

Margaret K. Bernish

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EDUCATION

University of South Carolina, Columbia — *Master's Student, Peng Lab*

AUGUST 2021 – MAY 2023

Master's student in marine science. Researched the role of various novel strains of marine fungi in biogeochemical cycling in salt marsh sediments and in the open ocean. Conducted functional genome annotation to identify genes used in fungal denitrification pathways and nitrous oxide production. Participated in regular outreach at the Riverbanks Zoo & Garden in Columbia, SC, educating the public on climate change and providing mentorship to local high school students interested in STEM fields. Successfully defended thesis, titled "Genomic Analysis of *Exophiala* sp. ETNP2018, a Marine Fungal Strain Isolated from an Oxygen Minimum Zone" on March 15th, 2023.

University of North Carolina, Chapel Hill — *Bachelor of Science*

AUGUST 2016 - MAY 2020

Quantitative biology major with a minor in marine sciences.
Graduated in May 2020.

RESEARCH EXPERIENCE

University of North Carolina, Chapel Hill— *Associate Researcher, Taylor Lab*

AUGUST 2019 - JULY 2021

Used bio-inspired engineering to study the perception and navigation solutions that animals have evolved to survive. Utilized computer programming and modeling in the study of magnetic reception in animals and bio-inspired navigation. Modeled the magnetic field in the Atlantic Ocean on MATLAB and visualized it with simulated data. Co-authored a scientific research article titled "A bioinspired navigation strategy that uses magnetic signatures to navigate without GPS in a linearized northern Atlantic Ocean: a simulation study." (DOI: 10.1088/1748-3190/abe7cd)

University of North Carolina, Chapel Hill— *Research Assistant, Marchetti Lab*

AUGUST 2017 - MAY 2020

Paid research position studying Southern Ocean diatoms through physiological and molecular analysis of iron and light limitation. Prepared environmental and culture samples to be sequenced with high-throughput sequencing technology. Executed techniques such as microscopy, RNA-seq TagSeq library preparation, cell counts, qPCR, trace metal clean technique, chemical reagent preparation, and DNA/RNA extractions. Gained valuable experience with Amplicon sequencing techniques and library prep, linear regressions, and data analysis.

Cincinnati Museum Center, Cincinnati — *Research Intern*

MAY 2017 - AUGUST 2017

Worked in a DNA lab with a zoologist, assisting in DNA extractions and sequencing. Helped with taxonomic identification and organization of the ichthyology collection. Assisted in field work and sample collection at the Edge of Appalachia.

AWARDS

Recipient of the SEOE Graduate Scholar Award in 2021.

Recipient of the Htheill Internship Award for biological research in October 2017.

Dean's List for three semesters at The University of North Carolina at Chapel Hill.

Carolina Research Scholar designation on transcript for inquiry-driven research.

SKILLS

Programming and data analysis.

Data visualization.

Great written and oral communication skills

COMPUTER SOFTWARE EXPERTISE

MATLAB, a scientific programming software.

Microsoft Excel, particularly its mathematical computation abilities.

C++, a high-level programming language.

Microsoft Office Suite

SQL, a tool for manipulating data in databases.

JOB EXPERIENCE

Columbia Museum of Art, Columbia, South Carolina— *Gallery Attendant*

FEBRUARY 2023 – MAY 2023

Ensuring that visitors at the Columbia Museum of Art have an enriching, enjoyable experience. Communicating with guests from different backgrounds and answering their questions about art and art history.

University of South Carolina, Columbia, South Carolina— *Treasurer of the Graduate Organization of the Earth, Ocean, and Environment*

AUGUST 2022 - PRESENT

Managing the budget for the graduate student organization associated with the School of the Earth, Ocean, and Environment. Utilizing funds to plan enriching events for graduate students studying marine science and geology. Participating in a committee to create an annual conference for graduate students in the School of the Earth, Ocean, and Environment for presenting their research to faculty, peers, and industry representatives.

Duke TIP, Beaufort, North Carolina— *Teaching Assistant at the Duke TIP Summer Studies at the Duke Marine Lab*

JUNE 2019 - JULY 2019

Held evening study sessions and classes for gifted middle school students interested in marine science.

Duke TIP, Decatur, Georgia— *Teaching Assistant at the Duke TIP CRISIS at Agnes Scott Program*

JUNE 2018 - JULY 2018

Educated gifted children interested in marine biology. Implemented a hands-on marine biology curriculum.

PUBLICATIONS

Taylor, B.K., **Bernish, M.K.**, Pizzuti, S.A. and Kehl, C.E., (2021). A bioinspired navigation strategy that uses magnetic signatures to navigate without GPS in a linearized northern Atlantic Ocean: a simulation study. **Bioinspiration & Biomimetics**. <https://doi.org/10.1088/1748-3190/abe7cd>

Pizzuti, S.A., **Bernish, M.K.**, Harvey A., Tourangeau L., Shriver C., Kehl, C.E., and Taylor, B.K. (2022). Uncovering how animals use combinations of magnetic field properties to navigate: a computational approach. **Journal of Comparative Physiology A**. <https://doi.org/10.1007/s00359-021-01523-0>

CONFERENCE PRESENTATIONS

Bernish, Margaret K. (2021) Surface and subsurface salinity variability during marine heatwaves along the East Coast of the United States. American Geophysical Union Fall Meeting, December 13th-17th, 2021, New Orleans, LA. (*Oral presentation*).

Bernish, Margaret K., Pizzuti, Susan (2020) Using magnetic signatures to navigate the North Atlantic, Southeast Regional Society for Integrative and Comparative Biology Meeting, November 14th, 2020. (*Virtual presentation*).

Moreno, Carly, **Bernish, Margaret K.**, Hernandez, Gustavo, Pierce, Emily, Marchetti, Adrian (2020) Effects of iron limitation on the elemental stoichiometry and molecular physiology of four Southern Ocean diatoms, Ocean Sciences Meeting, February 16th-21st, 2020, San Diego, CA. (*Oral presentation*).

