

Mariely Vega Gómez

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EDUCATION

North Carolina State University, Raleigh, NC | Ph.D. Candidate in Biology **August 2019 - Current**

- *Thesis: Role of geomorphology and extreme disturbances on aquatic macroinvertebrates of tropical montane streams.*
Advisor: Dr. A. Ramírez

University of Puerto Rico, San Juan, PR | B.Sc. in Environmental Sciences **December 2019**

- *Thesis: How does substrate complexity affect predator-prey interactions between riparian spiders (*Wendilgarda clara*) and water striders (*Veliidae*, Hemiptera).*
Advisor: Dr. S.P. Kelly

PROFESSIONAL EXPERIENCE

El Verde Field Station, Luquillo, PR **May 2020 – Current**

Research Experience for Undergraduate Mentor

- 2023 project title: Substrate Preference and Role of Simulated Disturbance in Patterns of Mayfly Density and Biomass in Tropical Streams of Puerto Rico.
- 2022 project title: Macroinvertebrate Oviposition Site-Selection vs Availability in Tropical Streams.
- 2021 project title: Impacto de la apertura de dosel sobre la oviposición de insectos acuáticos en quebradas tropicales.
- 2020 project title: Macroinvertebrate Assemblage Response to Drought in Tropical Montane Streams: An Application of Biotic Indices.
- Supported historically underrepresented undergraduates in carrying out original research projects.
- Taught field and laboratory techniques on freshwater ecology.
- Revised manuscripts and science communication materials for symposiums and conferences.
- Trained students on how to use Microsoft Excel, R, and PAST statistical software.
- Fostered a supportive environment to encourage curiosity and self-confidence.

Invited speaker

- (Upcoming) 2024 workshop: “Figma and Other Web-Based Approaches for Project Visualization”.
- 2022 workshop: “Tips on Using Microsoft Excel for Data Organization and Visualization”.
- 2022 panel: Graduate school life, application process, research, and funding opportunities.
- 2021 workshop: “Use of Light Traps for Scientific Research”.
- 2021 seminar: “Applying to Graduate School and the NSF-GRFP”.
- 2020 seminar: “Macroinvertebrate Response to Drought and Hurricanes in Tropical Streams”.

North Carolina State University, Raleigh, NC

Teaching Assistant, Ecology (AEC 360)

January 2024

- Modified and delivered six lectures to approximately 200 students.
- Designed and graded assignments that encouraged the creative representation of ecological concepts and the defense of original ideas based on learning objectives from the revised Bloom’s Taxonomy.
- Incorporated technology to enhance in-class engagement (e.g., audiovisuals, TopHat quizzes).

Doctoral Researcher: Tropical Stream Ecology, Advisor: Dr. A. Ramírez

August 2019 – Current

- Applied field and lab research techniques and analyzed data using statistical software (e.g., PAST, R).
- Taught and mentored undergraduates and graduate students.
- Communicated my findings at national and international conferences.

- Collaborated with national and international researchers on diverse data collection initiatives.
- Attended extracurriculars to enhance my expertise in freshwater ecology and interdisciplinary topics.
- Wrote bilingual materials and manuscripts for publication, targeting general and expert audiences.
- Identified macroinvertebrates using taxonomic keys.
- Trained on how to conduct ethical research and common protocols for laboratory safety.
- Coordinated and supervised cohorts of undergraduates working in our Stream Ecology laboratory.

La Selva, Heredia, CR

May 2018

Intern: Tropical Stream Ecology, Advisors: Dr. N. Marzolf, Dr. M. Ardón, Dr. A. Ramírez

- Designed a research project, developing data collection and analysis methodologies.
- Collaborated to gather and analyze field and laboratory data.
- Established a time management framework for optimal field and laboratory performance.
- Coauthored a publication and presented our findings at a symposium.
- Engaged in a multicultural and diverse work environment.

University of Puerto Rico, San Juan, PR

August 2017 – December 2018

Field and Laboratory Assistant: Stream Flow Reduction Experiment, Advisor: Dr. A. Ramírez

- Assisted in field data collection and sorting of macroinvertebrates in the laboratory.
- Applied taxonomic keys to identify common Puerto Rican stream invertebrates.

