

# KATHERINE L. (HUDSON) GALLAGHER

EMAIL: KATHERINE.L.HUDSON@STONYBROOK.EDU

ORCID: 0000-0002-3076-8016

WEBSITE: KLGALLAGHER.GITHUB.IO

## EDUCATION

### University of Delaware

Ph.D., Oceanography

Lewes, DE

June 2017 – February 2022

Dissertation Title: A Potential Mechanism Sustaining the Biological Hotspot around Palmer Deep Canyon

Advisor: Dr. Matthew Oliver

**GPA: 4.0**

Relevant Coursework: Biological Oceanography, Physical Oceanography, Geological Oceanography, Chemical Oceanography, Statistics for Marine Sciences, Environmental Field Robotics, Physiology of Marine Organisms

### Northeastern University

Bachelor of Science in Marine Biology, Magna Cum Laude

Boston, MA

September 2012 – May 2017

#### Honors Distinction and Honors in the Discipline

**GPA: 3.76**

Relevant Coursework: Marine Biology, Ecology, Genetics & Molecular Biology, Organic Chemistry 1 & 2, Physics for Life Sciences 1 & 2, Calculus and Differential Equations for Biology Majors 1 & 2, Ecological Dynamics, Biostatistics

### Northeastern University Three Seas Program

September 2014 – May 2015

Field, lab, and course work at Northeastern's Marine Science Center (Nahant, MA), the Smithsonian Tropical Research Institute (Bocas del Toro, Panama), and University of Washington's Friday Harbor Laboratories (San Juan Islands, WA)

Relevant Coursework: Oceanography, Marine Botany, Marine Invertebrate Zoology, Experimental Design & Marine Ecology, Diving Research Methods, Biology & Ecology of Fishes, Coral Reef Ecology, Biology of Corals, Tropical Terrestrial Ecology, Ocean & Coastal Processes, Marine Birds & Mammals, Marine Conservation Biology, Physiological and Molecular Marine Ecology

## RESEARCH EXPERIENCE

### Stony Brook University

Senior Postdoctoral Associate – School of Marine and Atmospheric Sciences

Stony Brook, NY

September 2023 – Present

- Analyzing oceanographic and passive acoustic data from 15+ autonomous glider missions in R to examine baleen whale habitat use in the New York Bight
- Examining baleen whale habitat use in relation to ship strike and stranding data and wind energy lease areas
- Identifying different oceanographic regimes within the New York Bight using glider data and unsupervised clustering algorithms
- Building habitat suitability models for baleen whales using generalized additive models
- Supporting glider monitoring efforts in the New York Bight, including piloting Slocum gliders
- Preparing glider mission reports for New York State Energy Research & Development Authority

NSF Postdoctoral Research Fellow – Institute for Advanced Computational Sciences

February 2022 – Present

*Funded by the National Science Foundation (NSF) Office of Polar Programs Postdoctoral Research Fellowship Program*

- Running Regional Ocean Modeling System (ROMS) simulations and associated output processing scripts in R on Stony Brook University High Power Computing (HPC) Ookami cluster
- Designing modeling experiments in ROMS on the West Antarctic Peninsula to estimate krill distributions in the region and their impacts on penguin biogeography
- Analyzing ROMS output; satellite-based penguin diet estimates; and penguin colony location, size, and reproductive success data in R and MATLAB to groundtruth model data and predict habitat suitability based on prey distributions and predator population dynamics
- Building processing pipelines to examine connectivity of Antarctic krill populations using ROMS simulations
- Designing modeling experiments to determine potential sources and sinks for buoyant plastic pollution along the West Antarctic Peninsula
- Designing field campaigns to determine debris and plastic pollution distributions on the West Antarctic Peninsula
- Supervising high school students and undergraduates in research projects comparing modeled and observed krill distributions and examining minimum oceanographic requirements for penguin colonies

