

Hannah K. Morrissette

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Education

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| Ph.D. | University of Maryland, Marine-Estuarine-Environmental Science
<i>Dissertation:</i> Marsh-estuarine sediment biogeochemistry
<i>Advisor:</i> Dr. Raleigh Hood | 2021 |
| B.A. | Lycoming College, Biology <i>cum laude</i>
<i>Thesis:</i> Freshwater eutrophication in response to fracking | 2015 |
| B.A. | Lycoming College, French <i>cum laude</i>
<i>Advisors:</i> Dr. Mel Zimmerman, Dr. Amy Cartal-Falk | 2015 |

Research Experience

Smithsonian Environmental Research Center, Edgewater, MD Jan 2023-present
Postdoctoral Researcher 40hrs/week

Conduct applied research to support the conservation and management of mangroves and seagrasses in the Latin America and Caribbean regions. Lead the training of field teams in Guatemala and Honduras (12 individuals) for the collection of ecosystem health, reference plots, and blue carbon data. Develop standardized protocols for blue carbon and mangrove health assessments to next be implemented in regional mangrove monitoring and restoration efforts.

Smithsonian Marine Station, Ft. Pierce, FL Apr 2021-Jan 2023
Postdoctoral Researcher 40hrs/week

Performed applied research as a response to the updated Nationally Determined Contribution of Belize, to obtain a Tier II estimate of mangrove carbon as per IPCC standard. Led the training of a field team of over 35 individuals for the collection of 1350 sediment samples and almost 4000 mangroves measurements, and completed laboratory analyses to provide the first national mangrove carbon stock assessment and restoration priority areas for stakeholders. Collaborated with each member of the field team to produce one peer-reviewed scientific manuscript and another in preparation.

Horn Point Laboratory, Cambridge, MD June 2016-Aug 2021
Graduate Research Assistant 40hrs/week

Created and executed interdisciplinary dissertation research on the processes of dissolved organic carbon movement at the marsh-estuarine interface. Used numerical modeling, field collections, and laboratory experiments to demystify the importance, magnitude, and influence of transformation, transport, and interaction of dissolved organic matter in tidal marshes.

Collaborated with four separate institutions to finalize dissertation and communicate results, with three peer-reviewed journal publications in preparation.

Smithsonian Environmental Research Center, Edgewater, MD Aug 2017-Aug 2021
Visiting Scientist With above

Performed field and laboratory experiments as part of a National Science Foundation Department of Biology grant to explore dissolved organic matter transport and transformation within tidal marsh systems. Developed protocols and standard operating procedures for new methods pertaining to the success of the project. Facilitated the field and lab work of the postdoctoral researcher with additional aspects of the project and co-mentored three REU interns throughout the duration of the grant period.

National Marine Sanctuary Foundation, Silver Spring, MD Apr 2019-Aug 2019
Science and Conservation Intern 20hrs/week

Shaped and expanded conservation projects in the national sanctuary system, such as underwater marine debris removal in the Florida Keys, reducing whale ship strikes in Stellwagen Bank and Hawaii, long-term monitoring for coral disease mitigation and restoration in the Flower Gardens and American Samoa, and kelp forest ecology off the coast of California. Connected science with policy through the translated communication between researchers, stakeholders, and policy makers. Participated in the organization and hosting of the Capitol Hill Ocean Week conference with three days of presentations, panels, guests of honor, exhibitions, and several hundred in-person attendees.

NOAA R/V Ronald H. Brown, Indian Ocean Apr 2018-June 2018
Research cruise member; biological sampling 60hrs/week

Participated in a six-week research cruise from Durban, South Africa, to Goa, India, to be a part of an interdisciplinary team to examine an under-sampled region of the Indian Ocean. Collaborated with an international team of scientists to organize hourly and daily samplings and analyze trends in the chemical, biological, and physical changes of the Indian Ocean.

Fundación Mahatma Gandhi, Las Terrenas, Dominican Republic Sept 2015-Feb 2016
Coastal Restoration Scientist 40hrs/week

Established a sustainable and financially independent mangrove restoration effort via restoration site identification, coordination of donated propagules from local nurseries, planting of over 1,000 seedlings along the coast, and collaboration to expand environmental education throughout the local schools with organized field trips to planting locations.

The Clean Water Institute, Williamsport, PA June 2014-Aug 2014
Water Quality Intern 40hrs/week

Analyzed the water quality and biodiversity of rivers and lakes in Pennsylvania through fish, invertebrate, and plant collections and assessments, and water quality analysis, reporting the findings to local stakeholders with an interest in the effect of fracking on the aquatic environment.

Languages

English – Native
French – Proficient
Spanish - Basic

Affiliations

Global Mangrove Alliance Science Technical Group	2023-present
UN GO-BC Science Technical Working Group	2023-present
Belize Blue Carbon Working Group	2024-present

Awards, Licenses, & Certifications

Horn Point Laboratory Student Travel Award	2019, 2020
Maryland Sea Grant Award	2019
Izaak Walton Award	2018
Horn Point Laboratory Fellowship	2017
Maryland Boater's Certification	2016
SCUBA Open Water Certification	2014
Tri Beta Biological Honor Society	2014
Phi Sigma Iota Modern Language Honor Society	2014

Leadership & Service

Science & Coffee Coordinator	2022-pres
SI Earth Optimism Outreach Presenter	2022
Women in Science Committee Member	2021-pres
Society for Women in Marine Science Co-Chair	2018-2020
Scientific Communication Committee Student Representative	2017-2019
Ian Morris Scholar Chair	2017-2018
Graduate Student Organization Representative	2017-2018
Blackwater Wildlife Refuge, Environmental Preservation	2016-2019
Horn Point Laboratory Tour Guide	2016-2019
Fundación Mahatma Gandhi Volunteer	2015-2017

