

MALCOLM ALEXANDER BARNARD

CURRICULUM VITAE

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EDUCATION

- PhD Student** Baylor University, Biology (2022-present; Expected 2026)
Advisors: Dr. Stephen M. Powers and Dr. J. Thad Scott
- MSc** University of North Carolina at Chapel Hill, Marine Sciences December 2021
Advisor: Dr. Hans W. Paerl
Thesis Title: Adapting oceanic grazing techniques for use in high productivity aquatic ecosystems
- BSc** University of Georgia, Ecology August 2017
Undergraduate Certificate, Environmental Ethics
Undergraduate Certificate, Water Resources
Cum Laude with Honors
Bernard Ramsey Honors Scholar, University of Georgia Honors Program
CURO Undergraduate Research Scholar, Center for Undergraduate Research Opportunities
Advisors: Dr. James W. Porter, Dr. Susan B. Wilde, and Dr. Alan P. Covich
Honors Thesis Title: Utilizing *Spirogyra grevilleana* as a Phytoremediatory Agent for Reduction of Limnetic Nutrients and *Escherichia coli* Concentrations

PROFESSIONAL EXPERIENCE

- Data Assistant**, Global Change and Freshwater Ecosystem Analysis Lab 2022
Center for Reservoir and Aquatic Systems Research, Baylor University, Waco, TX, USA
- Laboratory Technician**, Coastal Environmental and Microbiological Processes Lab 2022
Institute of Marine Sciences, University of North Carolina at Chapel Hill, Morehead City, NC, USA
- Research Assistant**, Odum School of Ecology 2015-2017
University of Georgia, Athens, GA, USA
- Research and Teaching Assistant**, Warnell School of Forestry and Natural Resources 2015-2017
University of Georgia, Athens, GA, USA
- Summer Intern**, Husbandry Department and Tybee Island Sea Turtle Project 2016
Tybee Island Marine Science Center, Tybee Island, GA, USA

PUBLICATIONS

Peer-Reviewed Journal Articles

8. Plaas, H., Paerl, R.W., Baumann, K., Karl, C., Pependorf, K.J., **Barnard, M.A.**, Chang, N.Y., Curtis, N.P., Huang, H., Mathieson, O.L., Sanchez, J., Maizel, D.J., Bartenfelder, A.N., Braddy, J.S., Hall, N.S., Rossignol, K.L., Sloup, R., and Paerl, H.W. 2022. Harmful Cyanobacterial Aerosolization Dynamics in the Airshed of a Eutrophic Estuary, *Science of the Total Environment*. 852: 158383.
<https://doi.org/10.1016/j.scitotenv.2022.158383>.
7. Borton, M.A., Collins, S.M., Graham, E.B., Garayburu-Caruso, V.A., Goldman, A.E., de Melo, M.L., Renteria, L., Stegen, J.C., and **WHONDRS crowdsourced consortium** [56 researchers including **Barnard, M.A.**]. 2022. It takes a village: using a crowdsourced approach to investigate organic matter composition in global rivers through the lens of ecological theory, *Frontiers in Water*. 4: 870453.
<https://doi.org/10.3389/frwa.2022.870453>.

