# Bianca N. Ross

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## Education

**Ph.D.** – Biological and Environmental Sciences 2020
Specialization in Environmental and Earth Science
**University of Rhode Island**, Kingston, RI
Dissertation: *Assessing treatment performance of advanced nitrogen-removal onsite wastewater treatment systems*

**M. Sc.** – Biological and Environmental Sciences 2017
Specialization in Environmental and Earth Science
**University of Rhode Island**, Kingston, RI
Thesis: *Assessing hydrology, carbon flux, and soil spatial variability within vernal pool wetlands*

**B. S.** Environmental Science and Management with Honors, summa cum laude 2014
Soil Science Minor
**University of Rhode Island**, Kingston, RI

## Teaching Experience

**Full-time Lecturer: Watershed Hydrology & Management; Introduction to Soil Science; Seminar in Natural Resources; Soil/Water Chemistry** 2023 – 2024

NRS 471 (4 credits); NRS 212 (4 credits); NRS 200 (1 credit); NRS 412 (3 credits)
Department of Natural Resources Science, University of Rhode Island, Kingston, RI

- Independently instructed juniors, seniors, and graduate students about topics in watershed hydrology & management (NRS 471; 22 students). Topics included physical characteristics, water quality parameters, and ecological health of streams, lakes, groundwater, and wetlands. Additional topics included computational and modeling methods commonly used in the field of hydrology.
- Led weekly field labs investigating methods in measuring and monitoring hydrologic characteristics of the environment
- Independently instructed sophomores, juniors, and seniors about topics in soil science (NRS 212; 120 students). Topics included physical, chemical, and biological properties of soils and soil landscapes.
- Managed a seminar in which guest speakers inform students about professional opportunities in the field of environmental science (NRS 200; 100 students)
- Independently led a problem-based learning course for sophomores, juniors, and seniors covering topics in soil/water chemistry (NRS 412; 30 students). Topics included in-situ remediation of organic pollutants, bioremediation, groundwater and surface water contamination, and soil nutrient cycling
- Taught students how to gather, interpret, and present both quantitative and qualitative data
- Organized a field trip where students experienced hands-on demonstrations of the hydrological/morphological properties of soils in a drainage catena
- Engaged students in group-based learning
- Supervised the activity and student engagement of three teaching assistants
- Managed online site for courses (Brightspace)

**Instructor of Record: Soil, Land Use, & the Environment** 2023
NRS 450G (3 credits) & 452G (1 credit)
Department of Natural Resources Science, University of Rhode Island, Kingston, RI

- Taught juniors, seniors, and graduate students about topics in soil science and land use management including soil morphology, soil chemistry, soil taxonomy, hydrology, land classification and management, and waste management strategies

- Independently instructed and managed a class of 35 students majoring in environmental science and management and/or wildlife conservation biology
- Managed several problem-based land use practicum projects in which students applied their understanding of soils and landscapes to characterize and a land parcel in Rhode Island and used GIS to create a suburban development based on their characterization
- Organized two field trips where students observed and evaluated best management practices for stormwater and various strategies for wastewater treatment
- Engaged students in group-based learning
- Supervised the activity and student engagement of one teaching assistant
- Managed online site for course (Brightspace)

**Instructor of Record: Natural Resource Conservation** 2022 & 2024
NRS 100 (3 credits)
Department of Natural Resources Science, University of Rhode Island, Kingston, RI
- Taught freshman, sophomore, junior, and senior students about topics in natural resource conservation including water resources, ecology, sustainability, and food production
- Independently instructed and managed a class of 110 students majoring in both science and non-science subjects in the colleges of the environment and life sciences, arts and sciences, engineering, health sciences, and business (this is a general education course for STEM majors)
- Engaged students in group-based learning, both in an in-person and virtual classroom
- Supervised the activity and student engagement of four teaching assistants
- Managed online site for course (Brightspace)

