Carla Nicole Ayala Crespo

Email: cna97@nau.edu

Education

M.S. in Biology (Ecology, Evolution & Conservation Emphasis) | Expected graduation date: May 2023 | Northern Arizona University, Flagstaff, Arizona

B.Sc., Environmental Science | GPA: 3.67 |May 2020 | University of Puerto Rico, Río Piedras Campus

Undergraduate thesis: Mercury Storage in Hydric Soils and Biomass of a St. Lawrence River Wetland

General Skills

Languages: English and Spanish fluency.

Software: ArcMap, ArcGIS online, Google Earth, RStudio, Visual Studio Code, PowerPoint, Word, Excel.

Programming languages: Experienced using R programming language for data analysis and visualization.

Laboratory skills

• Experienced in measuring water quality parameters such as dissolved oxygen (with probe and Winkler titration), pH, nitrite, nitrate, ammonia, and phosphate concentration in water samples. Measurement of acidity, alkalinity, and hardness using EDTA titration. Measurement of salinity, turbidity, biochemical oxygen demand, and chemical oxygen demand. Experience in measuring total suspended solids (TSS) in water samples.

• Soil and biomass samples analysis: Experience in using Milestone Direct Mercury Analyzer-80. (DMA-80) for measuring total mercury in soil and plant samples. Experience performing loss on ignition analysis on stream benthic soil samples and determining soil particle size distribution by sieving.

• General Chemistry and Organic Chemistry laboratories: Experience in measuring refractive index of organic compounds with Abbe refractometer. Experience in using Mel-Temp apparatus for determining melting point of solid compounds. Familiarized with fractional and simple distillation procedures. Experienced in performing recrystallization, filtration, and extraction of organic compounds. Experienced in analyzing mixtures using thin layer chromatography and separating mixtures using column chromatography.

• Molecular Biology techniques: Familiarized with basic molecular biology techniques such as DNA extraction and using NanoDrop for quality assessment. Preparation of dilutions and serial

dilutions. Use of aseptic laboratory techniques to perform basic bacteriological water analysis. Basic knowledge of molecular techniques such as agarose gel electrophoresis and PCR.

Work Experience

August 16, 2021 – Present | Graduate Teaching Assistant in Cellular and Molecular Biology Laboratory for Undergraduates | Northern Arizona University, Flagstaff, AZ

Teaching 3 in-person lab sections per week. Teaching occasional virtual laboratory activities. Attending weekly preparatory lab meetings to practice and review laboratory procedures. Holding 2 office hours per week to clarify questions about laboratory procedures or lecture materials to students. Preparing PowerPoint presentations to introduce students to each lab topic. Preparing laboratory classroom and required materials before lab sections. Demonstrating laboratory procedures in class. Grading students' assignments.

September 21, 2020 – November 12, 2021 | Resource Assistant through Hispanic Access Foundation and US Forest Service | El Yunque National Forest, Río Grande, PR

Reviewing and updating the Comprehensive River Management Plan for El Yunque National Forest (EYNF). Conducting a WSRA Section 7 analysis. Creating a WSRA specialist report for a potential water resource project in a WSR. Creating and distributing Section 7 Analysis work packages and formal letters using Mercury software. Helping with WSRs upward reporting for fiscal year 2020 verifying the accuracy of WSRs data for Region 8 on the National Resource Manager Wild and Scenic Rivers Application (NRM-WSR). Developing community engagement projects in English and Spanish to raise awareness about the Wild and Scenic Rivers Act (WSRA), rivers, aquatic ecology, water quality, and trash issues in EYNF. Arranging meetings with different parties to discuss WSRA Section 7 Analysis findings and create educational projects. Creating publications to share in official EYNF social media accounts. Creating and editing a short video on WSRA in EYNF to share in official EYNF social media accounts. Contributing to the creation of The NatureWatch, Interpretation and Conservation Education (NICE) report for 2020. Interviewing potential employees for a position. Creating a river education and conservation communication plan. Assisting with Visitor Operations in EYNF. Interacting with the public, checking their reservation information, giving recommendations for responsible recreation activities, and answering questions. Assisting with EYNF office relocation operations. Leading river volunteer projects.

May 26, 2018 - August 4, 2018 | Undergraduate Intern | Limnology Laboratory, Clarkson University, Potsdam, NY.

Studied mercury storage and mobilization in hydric soils and cattail biomass of a wetland. Collected, processed, and analyzed 81 samples with Direct Mercury Analyzer (DMA-80). Plant identification. Coordinated field work. Created the map of study area with ArcMap. Presented research findings at several conferences. Prepared and submitted a manuscript to academic journal.

January 11, 2017 - May 26, 2018 | Undergraduate Research Assistant | Luquillo Long-Term Ecological Research Program, University of Puerto Rico-Río Piedras, PR.

Conducted stream fieldwork, used Surber and core samplers for benthic macroinvertebrates sampling, collected seston samples, classified benthic sediment, identified aquatic macroinvertebrates to family-level, processed samples, operated laboratory oven for sample drying, handled muffle furnace for performing loss on ignition analysis, utilized analytical balances, repaired shrimp traps

May 29, 2017 - August 4, 2017 | Undergraduate Intern | Water Quality Laboratory, St. Michael's College, Colchester, VT.