## University of Delaware College of Earth, Ocean, and Environment

Lewes, DE

Graduate Fellow – Ocean Exploration, Remote Sensing, and Biogeography (ORB) Lab

June 2017 – February 2022

- Examined the physical phenomena driving food web connectivity from phytoplankton to penguins within a submarine canyon along the West Antarctic Peninsula using interdisciplinary data sets (gliders, High Frequency Radar, acoustics, penguin tags, ROMS, LISST-HOLO1, Imaging Flow CytoBot) from NSF projects CONVERGE (2015) and SWARM (2020)
- Prepared, deployed, and piloted Slocum Electric gliders for missions in the Mid- and South Atlantic Bights, the Pacific Ocean, and the West Antarctic Peninsula (Total Missions to date: 12; Missions as primary pilot: 3)
- Compiled, analyzed, and visualized glider, ROMS, and other oceanographic data in R

## Palmer Station Long Term Ecological Research (LTER) Program

Palmer Station, Antarctica

Field Technician – Schofield Lab (C-019)

December 2019 – March 2020

- Collecting water samples and CTD profiles from a Niskin rosette in bi-weekly CTD and coupled acoustic and predator surveys in and around Palmer Deep Canyon
- Processing water samples for High Performance Liquid Chromatography (HPLC)
- Performing chlorophyll extraction, Fluorescence Induction and Relaxation (FIRE) analysis, and Imaging Flow CytoBot (IFCB) processing on water samples from bi-weekly surveys

## Northeastern University Marine Science Center

Nahant, MA

Student Researcher – Field Robotics Lab

January 2016 – May 2017

*Funded by the Beta Beta Beta Biological Honors Society Research Award and the Northeastern University Provost's Advanced Research/Creative Endeavor Award*

- Conducted an independent research project under Dr. Mark Patterson for an Honors Thesis investigating stratification dynamics in northern Massachusetts Bay
- Designed, constructed, and deployed moorings with Onset HOBO Water Temperature Pro V2 temperature loggers to visualize stratification dynamics in Nahant and Rockport, MA
- Constructed, programmed, deployed, and collected video data using an OpenROV v2.8

## Bermuda Institute of Ocean Sciences

St. George's, Bermuda

Research Experience for Undergraduates (REU) Program Student Researcher –  
Coral Reef Ecology and Optics Laboratory (CREOL)

August – December 2016

- Analyzed the drivers of coral biodiversity on Bermuda's coral reefs across spatial and temporal scales using long-term ecological datasets
- Developed code in R programming environment to calculate traditional diversity indices (alpha, gamma, beta) and zeta diversity across spatial scales
- Utilized constrained and unconstrained ordination methodologies to visualize the drivers of diversity change

## Woods Hole Oceanographic Institution

Woods Hole, MA

Research Assistant – Environmental Sample Processor (ESP) Lab, Anderson Lab

June 2015 – January 2016

- Aided in and prepared for deployment, groundtruth, and recovery cruises during the 2015 ESP field season
- Assisted in a joint ESP/Imaging Flow CytoBot (IFCB) experiment analyzing saxitoxin concentrations during the cell cycle of the harmful algae bloom-causing dinoflagellate, *Alexandrium fundyense*
- Prepared for and participated in the 2015 NOAA Cyst Cruise aboard the NOAA Ship *Henry B. Bigelow*
- Tested, maintained, and prepared ESPs for 2016 field season

## Northeastern University Marine Science Center

Nahant, MA

Volunteer Research Assistant – Bracken & Hughes-Kimbrow Labs

September 2013 – April 2014

- Assisted with graduate student research focused on intertidal alga *Fucus* growth, nutrient uptake, and genetic diversity
- Prepared experiments to analyze the ecological interactions of *Heterosiphonia japonica* in local ecosystems

## PUBLICATIONS

In Review or in preparation:

**Gallagher, K.L.**, Herman, R. Walton, K., Dinniman, M.S., Lynch, H.J. *Pygoscelis* penguin habitat suitability defined by different oceanographic niches. *In preparation.*

**Gallagher, K.L.**, Youngflesh, C., Dinniman, M.S., Che-Castaldo, C., Walton, K., Flynn, C., Hall, C., Lynch, H.J. Antarctic krill hotspots drive *Pygoscelis* penguin colony location and diet composition. *In preparation.*

