

# Shannon Murphy, MSc Marine Biology

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## EDUCATION

**Northeastern University, Three Seas Program** | Boston, MA

Sept 2019-Aug 2020

*Marine Biology M.Sc*

Experiential learning and dive-based program where students study and conduct research in three distinct marine ecosystems

Program is normally 1.5 years however due to COVID research was accelerated and completed remotely

Friday Harbor Laboratories | *San Juan Islands, Washington, USA*

Smithsonian Tropical Research Institute | *Bocas del Toro, Panama (Caribbean) & Coiba National Park (Pacific)*

Northeastern Marine Science Center | *Nahant, MA, USA*

Bigelow Laboratory for Ocean Sciences | *Boothbay Harbor, ME, USA*

Masters Thesis | "Influences on Spatial & Temporal Variability in Benthic Community Structure of Bocas del Toro Coral

Reefs" | Woods Hole Oceanographic Institution | Adviser: Maggie D. Johnson, PhD

**University of Massachusetts Boston** | Boston, MA

Sept 2015-Aug 2019

*Environmental Science B.S & Honors College* / Minor in Geospatial Analysis and Modeling

Honors Thesis | "Climate Change in East Boston: Its Impact & Community Outlook" | PI: Paul Kirshen, PhD & Sarah Mayorga de-Gallo PhD

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## CERTIFICATIONS

- Boating Safety Certification | *Florida Fish and Wildlife Conservation Commission* | June 2022
- Boating Safety Certification | *Hawaii Department of Land and Natural Resources* | January 2022
- CPR/First Aid/ADA/Oxygen Certified | *Divers Alert Network* | November 2021
- Boating Safety Certification | *Commonwealth of MA* | July 2021
- Advanced Open Water SCUBA | Professional Association of Diving Instructors (*PADI*) | June 2021
- AAUS Scientific Diver | *Northeastern University* | September 2019
  - *Active: 60ft | Florida State University* | June 2022
- \*Active Training\* Dry Suit Diver / *PADI* / November 2022
- Safe Zone | *Trainer: Alyvia Norris UMass Boston* | Spring 2018

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## HONORS & AWARDS

- Departmental Honors in Environmental Science from UMass Boston
- Undergraduate Legacy Award 2019
- UMass Boston Chancellor's Scholarship | Full ride with paid tuition and fees
- Alpha Lambda Delta National Honors Society
- 2017-2018 Undergraduate Student Research Grant for Research in Biological Oceanography
- 2018-2019 Undergraduate Student Research Grant for Research in Biological Oceanography
- Summer 2018 Beacon Student Success Fellowship

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## SKILLS

- ***Group Coordination & productivity:*** Experience organizing and instructing masters level grad students in lab and field work while advocating for their needs within a long-term traveling collegiate program as well as undergraduate students within the classroom and lab. Successful in developing and coordinating field research protocols between different lab groups, experience and confidence in multiple leadership and professional roles and in taking an open approach to work within diverse settings. Successful in volunteer coordination. Able to work professionally in an office and lab environment while communicating effectively with administration and colleagues.
- ***Field Work: Boating:*** Operating up to 26ft and 3,200lb vessels for SCUBA divers, surface sampling, and deploying heavy equipment both inshore in shallow seagrass and coral/oyster reefs and up to 7 miles offshore. Coordinating and leading large vessel marine mammal and bird surveys, deploying CTD and YSI probes, micro-net sampling/plankton tow, photographing animals for identification, and safety management. ***Underwater:*** SCUBA in both Tropical (Caribbean & Indo-Pacific) and cold water (New England and Pacific Northwest) between 4-100ft and as low as 6 inch visibility, tankless hookah/surface-supplied air diving, coral reef and mangrove surveying, identification of tropical corals and fish, fish spawning surveyal, underwater transects and chain-measured rugosity, search and recovery, underwater fish capture, taking photos for 3D modeling,

collection/identification of red/green/brown algae and invertebrates, and maintenance of coral nursery structure via snorkel and free diving. **Land based:** Beach profiling, using a stadia stick, calculating sponge pumping, hand level, hand lens, YSI (conductivity, temperature, PH, and salinity) storage and usage, and conducting qualitative surveys within different human communities. Transported both people and gear in large pickup trucks and 15 passenger vans as well as towing up to 26ft/3,200lb vessels.