**Instructor of Record: Introduction to Soil Science** 2021
NRS 212 (4 credits)
Department of Natural Resources Science, University of Rhode Island, Kingston, RI
- Taught freshman, sophomore, junior, and senior students about topics in soil science including soil microbiology, soil chemistry, soil morphology, and soil nutrient cycling
- Independently instructed and managed a class of 120 students majoring in both science and non-science subjects in the colleges of the environment and life sciences, engineering, health sciences, education and professional studies, and business (this is a required course for environmental science and management and wildlife conservation biology majors)
- Organized a field trip where students experienced hands-on demonstrations of the hydrological/morphological properties of soils in a drainage catena
- Supervised the activity and student engagement of one teaching assistant
- Managed online site for course (Brightspace)

**Instructor of Record: Environmental Science (Online)** 2020 – 2021
BIO 220 (4 credits)
College of Science, Engineering, and Technology, Grand Canyon University, Phoenix, AZ
- Taught undergraduate students about topics in environmental science in an online setting
- Actively participated in the online classroom at least 4 times per week
- Graded assignments and responses to discussion questions

**Outreach Instructor** 2017 – 2021
New England Onsite Wastewater Training Program, University of Rhode Island, Kingston, RI
- Taught professionals in the wastewater industry about topics, issues, and best practices in onsite wastewater treatment, including operation and maintenance, function, design, installation, and biological/chemical/physical processes involved in wastewater treatment
- Designed and taught – with two colleagues – a new course presenting current scientific research in onsite wastewater treatment
- Updated course curriculum and teaching approach to include methods to better engage the audience, such as class participation, group activities, and hands-on demonstrations

**Teaching Assistant: Introduction to Soil Science** 2016 - 2019
Department of Natural Resources Sciences, University of Rhode Island, Kingston, RI
- Graded homework assignments and final project
- Lead field trips and explained morphological/hydrological properties of soils in a drainage catena
- Managed online site for course (Sakai)

**Undergraduate Mentoring** 2014 – 2020
Department of Natural Resources Sciences, University of Rhode Island, Kingston, RI
- Mentored 11 undergraduate students interested in gaining hands-on research experience
- Managed undergraduates participating in the Coastal Fellows program, a summer internship program in which students assist with graduate student research projects
- Taught students on field and laboratory techniques, including greenhouse gas field sampling and laboratory analysis, soil core extraction and morphology assessment, groundwater well installation and water table monitoring, operation of water quality analysis meters, quantification of soil bulk density and carbon content, DNA extraction, polymerase chain reaction, and microplate analysis
- Assisted students with the design and completion of individual research projects, and scientific talks and posters presented at a regional graduate research conference

**Teaching Assistant/Head Teaching Assistant: Understanding the Earth** 2014 – 2016
Department of Geosciences**,** University of Rhode Island, Kingston, RI
- Taught 2-3 introductory geology labs per semester
- Provided verbal and hands-on instruction to reinforce topics being taught in lecture
- Graded weekly quizzes, homework assignments, lab reports, and final project
- Lead field trips highlighting topics discussed in lab (drove 15-person van)
- Created grading scheme to be used by other teaching assistants for course materials
- Managed online course site (Sakai)

**Assistant Soil Judging Coach** 2014 – 2016
Department of Natural Resources Sciences, University of Rhode Island, Kingston, RI
- Provided guidance and hands-on instruction on soil morphology and hydrology in a field and laboratory setting
- Graded score cards and provided students with feedback
- Facilitated student transport for field learning (drove 15-person van)

**Teaching Assistant: Herpetology** 2015
Department of Natural Resources Sciences, University of Rhode Island, Kingston, RI
- Presented students with information about the biology, ecology, and conservation of reptiles and amphibians in a field and laboratory setting
- Set up of amphibian/reptile specimens and tools for observation for weekly labs
- Assisted with amphibian/reptile tracking, trapping, and tagging in a field environment
- Transported students to field sites for outdoor labs and field trips (drove 15-person van)

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## Research Experience

**ORISE Postdoctoral Fellow** (Dr. Christopher Knightes) 2020 – 2024
Simulating the fate and transport of nanomaterials in surface waters
United States Environmental Protection Agency, Narragansett, RI
- Led a study investigating the fate, transport, and transformation of nanocopper and nanozinc in surface waters and sediments
- Performed extensive literature review on the behavior of nanomaterials in aquatic environments, methods in environmental modeling, and water chemistry
- Developed conceptual models highlighting the processes governing nanocopper and nanozinc behavior in the environment