Peer Reviewed:

- Gallagher, K.L.,** Cimino, M.A., Dinniman, M.S., Lynch, H.J. (2024) Quantifying Potential Marine Debris Sources and Potential Encounter Risk to Penguins on the West Antarctic Peninsula. *Environmental Pollution*. 123714. DOI: 10.1016/j.envpol.2024.123714
- Gallagher, K.L.,** Selig, G.M., Cimino, M.A. (2024) Descriptions and patterns in opportunistic marine debris collected near Palmer Station, Antarctica. *Marine Pollution Bulletin*, 199, 115952, DOI: 10.1016/j.marpolbul.2023.115952
- Gallagher, K.L.,** Dinniman, M., Lynch, H.J. (2023). Quantifying Antarctic krill connectivity across the West Antarctic Peninsula and its role in large-scale *Pygoscelis* penguin population dynamics. *Scientific Reports*, 13, 12072, DOI: 10.1038/s41598-023-39105-6
- Hudson, K.,** Oliver, M.J., Kohut, J., Dinniman, M., Klinck, J., Cimino, M.A., Bernard, K.S., Statescewich, H., Fraser, W. (2022) Subsurface Eddy Associated with Submarine Canyon Increases Quantities and Delivery of Simulated Antarctic Krill to Penguin Foraging Regions. *Marine Ecology Progress Series*. DOI: 10.3354/meps14211
- Hudson, K.,** Oliver, M. J., Kohut, J., Cohen, J. H., Dinniman, M., Klinck, J., Statscewich, H., Bernard, K., Fraser, W. (2022). Subsurface Eddy Facilitates Retention of Simulated Diel Vertical Migrators in a Biological Hotspot. *Journal of Geophysical Research: Ocean*, 127, 5. DOI: 10.1029/2021JC017482
- Hudson, K.,** Oliver, M. J., Kohut, J., Dinniman, M., Klinck, J., Moffat, C., Statscewich, H., Bernard, K., Fraser, W. (2021). A Recirculating Eddy Promotes Subsurface Particle Retention in an Antarctic Biological Hotspot. *Journal of Geophysical Research: Oceans*, 126, e2021JC017304. DOI: 10.1029/2021JC017304
- Shulman, I., Penta, B., Anderson, A., Moline, M. A., Oliver, M. J., Cohen, J. H., **Hudson, K.** (2020). Dynamics of bioluminescence potential and physical, bio-optical properties on the shelf and shelf-slope of the Delaware Bay. *Journal of Geophysical Research: Oceans*, 125, 9. DOI: 10.1029/2020JC016158
- Hudson, K.,** Oliver, M. J., Bernard, K., Cimino, M. A., Fraser, W., Kohut, J., Statscewich, H., & Winsor P. (2019). Reevaluating the canyon hypothesis in a biological hotspot in the Western Antarctic Peninsula. *Journal of Geophysical Research: Oceans*, 124. DOI: 10.1029/2019JC015195

Non-Peer Reviewed:

**Society for Women in Marine Sciences (SWMS) Blog**

*Futures in the Field*, July 2023, cowritten with Alex Stella

SWMS Blog: <https://swmsmarinescience.com/blog/>

*Exploring Orca Basin*, October 2023, written by E.R. Paris, edited by KLG

**NUScience Magazine**

Issues 12 – 22, 24 – 28, 30 – 32

Northeastern University, Boston, MA

Magazine archive: <https://issuu.com/nuscience>

INVITED TALKS

- Gallagher, K.L.** Prey, Predators, and Plastic: How Physics can Build Food Webs and Pollute Them. University of Connecticut Department of Marine Sciences Seminar. January 2024.
- Gallagher, K.L.** How Physics can Build Food Webs and Pollute Them. Rutgers University Department of Marine and Coastal Sciences Seminar. September 2023.
- Gallagher, K.L.** Physics + Behavior = Biogeography: A transdisciplinary approach to examining food web connectivity in the coastal ocean. University of New Hampshire. June 2023.
- Gallagher, K.L.** Physics + Behavior = Biogeography: A transdisciplinary approach to examining food web connectivity. Texas A&M College Station Oceanography Seminar. April 2023.
- Gallagher, K.L.** Physics + Behavior = Biogeography: A transdisciplinary approach to examining food web connectivity. Texas A&M Corpus Christi Marine Biology Seminar. April 2023.