6. **Barnard, M.A.**, Emani, S.R., Fortner, S.K., Haygood, L., Sun, Q., White-Newsome, J.L., and Zaitchik, B. 2022. GeoHealth Perspectives on Integrated, Coordinated, Open, Networked (ICON) Science, *Earth and Space Science*. 9(5): e2021EA002157. <https://doi.org/10.1029/2021EA002157>.
5. Dwivedi, D., Santos, A.L.D., **Barnard, M.A.**, Crimmins, T.M., Malhotra, A., Rod, K.A., Aho, K.S., Bell, S.M., Bomfim, B., Brearley, F.Q. and Cadillo-Quiroz, H., Chen, J., Gough, C.M., Graham, E.B., Hakkenberg, C.R., Haygood, L., Koren, G., Lilleskov, E., Meredith, L.K., Naeher, S., Nickerson, Z.L., Pourret, O., Song, H.-S., Stahl, M., Taş, N., Vargas, R., and Weintraub-Leff, S. 2022. Biogeosciences Perspectives on Integrated, Coordinated, Open, Networked (ICON) Science, *Earth and Space Science*. 9(3): e2021EA002119. <https://doi.org/10.1029/2021EA002119>.
4. **Barnard, M.A.**, Chaffin, J.D., Plaas, H.E., Boyer, G.L., Wei, B., Wilhelm, S.W., Rossignol, K.L., Braddy, J.S., Bullerjahn, G.S., Bridgeman, T.B., Davis, T.W., Wei, J., Bu, M., Paerl, H.W. 2021. Roles of Nutrient Limitation on Western Lake Erie CyanoHAB Toxin Production, *Toxins*. 13(1): 47. <https://doi.org/10.3390/toxins13010047>.
3. Paerl, H.W., Hall, N.S., Hounshell, A.G., Rossignol, K.L., **Barnard, M.A.**, Luettich, R.A. Rudolf, J.C., Osburn, C.L., Bales, J., and Harding, L.W. 2020. Recent increases of rainfall and flooding from tropical cyclones (TCs) in North Carolina (USA): implications for organic matter and nutrient cycling in coastal watersheds, *Biogeochemistry*. 150(2): 197–216. <https://doi.org/10.1007/S10533-020-00693-4>.
2. Paerl, H.W. and **Barnard, M.A.** 2020. Mitigating the global expansion of harmful cyanobacterial blooms: Moving targets in a human- and climatically-altered world, *Harmful Algae*. 96: 101845. <https://doi.org/10.1016/j.hal.2020.101845>.
1. **Barnard, M.A.**, Porter, J.W., and Wilde, S.B. 2017. Utilizing *Spirogyra grevilleana* as a Phytoremediatory Agent for Reduction of Limnetic Nutrients and *Escherichia coli* Concentrations, *American Journal of Plant Sciences*. 8(5): 1148-1158. <https://doi.org/10.4236/ajps.2017.85075>.

Patents

2. **Barnard, M.A.**, 2022. Algal System for Improving Water Quality. Canadian Patent 2,951,817. Issued July 19, 2022.
1. **Barnard, M.A.**, 2018. Algal System for Improving Water Quality. United States Patent 10,065,876. Issued September 4, 2018.

Peer-Reviewed Conference Proceedings

1. **Barnard, M.A.**, Plaas, H.E., Paerl, R.W., Karl, C.M., Holland, W.C., Hardison, D.R., Hall, N.S., Bartenfelder, A.N., Rossignol, K.L., Braddy, J.S., Sloup, R.S., and Paerl, H.W., Macronutrient and B vitamin dynamics of Chowan River (North Carolina, U.S.A.) CyanoHABs, In: Band-Schmidt, C.J. and Rodríguez-Gómez, C.F. (Eds.). 2022. Proceedings of the 19th International Conference on Harmful Algae, La Paz, B.C.S., Mexico. International Society for the Study of Harmful Algal Blooms. 365 pp, <https://doi.org/10.5281/zenodo.7034970>.

Book Chapters

1. **Barnard, M.A.**, Chaffin, J.D., Plaas, H.E., Boyer, G.L., Wei, B., Wilhelm, S.W., Rossignol, K.L., Braddy, J.S., Bullerjahn, G.S., Bridgeman, T.B., Davis, T.W., Wei, J., Bu, M., Paerl, H.W. Roles of Nutrient Limitation on Western Lake Erie CyanoHAB Toxin Production: pp. 183-203. In: *Cyanotoxins in Bloom: Ever-Increasing Occurrence and Global Distribution of Freshwater Cyanotoxins from Planktic and Benthic Cyanobacteria*: 2022. MDPI Books; Basel, CH. Kaloudis, T., Hiskia, A., Triantis, T.M. (eds.); 1st ed. <https://doi.org/10.3390/books978-3-0365-3921-8> (Article Reprint)