- Used ArcGIS, in combination with data from USGS stream gages and EPA's National Hydrography and StreamCat Datasets, to parameterize the Merrimack River for environmental modeling purposes
- Used the Water Quality Analysis Simulation Program (WASP8) to develop dynamic mechanistic models illustrating the environmental fate and transport of nanocopper, nanozinc, and their dissociative chemical products
- Performed sensitivity analyses on several important factors governing the fate and transport of nanomaterials in the environment
- Assisted with the modeling and soil morphology characterization of a wetland mesocosm experiment investigating nitrogen transformations and removal in dredged materials
- Produced research summary reports to successfully gain annual project funding extensions for 4 years

**Graduate Research Assistant** (Dr. Jose Amador) 2017 – 2020
Laboratory of Soil Ecology and Microbiology, University of Rhode Island, Kingston, RI
- Led a study investigating the performance of 50 advanced nitrogen-removal onsite wastewater treatment systems (OWTS) performance in Charlestown, Rhode Island (funded by EPA SNEP grant #00A000128-0)
- Used multiple linear regression to evaluate the relationship between wastewater quality parameters and OWTS nitrogen removal
- Characterized the nitrifying and denitrifying microbial communities in OWTS through DNA extraction, PCR, and Next Generation Sequencing
- Evaluated the relationships between microbial communities using principal coordinate analysis
- Used a Picarro Gas Analyzer to investigate the carbon dioxide, methane, and nitrous oxide fluxes from OWTS
- Used nonlinear regression analysis to assess the relationships between wastewater parameters and greenhouse gas fluxes
- Analyzed the accuracy/efficacy of rapid tests used to monitor wastewater effluent quality

**Graduate Research Assistant** (Dr. Mark Stolt) 2014 – 2017
Laboratory of Pedology and Soil-Environmental Science, University of Rhode Island, Kingston, RI
- Led a study on the soils, hydrology, and biogeochemistry of 4 vernal pool wetlands in southern Rhode Island (funded by the Rhode Island Agricultural Experiment Station and USDA Multistate Project NE-1438)
- Performed spatial analysis using ArcGIS to evaluate the morphologic properties of 40 vernal pool wetlands
- Assessed the relationship between landscape characteristics and hydrologic/edaphic traits of vernal pool wetlands, as well as the potential need for additional hydric soil indicators
- Investigated soil organic matter decomposition to assess carbon sequestration in vernal pool soils
- Performed gas chromatography analysis to evaluate greenhouse gas flux throughout various zones of differing soil saturation

**Undergraduate Research Assistant** (Dr. Arthur Gold) 2014
Laboratory of Watershed Hydrology, University of Rhode Island, Kingston, RI
- Identified wetland boundary of 18 ephemeral streams based on soil morphology and assigned hydric soil indicator values to soils at each site
- Prepared final report of findings, which would contribute to published study on nitrate uptake in ephemeral streams

**Undergraduate Research Assistant** (Dr. Mark Stolt) 2013 – 2014
Laboratory of Pedology and Soil-Environmental Science, University of Rhode Island, Kingston, RI
- Monitored daily/weekly pH changes of soil samples
- Conducted individual honors research project on subaqueous invertebrate communities of dredged and non-dredged sites

**Undergraduate Research Assistant** (Dr. Jose Amador) 2011 – 2012
Laboratory of Soil Ecology and Microbiology, University of Rhode Island, Kingston, RI
- Identified insects and managed soil plots in an agricultural field
- Collaborated with graduate students to study the effectiveness of seaweed as a fertilizer

**Coastal Fellow/Undergraduate Research Assistant** (Dr. Evan Preisser) 2010 – 2012
Laboratory of Community Ecology, University of Rhode Island, Kingston, RI
- Studied impact of two invasive herbivores on eastern hemlock tree health using a CIRAS-2 Portable Photosynthesis System to measure gas exchange rates
- Determined chlorophyll concentrations in needles of infested trees using ethanol extractions