**Gallagher, K.L.** Physics + Behavior = Biogeography: A transdisciplinary approach to examining food web connectivity in the coastal ocean. UMASS Boston Oceanography Seminar. February 2023.

**Gallagher, K.L.** From physics to penguins: an interdisciplinary approach to biogeography and ecological modeling. Ecology and Evolution Colloquium. October 2022.

**Gallagher, K.,** Lynch, H.J., Dinniman, M. *Pygoscelis* penguin colony locations along the West Antarctic Peninsula could be driven by high retention and accumulation of simulated krill. Stony Brook University Institute for Advanced Computer Sciences Five Year Review. September 2022.

**Hudson, K.,** Lynch, H.J., Dinniman, M. *Pygoscelis* Penguin Response to Potential Prey Retention along the West Antarctic Peninsula. Stony Brook University Institute for Advanced Computer Sciences Research Day. April 2022.

## PRESENTATIONS

\* - *presenting author*

S - *Student*

A - *award-winning presentation*

T - *travel funded by award*

### **International:**

**Gallagher, K.L.\***, Herman, R., Walton, K (S), Dinniman, M.S., Lynch, H.J. (2024). Persistent Prey Fields Drive Habitat Suitability for Central Place Foragers along the West Antarctic Peninsula. Ocean Sciences Meeting, New Orleans Louisiana. Scientific Poster.

**Gallagher, K.L.\***, Thorne, L., Flagg, C.N., McSweeney, J., Alnajjar, M., Warren, J.D., Kohut, J.T, Miles, N., Wilder, J., Baumgartner M. (2024) Using autonomous gliders to understand patterns and drivers of habitat use for baleen whales in the New York Bight. Ocean Sciences Meeting, New Orleans Louisiana. Oral presentation.

Walton, K\* (S), **Gallagher, K.L.**, Lynch, H.J. (2024) Marine Requirements for Penguin Colonization on the West Antarctic Peninsula. Ocean Sciences Meeting, New Orleans Louisiana. Scientific Poster.

Veatch, J.\*, Kohut, J.T., Oliver, M.J., **Gallagher, K.L.**, Fredj, E. (2024) Finding Marine Grocery Stores: A Lagrangian Approach to Prey Concentrating Features in Palmer Deep, Antarctica. Ocean Sciences Meeting, New Orleans Louisiana. Oral Presentation.

**Gallagher, K.L.\***, Cimino, M.A., Dinniman, M.S., Lynch, H.J. (2023) Quantifying Potential Plastic Pollutant Sources and Risks to Penguins on the West Antarctic Peninsula. Southern Ocean Observing System Symposium, Hobart, Tasmania. Scientific Poster.

**Gallagher, K.L.\***, Dinniman, M.S., Lynch, H.J. (2023) Quantifying Antarctic krill connectivity across the West Antarctic Peninsula and its role in large-scale *Pygoscelis* penguin population dynamics. Southern Ocean Observing System (SOOS) Symposium, Hobart, Tasmania. Oral presentation.

Oliver, M.J.\*, **Gallagher (Hudson), K.L.**, Kohut, J., Dinniman, M., Klinck, J., Cimino, M., Bernard, K., Statscewich, H., Fraser, W. (2023) Are biological hotspots farms or markets? The importance of resource retention for maintaining an Antarctic biological hotspot. Southern Ocean Observing System (SOOS) Symposium, Hobart, Tasmania. Oral presentation.

**Gallagher, K.L.\***, Walton, K.(S), Dinniman, M.S., Lynch, H.J. (2023) Krill hotspot persistence drives *Pygoscelis* penguin biogeography. Ecological Society of America 2023 Annual Meeting, Portland, Oregon. Oral presentation.