Publications

- 2024 Neale, et al. Sorption of Colored vs Noncolored Organic Matter by Tidal Marsh Soils. *Biogeosciences*. *accepted*.
- 2024 GO-BC Science Technical Working Group. Technical Meeting on Nuclear and Isotopic Techniques in Blue Carbon Habitats as a Nature-Based Solution for Climate Change, Meeting Report.
- 2024 Grimm, et al. Including Local Ecological Knowledge (LEK) in Mangrove Conservation & Restoration. A Best-Practice Guide for Practitioners and Researchers.
- 2023 Canfield, et al. Building an inclusive wave in marine science: Sense of belonging and Society for Women in Marine Science symposia. *Progress in Oceanography* 218: 103110.
- 2023 Morrissette, et al. Belize Blue Carbon: Establishing a national carbon stock estimate for mangrove ecosystems. *Science of the Total Environment* 870: 161829.
- 2020 Pinsonneault, et al. Dissolved organic carbon sorption dynamics in tidal marsh soils. *Limnology and Oceanography*, 9999:1-12.

In review:

Morrissette, et al. Wetland soil characteristics influence the kinetics of dissolved organic carbon sorption. *Wetlands*.

Canty, et al. Implications of improved remote sensing capabilities on blue carbon quantification. *Frontiers in Ecology and Environment*.

Grants Awarded

Awarded as PI

- 2024 Mapping of Belize Peatlands; \$21,443.
- 2023 Support for three Belizean undergraduate students to protect their mangrove coastline; \$26,990.

Awarded as co-PI

- 2023 Comparison of Rookery and Non-Rookery Mangrove Cayes through Biodiversity and Biomass; \$99,354.
- 2023 Panama Blue Carbon; \$281,977.
- 2022 Mangrove Restoration in the Gulf of Honduras; \$90,992.

Presentations

Belize Blue Carbon Baselines

Carbon Readiness Framework Workshop, 2024.

Blue Carbon and Beyond

Educator Workshop Panel on Wetlands, 2023.

Mangroves: Superheroes of the Coastal Ocean

Annapolis Café Scientifique Series, 2023.

Rapid mangrove monitoring methods to establish baselines for health, structure, and biodiversity

MMM6 Conference (poster), 2023.

Belize Blue Carbon: Government Presentation

Blue Carbon Knowledge Sharing Workshop (Final), 2023

Mangroves of Barbuda

Mangrove Status and Blue Carbon Data Virtual Workshop, 2023.

Mangrove Status: New Assessment and Blue Carbon

Healthy Reefs Initiative 7th Regional Partners Meeting, 2022.

Mangrove Blue Carbon Assessment: Preliminary Findings

Blue Carbon Knowledge Sharing Workshop, 2021.

Belize Blue Carbon: Establishing a national carbon stock

Scottish Blue Carbon Forum, 2021.

Belize Blue Carbon Update

GLOW Coastal Wetlands Twitter Conference, 2021.

Resolving the temporal and spatial variability of tidal marsh sediment dissolved organic carbon sorption

Smithsonian Environmental Research Center Seminar Series, 2021.

CCNY Environmental Science Seminar, 2021.

Resolving spatial variability in dissolved organic matter sorption kinetics of marsh soils

Ocean Sciences Meeting, San Diego CA, 2020.

Teaching/Mentoring

Training Lead for Blue Carbon, Guatemala

Apr 2024

Trained 7 individuals from local NGOs and government sectors in mangrove blue carbon field research methods.

Training Lead for Blue Carbon, Panama

Mar 2024

Trained 20 individuals from local NGOs, academia, community groups, and government sectors in mangrove blue carbon field research methods.

Training Lead for Blue Carbon, Honduras Oct 2023

Trained 9 individuals from local NGOs, fisher community, navy, and government sectors in mangrove blue carbon field research methods.

Long-term Undergraduate Mentor, Belize May 2023-present

Mentor to 3 undergraduate students from the University of Belize, who are participating in a Marine Conservation Lab project and learning field, lab, and data analysis skills.

RET Mentor, SERC, USA June-Aug 2023

Mentor to a seventh-grade science teacher, who completed a summer research internship to gain laboratory skills and new topics and projects for classroom.

Training Lead for Mangrove Health/Restoration, Guatemala & Honduras Oct-Dec 2022

Trained 12 individuals from environmental NGOs on mangrove health monitoring via rapid transects and permanent reference plots.

Training Lead for Blue Carbon, Barbuda July 2022

Trained 6 individuals from a local sea turtle monitoring team in mangrove blue carbon research methods.

Training Lead for Capacity Building, Belize Aug 2021-Feb 2022

Trained 35+ individuals in blue carbon research methods, including mangrove biomass, soil field collections, and data analysis.

REU Mentor, UMCES HPL, USA May 2019-Aug 2019

Mentor to an undergraduate student who completed a summer research internship in my laboratory, aiding in lab, data analysis, and presentation skills.

Internship Mentor, SERC, USA Summer 2017, 2018

Co-mentor to several undergraduate students on separate internships for an NSF-funded grant in field work, lab analyses, and scientific communication.

Guest Lecturer, Washington College, USA Oct 2018

Guest lecture and laboratory exercise, Chester River transects (YSI measurements, net tows, sediment grabs, and spectral analyses for nutrients).

El Jamito, Las Terrenas International School, Dominican Republic Sept 2015-Feb 2016

Environmental education, coastal conservation, field trips to mangrove planting sites.