- **Lab Work:** Microscopy, hemocytometer, pipetting, proper disposal and usage of chemicals, coral lipid and protein extraction, calibrating equipment, Benchtop Multi-Mode Microplate Reader and plate shaker, storage of animal and coral samples, operating PAM experiments, maintaining flow-through seawater tanks and systems, care of live adult snails and spat-adult stage oysters, conducting fish spawning experiments, and analyzing fish and squid stomach content.
- **Software and Statistical Analysis:** ArcGIS, R Studio (e.g., univariate statistical analysis, querying, entering, graphing (Sci plot & ggplot), and calculating data, R Markdown), Qualtrics, Microsoft Office, Google Suite, operating PAM instrument and program, CoralNet, Agisoft MetaShape 3D modeling, ImageJ, Adobe Premiere Pro video editing, and Adobe Lightroom.
- **Experimental Design:** How to ask a testable question, using constructive criticism when digesting manuscripts, manuscript writing, critical reading of scientific and policy papers, creating a stakeholder survey, developing and testing in-situ settlement structures and equipment, creating an NSF Proposal, developing and testing field protocols, and creating accessible population surveys.
- **SciComm:** Experience in science communication in the format of a research poster presentation, Science Cafe, educational workshop, social media, and a thesis presentation. Experience managing social media platforms for scientific and educational engagement through Instagram and Twitter, served as a consultant for social justice educational social media platforms, and accomplished in service-learning development and logistics.

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## RESEARCH EXPERIENCE

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### **Research Technician** | *Shantz Lab @ Florida State University Coastal & Marine Lab* | St. Teresa, FL **June 2022 – Pres.**

- Worked with the Shantz Lab researching how global change impacts the biology and physiology of animals to shape their behavior and functional roles within coastal ecosystems such as oyster and coral reefs
- Assisted in lab operations including protein and lipid extraction from coral fragments, keeping of live oysters and snails in flow-through and closed seawater systems, temporal 3D image modeling of oyster settlement structures, data entry/management, and R statistical analysis
- Coordinated and participated in field operations within Florida's Apalachicola Bay and Key Largo through vessel operation and towing, SCUBA surveyal and live animal collections as well as deploying of various reef structures to study oyster and urchin recruitment under AAUS standards
- Managed lab supplies and operations including lab collaborations with the Apalachicola Bay System Initiative and NOAA's Southeast Fisheries Science Center

### **Research Intern** | *Woods Hole Oceanographic Institution* | Remote

**May 2020 – Sep 2021**

- Advised by Maggie D. Johnson, PhD
- Analyzed Coral Reef Benthic Cover Photo quadrats of Bocas del Toro, Panama from 2016-2019 in fulfillment of my Northeastern University Master's Thesis
- Organized a database of photographs from photo quads of coral reefs ranging spatially and temporally
- Analysis of coral reef conducted through CoralNet image processing combined with mapping using ArcPro

### **Research Intern** | *University of Massachusetts Boston* | Boston, MA

**Sep 2018 – Aug 2019**

- Advised by Paul Kirshen, PhD & Sarah Mayorga DeGallo, PhD
- Mapped vulnerability using climate justice group demographics collected from census data of East Boston
- Surveyed East Boston community members of how symptoms of Climate Change have affected them and what aid and services they needed and therefore will need in the future
- Analysis of the vulnerability of different areas of East Boston and the needs of the community were analyzed using ArcMap and Qualtrics

### **Research Assistant** | *UMass Boston Biological Oceanography Laboratory* | Boston, MA

**Oct 2017 - Dec 2018**

- Analyzed the abundance of Microfibers in oyster samples within the Mystic Watershed
- Processed oyster samples through Hydrolyzing with Trypsin in a controlled lab environment
- Counted fiber quantity and measured length on filtered hydrolyzed oyster samples
- Presented at research colloquiums for the School for the Environment

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## TEACHING EXPERIENCE WITH NORTHEASTERN UNIVERSITY

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### **Traveling Teaching and Program Assistant for Three Seas Master's in Marine Biology Program**

- Coordinated 19 Masters candidates in their 5-month field-based learning and lab training involving but not limited

to SCUBA research methods, small and large vessel sampling (plankton tows, CTD deploying, etc) and surveying (marine mammals and birds), transporting students and gear via pickup truck and 15 passenger vans, biological sample processing, microscopy, manuscript and grant writing, and data analysis via R Studio and ArcPro.