## Honors and Awards

1st Place Winner of the Soils and Environmental Quality Division poster contest (Soil Science Society of America international annual meeting) 2019
Scholarship (to attend Soil Science Society of America international annual meeting) – Society of Soil Science of Southern New England 2016
Graduate Student Travel Funds Award – College of the Environment and Life Sciences 2016
1st Place Individual Winner – National Collegiate Soil Judging Competition 2014
Scholarship to attend 1st ever international soil judging competition in South Korea – National Collegiate Soil Judging Competition 2014
Academic Excellence Award for Environmental Science and Management – University of Rhode Island 2014
4th Place Individual Winner – Northeast Regional Collegiate Soil Judging Competition 2013
Phi Kappa Phi Honors Society 2012
Centennial Scholarship – University of Rhode Island 2010
James and Mildred Cobble Scholarship 2010
Alex and Elli Fricke Scholarship 2010

## Publications

***Peer-Reviewed***

**Ross, B. N.**, Knightes, C. D., Wigand, C., Wilkin, R. T., & Schafer, N. (2023). Use of dredged sediments as a medium for nitrogen attenuation in constructed, freshwater wetland mesocosms. Manuscript in preparation for *Science of the Total Environment.*

**Ross, B. N.** & Knightes, C. D**.** (2022). The environmental fate, transformation, and speciation of nano-copper oxide in a freshwater environment. Conference proceedings in preparation for *International Environmental Modeling and Software Society conference*, Brussels, Belgium.

**Ross, B. N.**, Knightes, C. D. (2022). Simulation of the environmental fate and transformation of nano copper oxide in a freshwater environment. *ACS Es&t Water*, 2(9), 1532-1543. https://doi.org/10.1021/acsestwater.2c00157

**Ross, B. N.**, Wigginton, S. K., Cox, A. H., Loomis, G. W., & Amador, J. A. (2020). Influence of season, occupancy pattern, and technology on structure and composition of nitrifying and denitrifying bacterial communities in advanced nitrogen-removal onsite wastewater treatment systems. *Water*, *12*(9), 2413. https://doi.org/10.3390/w12092413

**Ross, B. N.**, Hoyt, K. P., Loomis, G. W., & Amador, J. A. (2020). Effectiveness of Advanced Nitrogen-Removal Onsite Wastewater Treatment Systems in a New England Coastal Community. *Water, Air, & Soil Pollution*, 231(11), 1-10. https://doi.org/10.1007/s11270-020-04911-5

**Ross, B. N.**, Lancellotti, B. V., Brannon, E. Q., Loomis, G. W., & Amador, J. A. (2020). Greenhouse gas emissions from advanced nitrogen-removal onsite wastewater treatment systems. *Science of the Total Environment*, 140399. https://doi.org/10.1016/j.scitotenv.2020.140399.

**Ross, B. N.**, Loomis, G. W., Hoyt, K. P., & Amador, J. A. (2018). User-based photometer analysis of effluent from advanced nitrogen-removal onsite wastewater treatment systems. *Water, Air, & Soil Pollution*, *229*(12), 389. https://doi.org/10.1007/s11270-018-4039-z

***Dissertation***

**Ross, B. N.** (2020). Assessing treatment performance of advanced nitrogen-removal onsite wastewater treatment systems. Ph. D. Dissertation, University of Rhode Island.

***Thesis***

**Ross, B. N.** (2017). Assessing hydrology, carbon flux, and soil spatial variability within vernal pool wetlands. M. S. Thesis, University of Rhode Island.

***General Interest***

**Ross, B. N.** (2020). COVID-19 Watch: Wastewater Edition. Envirobites. Retrieved from https://envirobites.org/2020/07/15/covid-19-watch-wastewater-edition/

**Ross, B. N.** (2020). Wastewater treatment in briny times. Envirobites. Retrieved from https://envirobites.org/2020/02/24/wastewater-treatment-in-briny-times/

**Ross, B. N.** (2018). Making amends with wetland soils. Envirobites. Retrieved from https://envirobites.org/2018/12/11/making-amends-with-wetland-soils/.