Repository Papers

3. **Barnard, M.A.** and Peissig, J.M. 2016. “Effects of Light Pollution on Loggerhead Sea Turtle (*Caretta caretta*) Nesting Behavior in Georgia and South Carolina,” University of Georgia Athenaeum Repository. Paper ID: 10724/35551. SeaTurtle.org Paper ID: 9775.
2. **Barnard, M.A.** 2015. “A Survey of the Tidal Cycle Influence on the Differential Phytoplankton Diversity of the Duplin River at Marsh Landing on Sapelo Island, Georgia,” University of Georgia Athenaeum Repository. Paper ID: 10724/35550.

1. **Barnard, M.A.**, Brock, H.K., Campbell, P., and Peissig, J.M. 2015. "Soil Manipulation by Leaf Cutter Ants at La Selva Biological Station, Puerto Viejo, Costa Rica," University of Georgia Athenaeum Repository. Paper ID: 10724/35605.

Code and Data

3. **Barnard, M.A.** 2022 "GitHub: malcolmbarnard/Barnard_Paerl_bioRxiv" <https://www.doi.org/10.5281/zenodo.5898592>.
2. **Barnard, M.A.** 2021 "GitHub: malcolmbarnard/GrazingMethodDevelopment" <https://www.doi.org/10.5281/zenodo.5026535>.
1. **Barnard, M.A.** 2020. "GitHub: malcolmbarnard/WLE_Barnard_et_al_Toxins" <https://www.doi.org/10.5281/zenodo.4281127>.

Protocols

1. **Barnard, M.A.** 2021. "Protocol for Creating Major Ion Solutions for Freshwater Systems." Protocols.io. <https://www.doi.org/10.17504/protocols.io.bvyxn7xn>.

GRANTS AND RESEARCH FELLOWSHIPS

3. **ACS Committee on Environmental Improvement and Committee on Local Section Activities Mini-Grant For Sustainability Programming**, (2020) Establishing a BIPOC seminar series through the Eastern North Carolina American Chemical Society Local Chapter (\$500)
2. **Kenan Graduate Student Award**, (2019) "Using stable isotopes to identify fertilizer-derived nitrogen (N) assimilation in microcystins" (\$2500)
1. **Sigma Xi Grants-in-Aid of Research**, (2019) "Understanding the effects of grazing on cyanoHAB toxicity" (\$750)

TEACHING EXPERIENCE

Teacher of Record/Teaching Assistant , Baylor University (BIO 1105) "Modern Concepts in Bioscience Lab"	August 2022-Current Fall 2022
Graduate Research Consultant , University of North Carolina at Chapel Hill (ENEC 222/MASC 470) "Estuarine and Coastal Marine Science" (MASC 220/ENEC 220) "North Carolina Estuaries: Environmental Processes & Problems" Assisted Dr. Marc Alperin	May 2019-December 2021 Fall 2021 May 2019
Teaching Assistant , University of North Carolina at Chapel Hill (MASC 401/BIOL 350/ENVR 417/GEOL 403) "Oceanography" Assisted Dr. Andreas Teske (ENEC 433/MASC 433) "Wetland Hydrology and Hydrodynamics" Assisted Dr. Jaye Cable	August 2018- May 2019 Spring 2019 Fall 2018
Teaching Assistant , University of Georgia (FYOS 1001) "First Year Odyssey Seminar – Aquatic Life in UGA Watersheds." Assisted Dr. Susan Wilde	August 2016-December 2016 Fall 2016