- Advocated for student needs in their learning and living environment while aiding in successful programming.
- Coordinated with professors on logistics of their accelerated courses and assisted in course instruction.
- Managed program social media and coordinated promotion through university videos, takeovers, and blog posts.
- **Semester in Northern Pacific** | *Friday Harbor Labs* / Friday Harbor, WA **March 2022 – May 2022**
  - Assisted the instruction and logistics of the following courses:
    - Changing Global Oceans instructed by Steve Doo, PhD of King Abdullah University of Science and Technology
    - Conservation & Restoration of Marine Systems instructed by Brooke Sullivan, PhD of Friday Harbor Labs
    - Marine Birds and Mammals instructed by Breck Tyler, PhD of University of Washington
- **Semester in the Tropics** | *Hawai'i Inst. Of Marine Biology* | Kaneohe, HI **Jan 2022 – March 2022**
  - Successfully certified to operate 17ft Whaler boats in order to transport students to dive sites
  - Assisted the instruction and logistics of the following courses:
    - Biology of Corals instructed by Steven Vollmer, PhD of Northeastern University
    - Biology & Ecology of Fishes instructed by Richard Coleman, PhD of Hawai'i Inst. Of Marine Biology & UMiami
    - Ocean & Coastal Processes instructed by Christopher Jury, PhD of Hawai'i Inst. of Marine Biology
    - Marine Tropical Ecology instructed by Kaleonani Hurley, PhD of Hawai'i Inst. of Marine Biology

**Teaching Assistant for Diving & Research Methods** | *NEU Marine Science Center* | Nahant, MA **Sep 2021 – Dec 2021**

- Instructed 21 students Masters and PhD students in SCUBA research techniques used in the study of the biology, ecology, and physiology of subtidal marine organisms as well as diver safety and rescue
- Trained students in their certification as scientific divers by the American Academy of Underwater Sciences (AAUS) as well as Diver First Aid/Oxygen delivery
- Responsible for SCUBA equipment maintenance including tank filling and Bank Compressor operation
- Assisted Marine Career Seminars instructing on networking, CV/Resume creation, and media management

**Teaching Assistant for Marine Biomes Course** | *NEU Marine Science Center* | Nahant, MA **Sep 2021 – Dec 2021**

- Assisted Dr. Tara Duffy in the instruction and logistics of 22 Masters in investigating the major biomes in the NW Atlantic and the major chemical, physical, geological, and biological forces that shape them
- Responsible for equipment management and organization for weekly fieldwork and lab exercises ranging from seagrass seining to pelagic sampling on a vessel, and plankton sorting/identification
- Assisted in creating and grading supplemental lab activities, homework, and exams

**Teaching Assistant for Biological Statistics Course** | *Northeastern University* | Boston, MA **Sep 2021 – Dec 2021**

- Led two 3-hour weekly lecture & laboratory sessions for 28 undergraduate students and virtual office hours
- Instructed students on coding methods within R-Studio and R-markdown to conduct statistical analyses, produce graphs/figures, and interpret results
- Graded projects and exams synthesized from topics covered in lab

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## WORK EXPERIENCE

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**Reservations Specialist** | *New England Aquarium* | Boston, MA & Hybrid Remote **Feb 2021 – Dec 2021**

- Operating within the Group Sales and Reservations department within the Marketing & Reservations department of the New England Aquarium.
- Personally work directly with over 100 visitors and groups each day to provide them with access to all aquarium experiences including educational movies, virtual animal encounters, and academy courses.
- Connect persons with affordable admission and discounts to engage as much of the New England community as possible.

**Media Coordinator** | *Office of Student Leadership & Community Engagement* | Boston, MA **Oct 2018 – Sept 2019**

- Assisted multiple volunteer and engagement programs within the office with media and design projects
- Worked with Director in managing and developing new engagement campaigns
- Maintain professional and communicative relationships with different vendors
- Ensured all media and graphic designs follow university guidelines and requirements

**Office Billing Clerk** | *Quirk Chrysler Jeep Dealership* | Braintree, MA **July 2017 – Dec 2019**

- Organized the finance and registration of vehicles and transactions within the different departments
- Ensured optimal efficiency in a fast-paced environment while maintaining comfortable customer experience and an organized office space