**Ross, B. N.** (2018). Ornamental plants don't dye. Envirobites. Retrieved from https://envirobites.org/2018/08/24/ornamental-plants-dont-dye/.

**Ross, B. N.** (2018). Wineries: don't waste the wastewater. Envirobites. Retrieved from https://envirobites.org/2018/04/06/wineries-dont-waste-the-wastewater/.

**Ross, B. N.** (2017). Rejuvenating agricultural soils. Envirobites. Retrieved from https://envirobites.org/2017/12/18/rejuvenating-agricultural-soils/.

**Ross, B. N.** (2017). The fate of our waste: nitrogen removal in residential wastewater. Envirobites. Retrieved from https://envirobites.org/2017/09/08/the-fate-of-our-waste-nitrogen-removal-in-residential-wastewater/.

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## Presentations

***Talks:***

**Ross, B. N** & Knightes, C. D**.** (2022). "Modeling the fate and transport of two nanometal oxides in the Merrimack River." New England Estuarine Research Society fall meeting.

**Ross, B. N.** & Knightes, C. D**.** (2022). "The environmental fate, transformation, and speciation of nano copper oxide in a freshwater environment." International Environmental Modeling and Software Society conference, virtual.

**Ross, B. N.** & Knightes, C. D. (2021). "Modeling the environmental fate and transport of nanocopper." North Atlantic Society of Environmental Toxicology and Chemistry annual meeting, virtual.

**Ross, B. N.** (2020). "Assessing nitrogen-removal performance of advanced onsite wastewater treatment systems in Charlestown, Rhode Island." Salt Ponds Coalition Septic System Seminar, virtual (**Invited presentation**).

**Ross, B. N.** (2020). "New and retrofit advanced treatment options for nutrient reduction in sensitive freshwaters and estuarine environments." Shoreline Septic System Study Commission webinar, virtual (**Invited panelist**).

**Ross, B. N.** (2020). "Assessing nitrogen-removal performance of advanced onsite wastewater treatment systems in Charlestown, Rhode Island." EPA Southeast New England Program webinar series, virtual (**Invited presentation**).

**Ross, B. N.** (2020). "Assessing treatment performance of advanced nitrogen-removal onsite wastewater treatment systems." University of Rhode Island dissertation defense, virtual.

**Ross, B. N.** (2020). "Analysis of nitrifying and denitrifying bacteria communities in advanced nitrogen-removal onsite wastewater treatment systems." Rhode Island Microbiome Symposium, Kingston, RI.

**Ross, B. N.** (2019). "Assessing nitrogen-removal performance of advanced onsite wastewater treatment systems in Charlestown, Rhode Island." Soil Science Society of America international annual meeting, San Antonio, TX **(Session organizer and moderator)**.

**Ross, B. N.** (2019). "Performance of advanced systems in Rhode Island." Reclaim Our Water's Advancing Wastewater Treatment SepticSmart Week 2019 conference, Stony Brook, NY **(Invited panelist)**.

**Ross, B. N.** (2019). "Assessing nitrogen-removal performance of advanced onsite wastewater treatment systems in Charlestown." New England Graduate Student Water Symposium, Amherst, MA.

**Ross, B. N.** (2019). "Assessing nitrogen-removal performance of advanced onsite wastewater treatment systems in Charlestown." Metcalf Institute Annual Science Immersion Workshop for Journalists, Warwick, RI **(Invited presentation)**.

**Ross, B. N.** (2019). "Assessing nitrogen-removal performance of advanced onsite wastewater treatment systems in Charlestown." EPA Atlantic Ecology Division seminar on wastewater research, Narragansett, RI **(Invited presentation)**.

**Ross, B. N.** (2019). "Assessing nitrogen-removal performance of advanced onsite wastewater treatment systems in Charlestown." RI Rivers Council meeting, Providence, RI **(Invited presentation)**.

**Ross, B. N.** (2019). "Assessing nitrogen-removal performance of advanced onsite wastewater treatment systems in Charlestown." New England Estuarine Research Society meeting, York Harbor, ME.