CONFERENCE PRESENTATIONS

22. "Evaluating the FluoroProbe as a tool for rapid chlorophyll a and phytoplankton group identification during Western Lake Erie CyanoHAB bloom conditions," 12th International Conference on Toxic Cyanobacteria. University of Toledo, Toledo, OH, USA, May 2022.
21. "Size-fractionated phytoplankton grazing rate determination across the freshwater-to-marine continuum," 2022 Joint Aquatic Sciences Meeting. Grand Rapids, MI, USA, May 2022.
20. "Nutrient Dynamics of Microcystin and Anatoxin Production in the Western Lake Erie Cyanobacterial Harmful Algal Blooms," Society of Environmental Toxicology and Chemistry 2021 North America SciCon4 Virtual Conference. Portland, OR, USA, November 2021.
19. "Macronutrient and B vitamin dynamics of Chowan River (North Carolina, USA) CyanoHABs," 19th Virtual International Conference on Harmful Algae. La Paz, BCS, Mexico, October 2021.

18. “Evaluating FluoroProbe as a tool for rapid chlorophyll a and phytoplankton group differentiation during bloom conditions,” Oceans and Human Health Virtual Meeting 2021. Bowling Green State University, Bowling Green, OH, USA, October 2021.
17. “Macronutrient and vitamin influences on Chowan River (North Carolina, USA) cyanobacterial harmful algal bloom biomass and toxicity,” American Chemical Society Fall 2021 National Meeting. Atlanta, GA, USA, August 2021. Presentation is available at <https://doi.org/10.1021/scimeetings.1c01003>.
16. “Macronutrient and vitamin influences on the Chowan River (North Carolina, USA) CyanoHABs,” 10.5 US Symposium on Harmful Algae Virtual Meeting. Virtual, USA, May 2021.
15. “Nutrient limitation dynamics of Western Lake Erie CyanoHAB biomass, microcystin, and anatoxin production,” International Association for Great Lakes Research Virtual Annual Conference. Michigan Technical University, Houghton, MI, USA, May 2021.
14. “Nutrient limitation dynamics of Western Lake Erie cyanoHAB biomass and toxin production,” American Chemical Society Virtual Spring 2021 National Meeting. San Francisco, CA, USA, April 2021. Presentation is available at <https://doi.org/10.1021/scimeetings.1c00521>.
13. “Nutrient limitation dynamics of the Western Lake Erie CyanoHABs,” Oceans and Human Health Virtual Meeting 2020. Woods Hole, MA, USA, October 2020.
12. “Understanding the roles of nutrient limitation on the Western Lake Erie Cyanobacterial Harmful Algal Blooms,” North Carolina State University LW Parks Lectureship ePoster Session. Raleigh, NC, USA, September 2020.
11. “Use of ¹⁵N compound specific analysis to trace N assimilation into microcystins in toxic cyanobacterial harmful algal blooms (cyanoHABs),” American Chemical Society 2019 Eastern North Carolina Poster Session, Greenville, NC, USA, November 2019.
10. “Utilizing the Alga *Spirogyra* to Improve Limnetic Water Quality: A Phytoremediatory Approach to Nutrient and Bacterial Pollution,” Association for the Sciences of Limnology and Oceanography 2018 Summer Meeting, Victoria, BC, Canada, June 2018.
9. “Utilizing *Spirogyra grevilleana* as a Phytoremediatory Agent for Reduction of Limnetic Nutrients and *Escherichia coli* Concentrations,” 2018 European Geosciences Union General Assembly, Vienna, Austria, May 2018. Poster available on <http://essoar.org>. DOI: <https://doi.org/10.1002/essoar.884a8536f683a34d.b4c20790a6644e17.2>.
8. “Providing Potable Water from Lake Water: The Frontiers of Sustainability in Your Own Backyard,” Ecological Society of America’s Centennial Conference, Baltimore, Maryland, USA, August 2015.
7. “Utilization of *Spirogyra grevilleana* as a Method of Algal Filtration for Reduction of Limnetic Nutrient and *Escherichia coli* Levels,” Center for Undergraduate Research Opportunities Symposium, Athens, GA, USA, March 2015.
6. “Utilization of *Spirogyra grevilleana* as a Method of Algal Filtration for Reduction of Limnetic Nutrient and *Escherichia coli* Levels,” Georgia Association of Water Professionals Industrial Conference, Athens, GA, USA, March 2015.
5. “Utilization of *Spirogyra grevilleana* as a Method of Algal Filtration for Reduction of Limnetic Nutrient and *Escherichia coli* Levels,” International Erosion Control Association Environmental Connection Conference, Portland, OR, USA, February 2015.
4. “Utilization of *Spirogyra grevilleana* as a Method of Algal Filtration for Reduction of Limnetic Nutrient and *Escherichia coli* Levels,” UGA Sustainability Science Symposium, Athens, GA, USA, January 2015.
3. “Utilization of *Spirogyra grevilleana* as a Method of Algal Filtration for Reduction of Limnetic Nutrient and *Escherichia coli* Levels,” Odum School of Ecology Graduate Symposium, Athens, GA, USA, January 2015.
2. “Utilization of *Spirogyra grevilleana* as a Method of Algal Filtration for Reduction of Limnetic Nutrient and *Escherichia coli* Levels,” Georgia Association of Water Professionals Annual Conference, Savannah, GA, USA, July 2014.
1. “Utilization of *S. grevilleana* as a Novel Method of Bioremediation in Freshwater Lakes,” Georgia Association of Water Professionals Annual Conference, Savannah, GA, USA, July 2013.

