastic infection strategies. *Molecular Ecology* 31(17):4558-4570.

McGrath-Blaser, S., Steffen, M. M., Grafe, U., Torres-Sánchez, M., McLeod, D. S., and Muletz-Wolz, C. R. 2021. Early life skin microbial trajectory as a function of vertical and environmental transmission in Bornean foam-nesting frogs. *Animal Microbiome* 3(1):1-15.

McGrath-Blaser, S., Neighbors, A. *, and Hyman, O. 2021. Novel, less-invasive hylid survey device performs equal to traditional pipe refugia in field-based comparison. *Herpetological Conservation and Biology* 16(2):355–360.

Muletz-Wolz, C. R., Rankin, E. W., **McGrath-Blaser, S.**, Venkatraman, M., Maldonado, J. E., Gruner, D. S., Fleischer, R. C. 2021. Identification of novel bacterial biomarkers to detect bird scavenging by invasive rats. *Ecology and Evolution* 00:1–15.

McGrath, S., Yirka, A., Frega, K., and Neighbors, A*. 2020. Novel Hylid survey technique: A clear alternative to traditional polyvinyl chloride pipe refugia. *Herpetological Review* 51(2):241–244.

Reynoso, G., Smith, M. R., Holmes II, C. P., Keelan, C. R., **McGrath, S. E.**, Alvarez, G. H., Coceano, M. A., Elderidge, K. A., Fried, H. I., Gilbert, N. E., Harris, M. T., Kohler, L. R., Modolo, C. M., Murray, E. A., Polisetti, S. M., Sales, D. J., Walsh, E. S., and Steffen, M. M. 2019. Bacterial community structure and response to nitrogen amendments in Lake Shenandoah (VA, USA). *Water Science & Technology* 80(4):675–684.

BOOK CHAPTERS

McGrath-Blaser, S and Longo, A.V. 2022. Fungal Invasions and potential spread through tourism and recreation. In *Tourism, Recreation and Biological Invasions*. Barros, A., Rew, L., Shackleton, R., Pizarro, C., Pauchard, A. CABI. 27-35.

THESES

McGrath-Blaser, S. Expanding the human footprint: understanding human-mediated dispersal of microscopic fungi in the context of tourism and recreation. *University of Florida ProQuest: in embargo*.

McGrath, S. Exploring the microbiome: diversity of the microbial community of three foam nesting frogs, Genus: *Polypedates*, across a developmental gradient.
<https://commons.lib.jmu.edu/cgi/viewcontent.cgi?article=1596&context=master201019>

NATURAL HISTORY NOTES

McGrath-Blaser, S., Hartmann A., and Doby, J. 2021. Geographic distribution: *Eurycea hillisi*. *Herpetological Review* 52(3):571.

TEACHING EXPERIENCE

[Spring 2022]
[Summer 2022]

Teaching Assistant – University of Florida
Evolution Lecture – Discussion Leader

[Spring 2021] Integrated Principles of Biology I – Lecture
 [Fall 2020] Integrated Principles of Biology I – Lab

[2019] **Guest Lecturer – James Madison University**
 Herpetology, Spring Semester

[2018–2019] **Adjunct Instructor – James Madison University**
Course-based Undergraduate Research Experience (CURE)
 Foundations of Biology I, Bio 140
 Foundations of Biology II, Bio 150

[2016–2018] **Teaching Assistant – James Madison University**
Course-based Undergraduate Research Experience (CURE)
 Foundations of Biology I, Bio 140

[May 2016 & May 2017] **Teaching Assistant – James Madison University**
Study Abroad Course in Brunei
 Universiti Brunei Darussalam
 Kuala Belalong Field Studies Centre

[April 2016] **Co-leader, Educational Spring Break – NC Museum of Nat Sci**
Trip for high school volunteers, Jr. Curator Program
 Everglades National Park

EMPLOYMENT

[March 2024-Present] **Postdoctoral Research Fellow, Environmental Protection Agency**
USEPA, Research Triangle Park, Durham, NC

- Developing project elements and analyzing data on the fate and transport of human pathogens in aquatic environments
- Performing laboratory assays on field collected samples including DNA extraction, qPCR, and next-generation sequencing
- Collaborating with multiple stakeholders including the USGS, NGO's, and the City of Raleigh, to characterize water quality in the impaired Walnut Creek Watershed, research pathogen transmission, and provide input on effective water management

[Fall 2018] **Technician – Smithsonian Conservation Biology Institute**
Center for Conservation Genomics, National Zoo, Washington, D.C.

- Assisted with laboratory preparation of microbiome samples including processing samples and optimizing DNA extraction protocol for degraded samples.
- Bioinformatic data analysis via QIIME2 and R.

[2015–2016] **Assistant Curator of Program Animals – Living Collections**
North Carolina Museum of Natural Sciences, Raleigh, NC

- Co-managed the largest dedicated program animal collection in the country.
- Cared for animals representing over 80 different species across 5 different taxa.

- Worked to develop a novel treefrog husbandry container that we then transitioned into a field-based application for treefrog surveys.

