

Colleen M. McMaken

Education

-
- M.Sc. Marine Sciences** - *Nova Southeastern University*, 8/19/2019 – 6/30/2022 GPA: 3.95 out of 4.00
Advisor: Jose V. Lopez, PhD.
Thesis: The microbiome characterization and comparison of loggerhead (*Caretta caretta*) and green (*Chelonia mydas*) sea turtle eggs in Broward County, Florida.
- B.S. Marine Biology & Biology** - *Nova Southeastern University*, 8/24/2015 – 5/10/2019 GPA: 3.59 out of 4.00
General Citation in Honors; Dean's List Winter 2016 & Fall 2018

Research Experience

9/12/2022 – Present **Research Assistant III** - *Marine Biological Laboratory*

(Hours per week: 40)

- Support NIH- and NSF-funded research by planning and conducting experiments, troubleshooting study designs, analyzing data, and contributing to scientific publications.
- Investigate rotifer biology, including mitochondrial morphology, lifespan and reproduction, and swimming behavior across genetic and environmental conditions.
- Maintain laboratory operations, including organism culturing, chemical inventory management, and training/supervision of interns, undergraduate researchers, and new employees.
- Evaluate and troubleshoot emerging molecular techniques, including CRISPR and RNAi, to investigate rotifer genetics.
- Developed a free, open-sourced software pipeline for analyzing rotifer swimming behavior.

5/11/2020 – 9/9/2022 **Sea Turtle Specialist II** - *Broward County Sea Turtle Conservation Program*

(Hours per week: 40, seasonal)

- Documented sea turtle nesting distribution and reproductive success data for local, state, and federal conservation agencies.
- Relocated imperiled nests and recorded nesting obstructions and sea turtle disorientation events associated with human-related disturbances, including artificial lighting and beach furniture.
- Responded to stranded sea turtles, transporting live turtles to appropriate rehabilitation facilities and salvaging deceased turtles for necropsy.
- Participated in public education and outreach through community events, informational tables, and presentations.

5/3/2021 – 9/9/2022 **Sea Turtle Researcher** - *NSU Conservation, Movement, & Ecosystem Dynamics Lab*

(Hours per week: 10)

- Conducted overnight beach surveys to monitor sea turtle nesting activity.
- Checked for existing flipper, satellite, living, and Passive Integrated Transponders (PIT) tags and assisted with tagging previously untagged sea turtles.
- Safely handled and restrained sea turtles for the collection of morphometric data, carapace and flipper biopsy samples, and blood samples.
- Assisted in laboratory processing of genetic and stable isotope samples.

8/19/2019 – 6/30/2022 **Graduate Thesis Researcher** - *NSU Microbiology & Genetics Laboratory*

(Hours per week: 20)

- Designed, organized, and conducted experiments to characterize the microbial composition of sea turtle eggs and investigate the transmission of potentially harmful bacteria into eggs.
- Performed microbiome sequencing using the Illumina MiSeq on sea turtle cloaca, egg, and sand samples.
- Authored and managed grant proposals, research permits, and regulatory reports.
- Led data curation, manuscript preparation, review, and editing for scientific publication.

5/13/2019 – 8/9/2019 **Research Assistant** - *NSU Microbiology & Genetics Laboratory*

(Hours per week: 20)

- Collaborated with Bok Tower Gardens' Rare Plant Conservation Program to investigate the soil microbiome associated with the endangered Rugel's pawpaw (*Deeringothamnus rugelii*).
- Performed microbiome sequencing using the Illumina MiSeq platform on soil samples.
- Analyzed sequencing data and environmental metadata, reported analytical results, and provided samples to collaborators for additional research.

8/21/2017 – 7/31/2022 Volunteer Research Positions - Nova Southeastern University

(Hours per week: 10)

- Shark tagging hammerhead and nurse sharks in the southeast Atlantic Ocean off of Fort Lauderdale, Florida (July 2022).
- Remotely operated vehicle (ROV) deployment to investigate the effects of dredging in the Port Everglades Inlet (June 2022).
- Microbiome analysis to determine the role of bacterial symbionts and bioluminescence in *Pyrosoma atlanticum* (August 2019-April 2020).
- DNA extractions for microbiome analysis to characterize the bacterial communities in Biscayne Bay, Florida (August 2018-April 2019).
- Periphyton sampling in Everglades National Park for nutrient and stable isotope analyses (November 2018).
- DNA extractions for microbiome analysis to characterize the bacterial communities in surface waters in South Florida (August 2017- April 2018).