Field Assistant: PR-LSAMP'S Dragonfly Project, Advisor: Dr. A. Ramírez

- Executed standard collection protocols of adult dragonfly and damselfly species.
- Attended collection events at various sites to inventory Puerto Rican odonates.

El Verde Field Station, Luquillo, PR

May 2017

Intern: Tropical Stream Ecology, Advisors: Dr. A. Ramírez

- Designed a research project with methodologies for data collection and analysis.
- Collaborated to gather and analyze field and laboratory data.
- Wrote a manuscript and presented my results at a scientific conference.
- Engaged in a multicultural and diverse work environment.

BROADER IMPACTS AND OUTREACH

Society for Freshwater Science, virtual/Philadelphia, PA

June 2024

(Upcoming) SFS Mixer Mentor

- Mentor students interested in graduate school and freshwater ecology, addressing questions about applications for graduate school and funding, imposter syndrome, and time management.

Social Media Subcommittee Member

December 2022 – May 2023

- Updated SFS's "Stay Fresh!" bibliographic hub with current publications on aquatic ecology topics.

STOICH Student Training and Data Analysis Workshop, virtual

May 2024 - Current

Lead Lesson Plan Developer

- Lesson plan title: "A Chemical Balancing Act: The Nutrients of Aquatic Life".
- Implemented Next Generation Science Standards for high school life science lessons.
- Collaborated to create the lesson plan teaching high school students about associations between functional and stoichiometric traits of aquatic organisms using the STOICH database.
- Created an organized workflow using web-based applications (i.e., Google Draw and Google Drive).

Young Voices of Science: Science Communication Workshop, virtual

February 2024 - Current

Science Communicator

- Video title: “A Macro-Adventure: Diversity of Tropical Aquatic Life”
- Collaborated on an animation aimed at general audiences, highlighting the diversity, taxonomy, life-history traits, ecosystem services, and interspecific relationships of tropical freshwater life.
- Trained in the use of computer programs and animation techniques as science communication tools (i.e., Adobe Illustrator, Adobe Premiere, ProCreate, ProCreate Dream, and Clip Art Studio).

SciRen Triangle, Raleigh, NC

August 2023

Lead Lesson Plan Developer

- Lesson plan title: “Peek Below the Surface: Dive into Aquatic Organisms”.
- Implemented NC Essential Science Standards for 5th-grade biology.
- Developed cost-effective and flexible activities to teach students about food webs using aquatic environments and macroinvertebrates as a case study.
- Collaborated to create the lesson plan and to develop demonstrative materials for a subsequent networking event between researchers and NC educators.

Macrolatinos, virtual

July 2022 – Current

- Used Google Forms to gather survey data used in the creation of poster and oral sessions as part of the VI Congreso Latinoamericano de Macroinvertebrados y Ecosistemas Acuáticos.
- Disseminated information using popular social media platforms (i.e., X, Instagram, and Facebook).
- Assisted in updating the conference webpage using Blogger.

North Carolina State University, Raleigh, NC

November 2022

Graduate Student Panel Speaker – Field Ecology (AEC 460)

- Participated in a panel on diverse ecosystems, research techniques, career paths, and perspectives.

Biology Graduate Student Committee Seminar Coordinator

August 2021 – May 2022

- Coordinated and moderated monthly seminars for the Applied Ecology Department’s science series.
- Provided a virtual space for speakers and attendees to network using Zoom.
- Created promotional materials using Canva, original photographs, and color pallet generators.

DEI Committee Member – Applied Ecology Department

November 2020 – December 2022

- Participated in discussions on retaining and safeguarding diverse students and faculty.

Peer Mentoring Network Mentor

August 2020 – May 2021

- Supported incoming graduate students by offering guidance about academic life and resources.
- Addressed their concerns about settling into a new community and new routines.