[2015–2016]

**Educational Contractor – Outreach Programming
North Carolina Museum of Natural Sciences, Raleigh, NC**

- Led scientific educational programs throughout the state of NC to a wide array of age groups and crowd sizes.

[Fall 2014]

**Fieldwork Technician – Research Program, Dr. Jennifer Sheridan
S.A.F.E project site, Sabah, Malaysian Borneo**

- Conducted tadpole surveys in streams with varying widths of riparian buffer in areas where primary or secondary rainforest had been logged to create palm oil plantations.
- Assisted with tadpole and frog identification, construction and maintenance of field equipment, and obtained various environmental measurements for each stream.

[Summer 2014]

**Science Museum Intern – Maria Mitchell Association
Maria Mitchell Natural Science Museum, Nantucket, MA**

- Assisted with all aspects of operations for the science museum including giving tours to the public, running the museum gift shop, designing new museum exhibits, and caring for the live animal collection that contained reptiles, amphibians, insects, fish, and crustaceans.
- Oversaw high school volunteers and ran multiple museum programs each week.
- Carried out ongoing research projects by conducting mark and recapture fieldwork each week to ascertain snake biodiversity as well as endangered American Burying Beetle populations using cover board surveys and pitfall traps for these projects, respectively.

[Spring 2014]

**Animal Husbandry Technician – Living Collections
North Carolina Museum of Natural Sciences, Raleigh, NC**

- Assisted with the husbandry duties for various reptiles and amphibians in the Terrestrial Exhibits section of the Living Collections department. Such duties included feeding, handling, utilizing proper cleaning techniques, and maintaining as well as constructing animal habitats. While working on exhibits during museum hours I interacted with the public and participated in interpretation.

[Fall 2013]

**Biological Research Technician – US Geological Survey
Patuxent Wildlife Research Center, Laurel, MD**

- Worked with the Northeast Amphibian Research and Monitoring Initiative (NE ARMI) conducting various terrestrial and stream salamander surveys to obtain population data in an ongoing study concerning the effects of climate change on amphibians.
- Assisted with habitat mapping of Catocin Mountain Park and Harper’s Ferry National Historical Park using the Trimble GPS system.
- Assisted with mark and recapture of salamanders in a plot survey using Visual Implant Elastomer.

GRANTS AND AWARDS

[2022] **Belgian American Educational Foundation Fellowship - \$17,000 (Declined)**

[2021] **Wildlife Disease Grant Challenge hosted by Experiment - \$4,175.64**

[2021] **Brian Riewald Memorial Fund Research Grant - \$300**

[2019] **UF Graduate School Funding Award - \$31,000/year + tuition and benefits**

- [2018] **JMU Graduate School Travel Grant - \$500**
- [2018] **Outstanding Second Year Graduate Student Award - \$100**
- [2018] **3-Minute Thesis Competition (1st place, People's Choice Award) - \$1,050**
- [2017] **JMU Graduate Student Association Professional Development Grant - \$200**
- [2017] **National Geographic Society Young Explorer Grant - \$5,000**
- [2017] **Virginia Herpetological Society Grant - \$500**
- [2012] **CAPSE/FIPSE Ecosystems Services Exchange Grant - \$3,000**

PRESENTATIONS

* — denotes student mentee

MEETING PRESENTATIONS

- [2022] **McGrath-Blaser, S.**, Pardon, A.,* McGathey, N.,* Longo, A. First Global Amphibian and Reptile Disease Conference, Knoxville, TN
'Invasibility of a North American soil ecosystem to amphibian-killing fungal pathogens'
- [2022] **McGrath-Blaser, S.**, Pardon, A.* , McGathey, N.,* Longo, A. Mycological Society of America, Gainesville, FL
'Appalachian soil bacterial communities inhibit amphibian-killing fungal pathogen growth in experimental microcosms'
- [2018] **McGrath, S.** Southeast Partners in Amphibian and Reptile Conservation, Helen, GA
'Exploring the microbiome: diversity of the microbial community of three foam nesting frogs, Genus: *Polypedates*, across a developmental gradient'
Neighbors, A.,* and **McGrath, S.**
'Novel hylid survey technique: a clear alternative to traditional PVC pipe refugia'
- [2017] **McGrath, S.**, and Neighbors, A.* Virginia Herpetological Society Fall Meeting, Henrico, VA
'Novel hylid survey technique: a clear alternative to traditional PVC pipe refugia'

INVITED TALKS

- [2022] **McGrath-Blaser, S.** PacBio Genomics Day, Emory University, Atlanta, GA
'Tracking shifts in soil bacterial communities caused by invasive fungi using PacBio long-read sequencing'
- [2021] **McGrath-Blaser, S.** UF PEERS (Ecology & Evolution) Seminar, Gainesville, FL
'Establishment and growth of the amphibian-killing fungi (*Batrachochytrium spp.*) in North American soils'
- [2020] **McGrath-Blaser, S.** Amphibian Foundation, Atlanta, GA
Master Herpetologists Class (Recorded)
'*Batrachochytrium salamandrivorans*: the salamander devouring fungus'
- [2019] **McGrath-Blaser, S.** UF POPBio (Population Biology) Seminar, Gainesville, FL
'Evolution of a graduate student: lessons from the microbiome and PhD topic feedback request'
- [2018] **McGrath, S.** Maria Mitchell Association Science Speaker Series, Nantucket, MA
'Importance of the microbiome: Lessons from the world of amphibians'