Analyzed water quality data, conducted stream fieldwork, collected aquatic macroinvertebrates samples, collected total suspended solids (TSS) and nutrient samples, processed and analyzed TSS samples, prepared acid baths, logged samples into laboratory database, assisted in the organization of several educational activities for high school students. Presented research poster on symposium.

August 22, 2016 - December 5, 2016 | Undergraduate Research Assistant | Center for Applied Tropical Ecology and Conservation, University of Puerto Rico, Río Piedras, PR.

Evaluated seed germinability and growth requirements of endangered, endemic shrubs. Handled seeds, observed seeds and seedlings with optical microscope, identified disease in seeds and seedlings, counted seedlings, designed different light treatments to determine their effect on germination, used plant growth chamber. Reported research findings in an oral presentation.

Additional experience

January 15, 2015-December 21, 2016 | Student Assistant | Microfilm Center, University of Puerto Rico, Río Piedras, PR.

Prepared microfilming material,managed and stored microforms, operated microfilming equipment (cameras), performed microform quality control inspection, created inventory reports, elaborated spreadsheets and graphs on Microsoft Excel, trained less experienced personnel.

June 13, 2016-May 5, 2016 | Volunteer | Department of Environmental Science, University of Puerto Rico, Río Piedras, PR.

Formed part of a team that evaluated tree ecosystem services and disservices in an urban area. Communicated the purpose of the research project to property owners, measured subjective socioeconomic status of property owners through questionnaires and interviews, measured diameter at breast height (DBH) of trees, measured average crown diameter of a tree,

measured tree height using TruPulse 200 Laser Rangefinder, identified plants, logged data into i-Tree software, created shapefile in QGIS application with polygons of surveyed properties.

Extracurricular activities

February 21, 2016-May 2020 | Member of US Department of Agriculture Natural Resources Career Tracks Program (USDA-NRCT).

• Collaborated in the organization and promotion of an agricultural market at the University of Puerto Rico-Río Piedras. Assisted farmers in the onloading of their produce and directed them to their assigned vending stalls.

• Created and delivered a presentation to explain and inform undergraduate students about internship opportunities and their importance.

2019 | Society of Wetland Scientists (SWS).

2017-2018 | Association for the Sciences of Limnology and Oceanography (ASLO).

2017-2018 | Ecological Society of America (ESA) AKKA SEEDS- University of Puerto Rico-Río Piedras Chapter.

• Created educational material on flowers that attract pollinators, prepared seed bombs for fundraising event, assisted in the organization of a fundraising event in which eco-friendly utensils and seed bombs were sold.

Awards

2019| Society of Wetland Scientists Multicultural Mentoring Program (SWaMMP).

2016| SEEDS National Field Trip to the Flathead Lake Biological Station in Polson, Montana, Ecological Society of America.

Publications

Brahmstedt, E. S., Ayala Crespo, C. N., Holsen, T. M., & Twiss, M. R. (2021). Mercury distribution in an Upper St. Lawrence River wetland dominated by cattail (*Typha angustifolia*). *Wetlands, 41*(119). doi:https://doi.org/10.1007/s13157-021-01511-9

Presentations

Ayala Crespo, C.N. “Getting to Know the Wild and Scenic Rivers of El Yunque National Forest”, Region 8 (R8) Wild and Scenic Rivers (WSR) Quarterly Call, March 3, 2021.

Ayala Crespo, C.N., E.S., Brahmstedt, T.M., Holsen, and M.R. Twiss. “Mercury Contamination in Hydric Soils and Biomass of a St. Lawrence River Wetland”, Society of Wetland Scientists Student Section Virtual Conference, June 11, 2020.

Ayala Crespo, C.N., E.S., Brahmstedt, T.M., Holsen, and M.R. Twiss. “Mercury Storage in Hydric Soils and Biomass of a St. Lawrence River Wetland”, Society of Wetland Scientists Annual Meeting in Baltimore, MD, May 28-June 1, 2019.

Ayala Crespo, C.N., E.S., Brahmstedt, T.M., Holsen, and M.R. Twiss. “Mercury Storage in Hydric Soils and Biomass of a St. Lawrence River Wetland”, American Society for Limnology and Oceanography (ASLO) Annual Aquatic Sciences Meeting in San Juan, PR, February 26, 2019.

Ayala Crespo, C.N., E.S., Brahmstedt, T.M., Holsen, and M.R. Twiss. “Mercury Storage in Soils and Biomass of a St. Lawrence River Wetland”, Research and Project Showcase (RAPS) held at Clarkson University, Potsdam, NY, July 27, 2018.

Ayala Crespo, C.N., J.J., Roberge, and D.J. McCabe. “Effects of Rainfall on Water Quality Parameters in Potash Brook”, 10th annual Vermont EPSCoR Student Research Symposium held at the University of Vermont’s Davis Center, March 20, 2018.