INVITED TALKS

7. **Brown Bag Seminar**, “The effects of nutrients and vitamins on the Chowan River CyanoHABs,” Institute of Marine Sciences, University of North Carolina at Chapel Hill, Morehead City, NC, USA, February 2021.
6. **Mostly Marine Informal Seminar Series**, “Using FluoroProbes to Rapidly Quantify CyanoHABs,” Duke University Marine Laboratory, Beaufort, NC, USA, May 2020.

5. **Brown Bag Seminar**, “Understanding Western Lake Erie CyanoHAB Bloom Dynamics,” Institute of Marine Sciences, University of North Carolina at Chapel Hill, Morehead City, NC, USA, January 2020.
4. **National Wildlife Federation EcoLeader Panel**, Georgia Campus Sustainability Network Annual Conference, Atlanta, GA, USA, September 2016.
3. **TEDx Talk**, “Solving the Global Water Crisis,” TEDxUGA Student Idea Competition, one of nine students campus-wide selected to present, Athens, GA, USA, January 2015.
2. **National Wildlife Federation Speech**, “The Importance of Volunteering in Your Community,” Disney Kids and Nature Celebration, Orlando, FL, USA, February 2012.
1. **TEDx Talk**, “Follow Your Dreams,” TEDxYouth@PiedmontPark, Atlanta, GA, USA, November 2011.

SELECTED HONORS AND AWARDS

Baylor University Transition Fellowship , Awarded by the Baylor University Graduate School	2022
Registration Fee Award for the 2021 International Conference on Harmful Algae , Awarded by US National Office for Harmful Algal Blooms on behalf of NOAA NCCOS	2021
IAGLR Science Communication Scholar , Recognized by the International Association of Great Lakes Research due to being an IAGLR 2021 Student Presentation Award Finalist	2021
2020 National Science Foundation Graduate Research Fellowship Honorable Mention	2020
Kenan Graduate Student Award , awarded by the Department of Marine Sciences, University of North Carolina at Chapel Hill	2019
Election to Full Membership, Sigma Xi	2018
Josh Laerm Memorial Outstanding Ecology Undergraduate Award Awarded to a graduating senior Ecology major based on a combination of research, classroom, and service performance (<i>i.e.</i> , all-around qualities as a professional ecologist)	2017
1st place in UGA Sustainability Science Symposium poster session	2015
2nd place in Odum School of Ecology Graduate Symposium poster session	2015
University of Georgia Bernard Ramsey Honors Scholarship (4-yr academic scholarship)	2014
IBM Watson Scholarship (4-yr academic scholarship)	2014
U.S. National Stockholm Junior Water Prize , State of Georgia winner for algal research	2013, 2014
Georgia’s 20 Under 20, 21st Century Leaders	2012
2011 Atlanta Cox Conserves Heroes Finalist , Cox Enterprises and The Trust for Public Land Awarded for contribution to community conservation	2011