**Ross, B. N.** (2019). "Assessing nitrogen-removal performance of advanced onsite wastewater treatment systems in Charlestown." Charlestown Town Council meeting, Charlestown, RI **(Invited presentation)**.

**Ross, B. N.**, Cox, A., & Wigginton, S. (2019). "Onsite wastewater treatment systems in southern New England: Nitrogen removal performance, greenhouse gas emissions and climate change woes." New England Interstate Water Pollution Control Commission 2019 Onsite Short Course, Mystic, CT.

**Ross, B. N.** (2019). "Assessing nitrogen-removal performance of advanced onsite wastewater treatment systems in Charlestown." Charlestown advanced N-removal OWTS service providers meeting, Charlestown, RI **(Invited presentation)**.

**Ross, B. N.** (2018). "Assessing nitrogen inputs to the Charlestown coastal watershed from advanced onsite wastewater treatment systems." Rhode Island Society of Environmental Professionals fall meeting, Kingston, RI **(Invited presentation)**.

**Ross, B. N.** (2018). "Charlestown coastal watershed protection and restoration program: Project update." RI Dept. of Environmental Management Technical Review Committee meeting, Providence, RI **(Invited presentation)**.

**Ross, B. N.**, Boucher, A., Ludovico, J., Hoyt, K., Loomis, G., & Amador, J. (2018). "Assessing nitrogen inputs to the Charlestown coastal watershed from advanced onsite wastewater treatment systems." New England Graduate Student Water Symposium, Amherst, MA.

**Ross, B. N.,** Boucher, A., Ludovico, J., Hoyt, K., Loomis, G., & Amador, J. (2018). "Assessing nitrogen inputs to the Charlestown coastal watershed from advanced onsite wastewater treatment systems." New England Estuarine Research Society Meeting, Portsmouth, NH.

**Ross, B. N.**, Boucher, A., Ludovico, J., Hoyt, K., Loomis, G., & Amador, J. (2017). "Assessing nitrogen inputs to the Charlestown coastal watershed from advanced onsite wastewater treatment systems". Coastal & Estuarine Research Federation Biennial Conference, Providence, RI.

**Ross, B. N.**, Boucher, A., Ludovico, J., Hoyt, K., Loomis, G., & Amador, J. (2017). "Assessing nitrogen inputs to the Charlestown coastal watershed from advanced onsite wastewater treatment systems." New England Graduate Student Water Symposium, Amherst, MA.

**Ross, B. N.** (2017). "Assessing hydrology, carbon flux, and soil spatial variability within vernal pool wetlands." University of Rhode Island Natural Resources Science Department Graduate Seminar Series, Kingston, RI.

**Peixoto, B. N.** (2016). "Landscape attributes, hydrology, and edaphic conditions of southern New England vernal pool wetlands." University of Rhode Island Natural Resources Science Department Graduate Seminar Series, Kingston, RI.

***Posters:***

**Ross, B. N.** & Knightes, C. D. (2022). "Modeling the fate and transport of two nanometal oxides in the Merrimack River." American Geophysical Union fall meeting, virtual.

**Ross, B. N.** & Knightes, C. D. (2021). "The environmental fate and transport of nanocopper in a freshwater environment." American Geophysical Union fall meeting, virtual.

**Ross, B. N.** (2019). "Assessing greenhouse gas emissions from advanced onsite wastewater treatment systems in Charlestown, RI." Soil Science Society of America international annual meeting, San Antonio, TX.

**Ross, B. N.** (2019). "Advanced OWTS – Nitrogen removal from wastewater in the Charlestown, Rhode Island coastal watershed." Reclaim Our Water's Advancing Wastewater Treatment SepticSmart Week 2019 conference, Stony Brook, NY **(invited poster)**

**Ross, B. N.** (2018). "Photometer analysis of nitrogen in effluent from advanced onsite wastewater treatment systems." New England Estuarine Research Society Meeting, Dartmouth, MA.