**Media Consultant** | *Fenway Health Getting to Zero* | Boston, MA **Sept 2019 - Dec 2019**

- Organized and planned content and graphics for Activist Academy recruitment as World Aids Day

- Created media content (e.g., infographics and gifs) for the Getting to Zero project assistants

**Beacon Ambassador** | *UMass Boston Undergraduate Admissions* | Boston, MA **Oct 2016 - May 2019**

- Informed prospective students and parents on opportunities and support services through tours and info sessions
- Assisted the Office of UG Admissions in preparing and successfully carrying out events for prospective students

**Intern for Massachusetts Public Interest Research Group** | *UMass Boston* | Boston, MA **October 2016 - May 2017**

- Coordinated public education grassroots and community engagement initiatives in projects ranging from Renewable Energy to Nonpartisan Voters Registration for our students to serve in the Boston area
- Mentor new student volunteers in effective service and community outreach

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## OUTREACH EXPERIENCE

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**Office of Student Leadership and Community Engagement** | *Beacon Voyages for Service* | Boston, MA

- **Media Coordinator** | Program Assistant to the Director of OSCLCE **Oct 2018 - Sept 2019**
  - Created media and design projects for volunteer and engagement programs
  - Managed and developed new engagement campaigns
  - Maintained professional and communicative relationships with vendors
  - Ensured all media and graphic designs follow university guidelines and requirements
- **Promotions Program Coordinator** | Beacon Voyages for Service **April 2018 - May 2019**
  - Advised, mentored, and educated trip leaders on planning the logistics of their alternative breaks
  - Worked with University admin, OSCLCE director and Program Coordinator on program development
  - Designed SWAG and printed materials
  - Promoted alternative breaks and coordinate outreach for the executive team
- **Trip Leader and Organizer** | Beacon Voyages for Service **April 2017 - April 2018**
  - Organized the education, training, and trip logistics of a service trip for 12 UMass Boston students to Florida to serve with the Friends of Saint Joseph's Bay Buffer & Aquatic Preserve over Spring Break.
  - Planned and lead weekly meetings on environmental topics as well as group dynamics, conflict resolution, identity and allyship, asset based community development, and more.
  - Coordinated and led fundraising events and sales
- **Volunteer for Animal Welfare Service Learning** | Las Cruces, NM **Oct 2016 - April 2017**
  - Served with the Safe Haven Animal Sanctuary in Las Cruces, NM through the distribution of animal care products, exercising and care of cats and dogs, and assisting in the operations of a free microchip clinic
  - Participated in peer-led education on threats to animal populations both locally and around the world and discussion and fundraising
- **Volunteer for Food Security Service Learning** | Boston, MA **Nov 2018 - May 2019**
  - Served with The Urban Farming Institute, Rosies Place, The Greater Boston Food Bank, The Campus Kitchen at UMass Boston, and the Daily Table
  - Spent the year in educational workshops centering around the root causes of food insecurity and its intersection with other social injustices
- **Volunteer for Animal Welfare** | Homestead, FL **Oct 2018 - Mar 2019**
  - Served with The John Pennekamp Coral Reef State Park on creating ADA accessible parks, forest walks, and beaches
  - Prepared a site for native trees to house migratory birds in a once zoned park
  - Participated in weekly educational workshops centered on animal conservation and welfare

**Other Service Experiences:**

- Service Trip | *Hope of Life* | El Arco, Guatemala
- Service Trip for Youth Education | *Urban Promise* | Camden, NJ
- Kitchen Volunteer | *Community Servings* | Jamaica Plain

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## PRESENTATIONS

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- Northeastern University Masters of Science in Marine Biology Presentations | *Influences on Spatial & temporal*

*Variability in benthic Community Structure of Bocas del Toro Coral Reefs* | Northeastern University & Woods Hole Oceanographic Institution

- UMass Boston Annual Environmental Research Symposium | *Quantifying Microfibers in Boston Harbor Oysters* | UMass Boston Biological Oceanography Laboratory
- UMass Boston Honors College | *Presentation on Senior Honors Thesis: "Climate Change in East Boston: Its Impact and Community Outlook* | UMB School for the Environment, Paul Kirshen, PhD, and Sarah Mayorga DeGallo, PhD
- UMass Boston Beacon Student Success Symposium | *Studying Global Leadership in Glasgow, Scotland* | Glasgow Caledonian University in Glasgow, Scotland