- [2018] **McGrath, S.** Mountain Lake Biological Station, Pembroke, VA
'Exploring the microbiome: diversity of the microbial community of three foam nesting frogs, Genus: *Polypedates*, across a developmental gradient'
- [2018] Livernoche, K., **McGrath, S.**, Murray, E., Elder, M., Coggin, C., Peyton, S., and Schmitt-Harsh, M. Presentation to the Harrisonburg City Council to help inform park management practices and provide Ash tree status in wake of Emerald Ash Borer presence. Harrisonburg, VA
'Purcell Park Tree Inventory: Emerald Ash Borer effects on a city park'

POSTERS

- [2018] **McGrath, S.**, McLeod, D.S., and Steffen, M.M. Joint Meeting of Ichthyologists and Herpetologists, Rochester, NY
'Exploring the microbiome: diversity of the microbial community of three foam nesting frogs, Genus: *Polypedates*, across a developmental gradient'
- [2018] Livernoche, K., **McGrath, S.**, Murray, E., Elder, M., Coggin, C., Peyton, S., and Schmitt-Harsh, M. JMU Biosymposium, Harrisonburg, VA
'Purcell Park Tree Inventory: Emerald Ash Borer effects on a city park'
- [2017] **McGrath, S.**, Gebhard, F., Roberts, C., Spradlin, W., and McLeod, D.S.
JMU Biosymposium, Harrisonburg, VA
'A review of larval field enclosure techniques and introduction of a novel field device'
- [2017] Holmes, C., Keelan, C., **McGrath, S.**, and Steffen, M.M.
JMU Biosymposium, Harrisonburg, VA
'Effect of Nutrient Amendments on Lake Microbial Communities'

OUTREACH

- [2023] **Girls Do Science, Herpetology Outreach**
Florida Museum, Gainesville, FL
- [2020] **Science Night, Activity Leader and Panelist**
Lawton Chiles Elementary School, Gainesville, FL
- [2018] **JMU Herpetology Outreach Program, Family Weekend**
Edith J. Carrier Arboretum, Harrisonburg, VA
- [2017] **Microbiology Outreach Program**
Eastern Mennonite High School, Harrisonburg, VA
-Students brought spices to class and we tested the antimicrobial properties of each spice on agar plates over a one-week period.
- [2016] **Herpetology Outreach Program**
International School Brunei, Bandar Seri Begawan, Brunei

-Brought live reptiles and amphibians to teach school-age children about the organisms that can be found in their city.

[2016] **Amphibian and Reptile Day Frog Feeding Program**
North Carolina Museum of Natural Sciences, Raleigh, NC

ACTIVITIES

LEADERSHIP

[2020–Present] **Founder, ZooJoe & Botantea; Interdepartmental social**
University of Florida
[2017–2018] **President, JMU Graduate Student Association (GSA)**
[2017–2018] **Graduate Student Representative, JMU Graduate Council**
[2017–2018] **Graduate Student Representative, JMU Career and Academic Planning**
Committee
[2016–2017] **GSA Biology Department Program Representative**

SOCIETIES

[Member since 2019] **Wildlife Disease Association**
[Member since 2017] **Society for the Study of Amphibians and Reptiles**
[Member since 2016] **SE Partners in Amphibian and Reptile Conservation**
[Member since 2016] **VA Herpetological Society**
[Member since 2012] **NC Herpetological Society**
NC State Zoology Club - Participant: Fall 2010 – May 2013, Treasurer: Fall 2010 – Spring 2012
NC State University Scholars Program – Alumna

PROFESSIONAL DEVELOPMENT

[2017] **Metabarcoding Workshop**
Smithsonian Environmental Research Center, Edgewater, MD

TECHNICAL EXPERTISE

COMPUTATIONAL

Proficient – R, QIIME2, GIS, next-generation sequencing, network analyses
Beginner – BASH, Python

LABORATORY

DNA extraction, PCR, qPCR, NGS library preparation, microbiology culture techniques

FIELD-BASED

Marking techniques – Visual Implant Elastomer (VIE), toe-clipping
Field surveys – dip netting, transects, temporary removal sampling, disease sampling

RESEARCH COVERAGE

[2020] **University of Florida**
<http://explore.research.ufl.edu/sustaining-science.html>
[2018] **James Madison University**
<https://jmu.edu/news/grad/2018/04-24-sarah-mcrath.shtml>
[2016] **Raleigh News & Observer - Contributed by Sarah McGrath**
<https://www.newsobserver.com/news/technology/article59597536.html>