Luquillo Long-Term Ecological Research Program, Luquillo, PR

March 2021 – Current

Graduate Student Representative Committee Lead

- Served as liaison between Luquillo LTER graduate students, primary investigators, the network-wide graduate student committee, and the management committee.
- Surveyed our student community to assess interests and needs and presented results to site leaders.
- Connected graduate students with undergraduates, volunteers, and recent graduates at our site.
- Translated written materials and real-time conversations between English and Spanish speakers.
- Used social media platforms to engage the public and increase their awareness of our students’ work.
- Coordinated and moderated various activities that fostered the interchange of scientific information.
- Crafted promotional materials for social media platforms using web-based tools such as Canva.
- Secured a \$500 travel award from the Management Committee for our student art contest winner.
- Scheduled regular meetings with the graduate committee to discuss ideas and establish a workflow.

- Shared research and funding opportunities using Gmail, Discord, X, Instagram, and Facebook.
- Recorded and shared past activities with the research community, the public, and our YouTube.
- Engaged nearly 500 voters from multiple countries with the LUQ-LTER Student Art Contest.
- Coordinated and moderated 14 talks for the LUQ-LTER Lightning Talks.
- Facilitated a seminar by Dr. A. Lugo: “Land Use and Research History of the Luquillo Mountains”.
- Carried out the LTER Network Instagram Takeover: “Site Features and People Highlights”.
- Edited and posted the 2021 and 2023 Student Highlights to all Luquillo LTER social media accounts.

PUBLICATIONS

Marzolf, N. S., Baca, D. M., Bruce, T. K., **Vega-Gómez, M.**, Watson, C. D., Ganong, C. N., ... & Ardón, M. (2022). Do experimental pH increases alter the structure and function of a lowland tropical stream? *Ecosphere*, 13(7), e4097.

PRESENTATIONS

2024 Society for Freshwater Science Conference, Philadelphia, PA **June 2024**
 (Upcoming) Talk: **M. Vega-Gómez**, A. Ramírez. Influence of Low and High Precipitation and Role of Geomorphology on Freshwater Invertebrate Response in a Tropical Stream.

(Upcoming) Talk: M. Gilbert, **M. Vega-Gómez**, A. Ramírez. Substrate Preference and Role of Simulated Disturbance in Patterns of Mayfly Density and Biomass in Tropical Streams of Puerto Rico.

(Upcoming) Talk: A. Ramírez, P. Gutiérrez-Fonseca, J. Gómez, O. Pérez-Reyes, T. Crowl, W. McDowell, A. Meza-Salazar, V. González-Hernández, **M. Vega-Gómez**. Effect of an Experimental Flow Reduction on a Rainforest Stream Ecosystem, Puerto Rico.

Luquillo Long-Term Ecological Research Program, Luquillo, PR. **June 2024**
 (Upcoming) Talk: **M. Vega-Gómez**. Overview of Activities and Engagement Opportunities from the Luquillo LTER Graduate Student Representative Committee.

Emerge Virtual Poster Showcase, virtual **April 2024**
 Talk: G. A. Herrera, **M. Vega-Gómez**, S. Espinoza, M. Osoh, C. Quiroz. Characterizing Temporal Changes in Freshwater Biodiversity at NEON Sites Across the United States.

Biology and FWBC Student Symposium, Raleigh, NC **April 2024**
 Talk: **M. Vega-Gómez**, A. Ramírez. Takeaways from Tropical Stream Responses to an Extreme Natural Disturbance.

VI Congreso Latinoamericano de Macroinvertebrados y Ecosistemas Acuáticos, virtual **June 2023**
 Talk: **M. Vega-Gómez**, Y. Quintana-Almóvar, A. Ramírez. Patrones de oviposición de insectos acuáticos en quebradas de Puerto Rico.

2023 Society for Freshwater Science. Brisbane, AU **June 2023**
 Talk: **M. Vega-Gómez**, A. Ramírez. Role of Pool Geomorphology and Rock Traits on Tropical Stream Insect Oviposition Patterns in Puerto Rico.

Biology and FWBC Student Symposium, Raleigh, NC **March 2023**
 Poster: **M. Vega-Gómez**, A. Ramírez. Role of Pool Geomorphology and Rock Traits on Tropical Stream Insect Oviposition Patterns of Puerto Rico.