PROFESSIONAL TRAINING / CERTIFICATION

Portal to the Public Training, Mayborn Museum, Baylor University, Waco, Texas, USA (2022)

United States Federal Aviation Administration (FAA) Remote Pilot, Airman Rating: Small Unmanned Aircraft Systems (FAA Part 107) – Airman Certificate Number 4689986 (Issued July 2022)

Science Communication Workshop, Phipps Conservatory and Botanical Gardens, Pennsylvania (Virtual) USA (2022)

Twitter for Science 101, University of North Carolina – Chapel Hill Department of Earth, Marine, and Environmental Sciences, North Carolina, USA (2021)

Unlearning Racism in Geosciences (URGE) Training, UNC Marine and Geosciences Pod Member (2021)

Diver First Aid (DFA) Pro (CPR-HCP, First Aid, AED, O₂ Provider), Divers Alert Network (2020)

Pursuing Respect, Inclusion, Diversity, and Equity (PRIDE) Training, Duke University Center for Sexual and Gender Diversity, Duke University Marine Lab, North Carolina, USA (2020)

Scientific Diving Certification – American Academy of Underwater Science, University of North Carolina (2019-2020), University System of Georgia (2016-2017)

2019 ComSciCon-Triangle Science Communication Training Workshop, Raleigh/Research Triangle Park, North Carolina, USA (2019)

Entering Mentoring Training Workshop, University of North Carolina – Chapel Hill Graduate School, North Carolina, USA (2019)

University of North Carolina – Chapel Hill Safe Zone Training, University of North Carolina – Chapel Hill LGBTQ Center, North Carolina, USA (2018)

Helping Advocates for Violence Ending Now (HAVEN) Training, University of North Carolina – Chapel Hill Equal Opportunity & Compliance Office, North Carolina, USA (2018)

Methods in Environmental Acquisition / Remote Data Acquisition (RDA) Sensor Training Workshop, University of New Mexico, Sevilleta Field Station, New Mexico, USA (2018)
Introduction to Remote Sensing and GIS for Ecological Applications, PR Informatics, Glasgow, Scotland, UK (2018)
Stable Isotope Ecology Course, Sicily Center for International Education, Siracusa, Sicily, Italy (2018)
Master SCUBA Diver, Scuba Schools International Certification, Stress and Rescue (2017), Navigation, Deep, Wreck, Night/Reduced Visibility, and Nitrox (2016)
Georgia Soil and Water Conservation Commission Level 1-A Certified Personnel/Blue Card Holder Georgia NPDES Training Institute (2016-2018)
Georgia Adopt-A-Stream QA/QC Certification, State of Georgia’s Environmental Protection Division Chemical (2009, 2010, 2016); Biological (2010, 2016); and Bacterial (2012) water quality testing

SELECTED UNIVERSITY INVOLVEMENT

Baylor University - Global Change and Freshwater Ecosystem Analysis (Powers) Lab Group 2022-Present
 Safety Compliance Liaison
University of North Carolina – Chapel Hill – Marine Sciences Department Diversity, Equity, and Inclusion Committee Member 2020-2021
University of North Carolina – Chapel Hill – Marine Sciences Graduate Student Symposium Co-Chair 2019-2020
University of Georgia Student Government Association – Odum School of Ecology Senator 2015-2017
 Chair of Auxiliary Services Committee
University Council – Odum School of Ecology Student Representative 2016-2017
 Library Committee Member
American Water Resources Association, UGA Chapter – Treasurer 2015-2017
National Wildlife Federation – Campus EcoLeader 2014-2017