**Ross, B. N.** & Stolt, M. (2016). "Assessing hydrology, carbon flux, and soil spatial variability within vernal pool wetlands." Soil Science Society of America international annual meeting, Phoenix, AZ.

**Peixoto, B. N.** (2014). "Effects of dredging on benthic biology in subaqueous soils." University of Rhode Island Honors Project Conference, Kingston, RI.

**Peixoto, B. N**, Gonda-King, L., Radville, L., & Preisser, E. L. (2011). "The effect of hemlock woolly adelgid (Adelges tsugae) and the elongate hemlock scale (Fiorinia externa) on stomatal conductance, net photosynthesis, and net total chlorophyll content." University of Rhode Island College of the Environment and Life Sciences Undergraduate Research Fellows Symposium, Kingston, RI.

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## Service

Ad-hoc Editor 2019 – Present

- *Journal of Biological Education*
- *Chemosphere*
- *International Journal of Environmental Research and Public Health*
- *Water*
- *Agronomy*

- *Animals*
- *Journal of Sustainable Water in the Built Environment*
- *PeerJ*
- *Energies*
- *Sustainability*
- *Separation and Purification Technology*
- *Applied Soil Ecology*

Wickford Middle School Outreach Program 2022 & 2023
- Worked with members of the U.S. EPA's Atlantic Coastal Environmental Sciences Division to provide middle school students with hands-on experience of the field, laboratory, and technical aspects of ecology research

Author and Editor for Envirobites 2017 – 2021
- Wrote and edited articles for Envirobites, an environmental science blog, which presents information from scientific journals to the general public

Speaker for URI High School Agricultural Conference 2018 – 2019
- Provided high school students with a tour of the Laboratory for Soil Ecology and Microbiology and shared my experiences in my field and my advice on entering into a STEM field

SMILE Program 2018
- Instructed elementary school students about basic principles of soil science

Compass School Soil Science Training 2016
- Instructed elementary school students about basic principles and field applications of soil science

## Professional Organizations

American Geophysical Union; Member 2021 – Present
Soil Science Society of America; Member 2016 – Present
Society of Soil Scientists of Southern New England; Member 2014 – Present
University of Rhode Island Soil Judging Team 2013 – 2014
Student Action for Sustainability; President 2012 – 2014
- Organization works towards and advocates for sustainability at the University of Rhode Island and in the community

College of the Environment and Life Sciences Ambassador 2012 –2014
Sigma Alpha (professional agricultural sorority); Scholarship Chair 2012 – 2013

## Relevant Skills and Proficiencies

**Laboratory:**
Gas chromatography analysis of greenhouse gases
Analysis of soil physical and chemical properties (pH, electrical conductivity, salinity, bulk density, loss on ignition, particle size distribution, and total C and N)
Genetic analysis (DNA extraction, PCR and analysis of communities using Next Generation Sequencing)
Water quality analysis with significant experience in wastewater (5-day biochemical oxygen demand, pH, alkalinity, and ammonium, nitrate, and total N concentration)
Benthic macroinvertebrate identification

**Field:**
Wetland delineation and plant identification
Installation of water table monitoring wells
Sampling greenhouse gases for in-situ and ex-situ analysis
Soil morphology description
Operation of a Picarro Gas Analyzer, multiparameter water quality meter (temperature, dissolved oxygen, and pH), photometer, and Odyssey capacitance water level loggers
Accessing and analyzing control panel data for advanced OWTS

Site elevation analysis (using laser level)
Monitoring stream flow (using flow meter and slug tests)

**Data Analyses and Management:**
R software
Image J
Microsoft Windows, Word, Excel, PowerPoint, and Publisher
ArcGIS and ArcMap
ERDAS Imagine
Downstream analysis of microbial sequencing data using QIIME and R
Linear, nonlinear, and multiple regression analysis
Parametric and nonparametric analysis of variance
WASP8
WRDB
MATLAB
BASINS

**General:**
Brightspace Learning Management System
Cisco WebEx
Leading/organizing teams in a workplace environment
Comfortable learning to use new equipment, programs, and methodologies
Effective communicator, problem-solver, comfortable working independently and collaboratively