NC State Conference on Faculty Excellence: Stronger Together, Raleigh, NC **March 2023**
Poster: E. A McKenney, C. Hubbard, O. Mathieson, M. E. Polera, A. M. Meza-Salazar, **M. Vega-Gómez**.
Learning to Teach Effectively: Graduate Pedagogical Mentorship.

Society for Ecological Restoration UPRAg, virtual **January 2023**
Talk: **M. Vega-Gómez**. Respuesta de ecosistemas de quebrada tropical a disturbios: macroinvertebrados como organismos modelo.

Luquillo Long-Term Ecological Research Program, Luquillo, PR. **January 2023**
Talk: **M. Vega-Gómez**. Activities and Survey Results from the Luquillo LTER Graduate Student Representative Committee.

VI Simposio sobre Insectos Acuáticos Neotropicales, Ilhéus, BR **November 2022**
Talk: L. G. Dias, **M. Vega Gómez**, A. M. Meza Salazar, A. Ramírez. Redescrición de *Borinquena carmencita* Traver, con notas sobre su ecología.

Long-Term Ecological Research All Scientists Meeting, Pacific Grove, CA **September 2022**
Poster: **M. Vega-Gómez**, A. Ramírez, P. Gutiérrez-Fonseca, C. Pringle. Response of Tropical Stream Macroinvertebrates to Hurricane Disturbances.

Joint Aquatic Sciences Meeting, Grand Rapids, MI **May 2022**
Talk: **M. Vega-Gómez**, A. Ramírez. Geomorphology Mediates Macroinvertebrate Response to Hurricane Disturbance in Tropical Streams.

Talk: A. Ramírez, A. M. Meza Salazar, **M. Vega Gómez**, J. E. Gómez, P. Gutiérrez-Fonseca. Response of mayfly assemblages to hurricane disturbance in tropical stream ecosystems.

V Congreso Latinoamericano de Macroinvertebrados y Ecosistemas Acuáticos, virtual. **October 2021**
Talk: A.M. Hernández, **M. Vega-Gómez**, A. Ramírez. Impacto de la apertura de dosel sobre la oviposición de insectos acuáticos en quebradas tropicales.

Luquillo Long-Term Ecological Research Program, virtual **July 2021**
Talk: **M. Vega-Gómez**, A. Ramírez. Macroinvertebrate Functional Feeding Group Response to Drought and Hurricane Disturbances in Tropical Montane Streams, Puerto Rico.

2021 Society for Freshwater Science Conference, virtual **May 2021**
Talk: **M. Vega-Gómez**, A. Ramírez. Macroinvertebrate Functional Feeding Group Response to Drought and Hurricane Disturbances in Tropical Montane Streams, Puerto Rico.

Poster: M. Alaniz, **M. Vega-Gómez**, A. Ramírez. Macroinvertebrate Assemblage Response to Drought in Tropical Montane Streams: An Application of Biotic Indices.

2020 Society for Freshwater Science Conference, virtual poster session **June 2020**
Poster: **M. Vega-Gómez**, A. Ramírez. Macroinvertebrate vulnerability to drought and hurricanes in forested streams in Puerto Rico.

2020 Water Collaborative Mini-Symposium, Raleigh, NC **January 2020**
Poster: **M. Vega-Gómez**, A. M Meza-Salazar, A. Ramírez. Tropical stream ecosystem responses to droughts and hurricanes.

2018 Society for Freshwater Science Conference, Detroit, MI **May 2018**

Poster: **M. Vega-Gómez**, S. P. Kelly, A. Ramírez. Intraspecific Predation Among Water Striders (Veliidae, Hemiptera) as Strong as Interspecific Predation by Riparian Spider (*Wendilgarda Clara*).

AWARDS AND HONORS

Sheraton Philadelphia Downtown, Philadelphia, PA **May 2024**

STOICH Student Training and Data Analysis Workshop Attendee

- \$ 468 travel award for the STOICH database workshop, offered free of cost.
- The program covered lodging, food, and registration costs for the 2024 SFS Conference.

