

Mileisha Lyann Velázquez

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RESEARCH INTERESTS

I am an environmental biologist and oceanographer graduate student interested in understanding how the physical, geological, chemical, and biological processes that shape our coastal and marine ecosystem are negatively affected by climate change and unsustainable practices and development of nature-based solutions that protect coastal ecosystem services and biodiversity.

EDUCATION

August 2023 PhD, Environmental Engineering Sciences, University of Florida, Gainesville, FL
2021-2023 MS, Oceanography, University of Puerto Rico, Mayaguez, PR 2019-2021 BS,
Biology, University of Puerto Rico, Mayaguez, PR

- Magna Cum Laude

2017-2019 AS, Natural Sciences, University of Puerto Rico, Utuado, PR

RESEARCH EXPERIENCE

August 2024 – May 2025

Southeast Climate Adaptation Science Center (SE CASC) – Global Change
Research Fellow 2024-2025 Cohort

Advisor: Catherine (Kasia) Nikiel

Funding: Southeast Climate Adaptation Science Center (SE CASC)
at North Carolina State University

Project: Drought and Aquatic Ecosystem in the Southeast: Informing drought
response and ecological resilience to future low-flow events

- Understand drought and hydrology
- Identify management information needs
- Highlight recent advancements in hydroclimate research
- Identify case studies in response and planning
- Assess vulnerability in aquatic and estuarine ecosystems
- Assess water quality, reservoir operations, water withdrawals and permitting

August 2023 – Present

Research Assistant, University of Florida, Gainesville

Advisor: Katherine Deliz Quiñones

Funding: USGS

Project: PFAS fate, transport, and effects, with emphasis on molecular-level understanding of PFAS precursor transformation, sorption dynamics, or mechanisms of bioaccumulation and(or) biological/ecological effects

- Collection, Characterization and Extraction
- Target PFAS Analysis
- Non-Target PFAS Analysis
- Desorption Experiments
- Batch Sorption Experiment
- Column Sorption Experiments
- DNA Extraction and Sequencing
- Epigenetic of gene expression
- Microcosm experiments
- Hours per week: 20

August 2022 – June 2023

Research Assistant, University of Puerto Rico, Mayaguez, PR

Advisor: Juan Cruz-Motta

Funding: NOAA in association with MER Consultants and the University of

Miami Project: Ecology and Fisheries Biology of the Yellowtail snapper (*Ocyurus chrysurus*) in PR □ Proposal redaction

- Sampling landed Yellowtail Snapper by collecting length and weight measurements coupled with image annotation software analysis for stock assessment.
- Data generated will serve to directly follow-up past survey (MER Consultants) and enrich data base with acquired length composition data from the data limited (*Ocyurus chrysurus*) species. All of which is essential for future wildlife management decisions in the Caribbean.
- Hours per week: 20

June – August 2022

Summer Intern, U.S Army Corps of Engineers, ERDC-UPRM partnership,

Construction Engineering Research Laboratory (CERL) - Champaign, IL

Advisor: Abigail M. Rice

Project: Military Engineering Technology for In-Field Waste

- Real-world and research experience on waste reduction by implementing use of PLA bioplastics in a compostable environment.

- This research provided further insight for the implementation of biodegradable and compostable biopolymers for increased sustainable practices. □ Hours per week: 40

January – May 2022

Research Assistant, Jobos Bay National Estuarine Research Reserve (JBNERR)

Advisor: Dr. Roy Armstrong

Project: Water Quality and Mangrove Deforestation Monitoring

- Satellite image retrieval of study area monitored
- Analysis and comparison of water quality parameters
- Hours per week: 40

WORK EXPERIENCE

August 2021– May 2022

Teaching Assistant Cellular Physiology Laboratory, University of Puerto Rico, Mayaguez, PR

- Hours per week: 8 (Two laboratory sessions per week)

August – December 2021

Tutor at “UPR Estudia Contigo” Program, Biology Department,
University of Puerto Rico, Mayaguez, PR

- Hours per week: 8 (Two videoconference sessions per week) **SKILLS**

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- Proficient in: Microsoft Office, Outlook; Macintosh; Windows; Google +
 - Experience using remote sensing analysis programs: ArcGIS; QGIS; online satellite image retrieval platforms (e.g., Sentinel-Hub, Planet etc)
 - Experience with R, and basic coding in C++ language
 - Technical writing
 - Responsible, highly motivated, leadership, team-work, and able to work under pressure
 - Good analytical and problem solving, creative, quick learner, and hardworking

- Environmental sampling of environmental and biological (e.g. fish) samples
- Laboratory skills including electrophoresis, chromatography, serial/direct dilutions, microscopy

LICENSES

- Scuba Diving Skills (Open Water, Advanced in progress)
- Navigation/Boating license

LANGUAGE

- Bilingual in Spanish and English, Full professional proficiency

RELEVANT COURSEWORK

- **Ecosystem Engineers**
 - Understand the roles of ecosystem engineers and learn the traits that define them through discussion of scientific literature.
 - Acquire insights on ecosystem engineering research perspectives for application to relevant research interests.
- **Water, Environment, and Human Health**
 - Implementation of computer analysis applications for engineering of water, environment, and human health issues.
 - Integrate analytical and technological approaches for the improvement of water and climate systems.
- **Biological Oceanography**
 - Study the biological processes that occur within the distinct marine ecosystems and how they are influenced by external factors. These general factors or parameters include human activity which contributes to climate change, coastal erosion, and pollution.
 - Identify and directly monitor changes to coastal features and benthic habitats in the Natural Reserve of La Parguera, Lajas, PR.
- **Chemical Oceanography**
 - Chemical composition of seawater and vital chemical reactions within the oceans
 - Ocean acidification and harmful toxins that pollute marine ecosystems

- Final project on Neon, a rare element found in our oceans, and identifying its presence, speciation, depth profile, fluxes, and residence time within our oceans
- **Marine Geology**
 - Geological processes that occur within our coasts and seafloor, which influences continental margins and affects stability of coastal infrastructures.
 - Develop a topic involving marine geologic processes, considering subduction zones at trench areas and the geological controls that influence trench fauna.
- **Marine Pollution**
 - Sources of marine pollution
 - Develop critical thinking skills by studying case studies in Puerto Rico and their potential solutions.
 - Use mathematical skills to estimate fluxes of pollutants in the oceanic reservoirs.
- **Remote Sensing**
 - Successfully develop and present a project based of the monitoring progression of mangrove deforestation at construction site in an area within the Jobos Bay National Estuarine Research Reserve (JBNERR)
 - Analyze satellite data using QGIS and ArcGIS programs
 - Interpret water quality parameters which in hand explains environmental processes
 - Satellite and *in situ* data analysis of coastal water quality parameters before and after Fiona storm in Puerto Rico
 - Recommend future island coastal development to be based on ecological engineering practices to reduce pollution and biodiversity loss