SELECTED PROFESSIONAL SERVICE

Protocols.io Ambassador, 2022- Present
North Carolina American Water Works Association/Water Environment Association (NC AWWA/WEA) Public Education Committee Member, 2018-2022
Eastern North Carolina Section of the American Chemical Society Diversity in the Chemical Sciences Seminar Series Coordinator, 2020-2021
Peer Reviewer
 Academia Letters, Aquatic Ecology, Coral Reefs, GeoHealth, Journal of Applied Phycology, Journal of Geophysical Research – Biogeosciences, Life: The Excitement of Biology, Microbial Ecology, New Zealand Journal of Marine and Freshwater Research, PCIEcology

STATISTICAL SOFTWARE PROFICIENCIES

MatLab, mathematical modeling
R/R Studio, statistical analysis utilizing **LaTeX** for formatting
Grass GIS, Open Source Global Information Systems Software
P.A.S.T., population analysis
JMP, population modeling

SELECTED COMMUNITY OUTREACH

Future City Competition National Judge, North Carolina Regional Judge, December 2021-January 2022; International Competition judge, March 2021 and February 2022.
Blue Heron Ocean Sciences Bowl, Manteo, NC Science Judge, February 2021; Morehead City, NC Moderator, February 2022
Skype a Scientist, communicating science to campers and school students, 2020-current.
North Carolina Stockholm Junior Water Prize Judge, acting as member of the North Carolina Water Environment Association Public Education Committee, 2019-2022. Helped to select the North Carolina state SJWP winner.

- North Carolina Science and Engineering Fair Judge – Region I** February 2020; **Region II** February 2019 and February 2022; **Region IIIB** February 2021 and February 2022; **Region V** February 2019 and February 2022; **Region VI** February 2022; **State Fair**, March 2022.
- SciREN Coast**, 2019-2021 Admin Team member and Educator Team leader.
- Future City Competition Mentor**, mentoring one team of seventh graders and two teams of eighth graders at Epiphany School of Global Studies in New Bern, North Carolina, USA for the 2020 Future City Competition, October 2019-January 2020.
- Science Fair Mentor**, mentoring eight grade students at Beaufort Middle School, Beaufort, North Carolina, USA. November 2019-December 2019.
- Raleigh Model Water Competition**, volunteer with the 2019 Model Water Competition hosted by the North Carolina Water Environment Association at Abbotts Bridge Elementary School, Raleigh, North Carolina, USA, October 2019.
- Girls Exploring Science and Technology**, volunteer with the 2019 Girls Exploring Science and Technology at the University of North Carolina – Chapel Hill Institute of Marine Sciences, Morehead City, North Carolina, USA, October 2019.
- United States National Stockholm Junior Water Prize Coach**, 2019 United State National Stockholm Water Prize competition at The Ohio State University, Columbus, Ohio, USA, June 2019.
- SciREN Coast**, Lesson Plan Workshop at Duke University Marine Lab, January 2019.
- Georgia DNR Tybee Island Sea Turtle Project**, Sea Turtle Patrol, 2014-2018. Conducting morning beach surveys, nocturnal nest sitting, nest transfers, and egg genetic sample field preparation.
- Tybee Island Marine Science Center**, Volunteer, 2011-2018. Educating visitors through gallery interpretation and assistance with beach walks, husbandry, and research.
- National Park Service**, Park Volunteer, 2010-2018. Assisting with educational programs, event preparation, and park cleanup at the Chattahoochee River National Recreation Area.
- Upper Oconee Watershed Network**, Volunteer, 2015-2017. Quarterly water quality monitoring of Athens-Clarke County, GA streams.
- Georgia State Science and Engineering Fair**, Junior Division Science Fair Judge, Athens, GA, April 2016.
- National Wildlife Federation**, Project leader and volunteer, 2010-present, Youth Ambassador, 2010-2014. Created and led Johns Creek Certified Community Wildlife Habitat Project.
- Chattahoochee Nature Center**, Docent, 2009-2014. Completed docent training program; educated visitors through artifact biobuggies and exhibit gallery interpretation.