Florida A&M University, Tallahassee, FL **May 2024**

SEEDS GIS Workshop Attendee

- \$ 493 travel award to attend the first graduate GIS workshop hosted by the Ecological Society of America's (ESA) Strategies for Ecology Education, Diversity and Sustainability (SEEDS).
- The program covered lodging, food, and transportation, and the workshop was offered free of cost.
- Selected from over 130 applicants for this competitive, nationwide award.

Highlands Biological Station, Highlands, NC **March 2024**

2023 – 2024 Emerge Fellow

- \$ 843 travel award to attend the Emerge Visual Communication workshop free of cost.
- Lodging, meals, and freshwater-centered excursions were also covered.

Natural Areas Conference, Virtual **November 2023**

Luquillo Long-Term Ecological Research Program Scholarship Recipient

- Received a \$158 scholarship for membership and registration to the 2023 Natural Areas Conference hosted by the Natural Areas Association.

Hopland Research and Extension Center, Hopland, CA **October 2023**

2023 – 2024 Emerge Fellow

- \$ 760 travel award to attend the Emerge NEON Data and R workshop free of cost.
- Lodging, meals, and freshwater-centered excursions were also covered.

Brisbane Convention and Exhibition Center, Brisbane, AU **June 2023**

2023 – 2024 Emerge Fellow

- \$ 2748 travel award to attend the 2023 SFS Conference.
- Lodging, meals, and registration costs were covered.
- The program also covered lodging, meals, and travel to the Crystal Waters Permaculture EcoVillage for a freshwater-centered team-building and cultural immersion experience.

North Carolina State University, Raleigh, NC **August 2021 – July 2024**

NSF-GRFP Fellow

- \$ 34,000 – 37,000/year stipend and \$12,000 cost of education allowance for institutional expenses (i.e., tuition, health insurance, and enrollment fees).

NC-LSAMP Bridge to the Doctorate Fellow **August 2019 – July 2021**

- \$ 32,000/year stipend, plus award for tuition, health insurance, and enrollment fees.
- Regular follow-ups and professional development sessions were offered free of cost.
- Recruitment efforts covered travel for a campus visit and waived graduate school application fees.

Graduate University Fellow **August 2019 – January 2020**

- \$ 4,000 fellowships to recruit outstanding incoming graduate students.

University of Puerto Rico, San Juan, PR
Magna Cum Laude for B.Sc. in Environmental Sciences
 GPA: 3.73

December 2018

Cobo Center, Detroit, MI
SFS 2018 Instars Fellow

May 2018

- \$ 770 travel and lodging award to attend the 2018 SFS conference.
- Membership and registration costs were covered.
- Professional development workshops and networking activities were offered free of cost.

Josefina Barceló High School, Guaynabo, PR
Academic Excellence and Valedictorian
 GPA: 4.00

May 2013

TECHNICAL SKILLS AND KEY COMPETENCIES

- Fully bilingual in English and Spanish – verbal and written communication.

Adept in the usage of basic laboratory and field equipment:

- Electron and dissecting microscope
- Microbalance and analytical balance
- YSI probe and flow rate sensor
- Calipers and densimeters
- Spectrofluorometers and electrofisher
- Other basic field and laboratory tools

Knowledgeable of the following computer programs:

Data Analysis and Visualization:

- Microsoft Excel, R Studio, and Past
- ArcGIS and QuantumGIS
- Google Colab, Google Earth Engine
- HOBOWare Pro
- PowerPoint

Project Management

- Figma, ClickUp, Canva, and Planner
- Science Communication and Illustration*
- Premiere, Photoshop, and Illustrator
 - Inkscape, BioRender, and Canva

RELEVANT COURSEWORK (GPA: 4.00)

<i>Research and Teaching</i>	<i>Grade</i>	<i>Freshwater Science and Ecology</i>	<i>Grade</i>
● Doctoral Research	S	● Current Issues: Nat. Resour.	A
● Introduction to Bio. Research	A	● Eco. & Cons.: Fresh. Inverts.	A+
● Learning to Teach Effectively	S	● Env. Issues in Aquatic Eco.	A
● Research Ethics	S	● Evolutionary Eco.	A+
● Stat. Methods for Bio. Research	A+	● Fresh. Eco.	A+
		● Foundations of Eco.	A