Teaching Experience

8/12/2019 – 5/1/2022 Graduate Biological Sciences Teaching Assistant - *Nova Southeastern University*
1/7/2019 – 5/5/2019 Microbiology Laboratory Assistant - *Nova Southeastern University*

Skills

Languages and Platforms: R, Linux, GitHub, GraphPad Prism, ImageJ/FIJI, PRIMER-e, QIIME2, NCBI Sequence Read Archive, NCBI BLAST, KEGG, Ensembl, ArcGIS, QGIS, Microsoft Office Suite.

Laboratory Techniques: DNA & RNA extraction, Polymerase chain reaction (PCR), qPCR, Electrophoresis, Agilent TapeStation, NanoDrop, Qubit, Next Generation Sequencing library preparation & analysis, CRISPR, RNAi, Microinjection, Stable isotope sample preparation, Microplate assays, Culture growth & maintenance (bacterial, phytoplankton, & zooplankton), Light & fluorescent microscopy, Microbial staining, Spectrophotometry, Selective & differential microbial testing, Media & agar preparation, Dissections, Laminar Flow Hood operation & maintenance, Autoclave operation.

Field Work: Species identification, Specimen collection & preservation, Morphometric data collection, Animal handling & restraint, Remotely operated vehicle deployment, Marine species tagging (flipper, living, PIT, & satellite tags), ATV operation & maintenance, Trimble GPS.

Publications

1. Korm S., **McMaken, C.M.**, Calvo-Rubio, M., Liguori, A.L., Raftery, D., Djukovic, D., de Cabo, R., Promislow, D.E.L., and Gribble, K.E. Advanced maternal age alters offspring lifespan, reproduction, and health via changes in mitochondrial metabolism and morphology. In prep for *Nature Communications*.
2. **McMaken, C. M.**, Donertas, M., Profetto, A., Stone, E., Corey, E., Richters, E., Thornton, J., & Gribble, K.E. Bioinformatic screening and rapid in vivo testing of FDA-approved drugs for new targets in aging. In prep for *GeroScience*.
3. Bisack, K., Clay, P. M., Carr-Harris, A., Corvi, D., Richards, P. M., Weng, C., Colburn, L. L., Quigley, K., **McMaken, C. M.**, & Agar, J. Socio-Economic Factors and their Relationships with Loggerhead Sea Turtle Nesting Counts in Florida, USA. In review for *Endangered Species Research*.
4. Luviano Aparicio, N., Dryburgh, M., **McMaken, C. M.**, Liguori, A., & Gribble, K. E. (2025) Impact of histone post-translational modification inhibitors on lifespan, reproduction, and stress response in the rotifer *Brachionus manjavacas*. *PLoS One*, 20(10): e0324769. <https://doi.org/10.1371/journal.pone.0324769>
5. **McMaken, C. M.**, & Gribble, K. E. (2024). A free and user-friendly software protocol for the quantification of microfauna swimming behavior. *BioTechniques*, 76(5), 175–183. <https://doi.org/10.2144/btn-2024-0001>
6. **McMaken, C. M.**, Burkholder, D. A., Milligan, R. J., & Lopez, J. V. (2023). Potential impacts of environmental bacteria on the microbiota of loggerhead (*Caretta caretta*) and green (*Chelonia mydas*) sea turtle eggs and their hatching success. *MicrobiologyOpen*, 12(3), e1363. <https://doi.org/10.1002/mbo3.1363>

Presentations

- 2022 Florida American Society for Microbiology (FLASM) Annual Meeting (February 25-27)
Oral Presentation: “Microbial impacts on loggerhead (*Caretta caretta*) and green (*Chelonia mydas*) sea turtle hatching success”
- 2022 Halmos College of Arts & Sciences – Graduate Research Symposium (February 24-25)
Oral Presentation: “Microbial impacts on loggerhead (*Caretta caretta*) and green (*Chelonia mydas*) sea turtle hatching success”

Awards & Grants

2022 2nd Place Student Oral Presentations, Halmos College of Arts & Sciences Graduate Research Symposium
2021 – 2022 Nova Southeastern University 2021-2022 Presidential Faculty Research & Development Grant

Honor Societies & Appointments

2020 – 2021 Halmos College of Arts and Sciences Student Government Association – Treasurer
2018 Beta Beta Beta Biological Honor Society – Rho Rho Chapter
2017 Rho Rho Rho Marine Science Honor Society

Certifications

2018 Florida Master Naturalist - Wetlands, Uplands, & Coastal Modules
2016 PADI Open Water Scuba Certification

Other Employment History

2019 – 2021 Dock Attendant - *Fort Lauderdale International Boat Show*
9/2018 – 8/2019 Head Lifeguard - *Nova Southeastern University*
10/2017 – 9/2018 Lifeguard - *Nova Southeastern University*
2017 – 2018 Lifeguard - *LifeTime Fitness*
9/2016 – 5/2017 Fulfillment Assistant - *Nova Southeastern University*
9/2013 – 8/2017 Retail Clerk - *Yost Pharmacy*