Oliver, M.J.\*, **Gallagher (Hudson), K.L.**, Kohut, J., Dinniman, M., Klinck, J., Cimino, M., Bernard, K., Statscewich, H., Fraser, W. (2023) Subsurface Eddy Facilitates Retention and Increases Particle Delivery of Simulated Diel Vertical Migrants in a Biological Hotspot. ASLO Aquatic Sciences Meeting, Palme De Mallorca, Spain.

**Gallagher, K.L.\***, Dinniman, M., Youngflesh, C., Che-Castaldo, C., Lynch, H.J. (2022) *Pygoscelis* penguin colony locations and diet compositions along the West Antarctic Peninsula could be driven by high retention and accumulation of simulated krill. American Geophysical Union Fall Meeting 2022, Chicago, Illinois. Oral presentation.

- Gallagher, K.L.\***, Lynch, H.J., Dinniman, M. (2022) *Pygoscelis* penguin colony locations along the West Antarctic Peninsula could be driven by high retention and accumulation of simulated krill. SCAR 2022 Open Science Conference. Virtual Oral Presentation.
- Hudson, K.\***, Oliver, M. J., Kohut, J., Cohen, M.S., Dinniman, M., Cimino, M.A., Klinck, J., Statscewich, H., Bernard, K., Fraser, W. A. (2022) Subsurface Eddy Facilitates Retention and Increases Particle Delivery of Simulated Diel Vertical Migrants in a Biological Hotspot. Virtual Oral Presentation. Ocean Sciences Meeting 2022.
- Connors, E.\*, **Hudson, K.**, Dutta, A., Trinh, R., Ducklow, H., Oliver, M., & Bowman, J. (2022) Investigating predicted bacterial production and associated metagenomic signature within Palmer Canyon Antarctica. Ocean Sciences Meeting 2022. Virtual Oral Presentation.
- Hudson, K.\***, Oliver, M. J., Kohut, J. H., Dinniman, M., Klinck, J., Moffat C., Statscewich, H., Bernard, K., Fraser, W. A. (2022) Recirculating Eddy Promotes Subsurface Particle Retention in an Antarctic Biological Hotspot. Ocean Sciences Meeting 2022. Virtual Oral Presentation.
- Hudson, K.\***, Oliver, M. J., Kohut, J., Dinniman, M., Klinck, J., Moffat, C., Statscewich, H., Bernard, K., Fraser, W. (2021) Modeled DVM Increases Retention and Particle Delivery to Penguin Foraging Areas Near Palmer Deep Canyon. Integrating Climate and Ecosystem Dynamics (ICED) Krill Modeling Workshop. Virtual Oral Presentation.
- Hudson, K.\***, M.J. Oliver, J. Kohut, M. Dinniman, J.M. Klinck, H. Statscewich, K. Bernard, W. Fraser. (2020) A Recirculating, Subsurface Eddy Increases Residence Times in an Antarctic Biological Hotspot. American Geophysical Union: 2020 Fall Meeting. Virtual eLightning Talk & Virtual Poster.
- Hudson, K.\***, M.J. Oliver, J. Kohut, M. Dinniman, J.M. Klinck, H. Statscewich, K. Bernard, W. Fraser. A Closed, Subsurface Eddy Increases Residence Times within Palmer Deep Canyon. (2020) SCAR (Scientific Committee for Antarctic Research) 2020 Online. Virtual Poster.
- Hudson, K.**, M.J. Oliver, J. Kohut, J.M. Klinck\*, & M. Dinniman. (2020) Diel Vertical Migration of Krill in a Subsurface Eddy may Promote Retention within Palmer Deep Canyon. Research talk. Ocean Sciences 2020, San Diego, CA. Oral Presentation.
- Hudson, K.\*** & T. Noyes. (2017) Examining the drivers of long-term change in benthic biodiversity cross the Bermuda reef platform. Ecological Society of America Annual Meeting 2017, Portland, OR. Scientific poster. (I)
- National:**
- Gallagher, K.L.\***, Cimino, M.A., Dinniman, M.S., Lynch, H.J. (2023) Quantifying Potential Plastic Pollutant Sources and Risks to Penguins on the West Antarctic Peninsula. SCAR US Antarctic Science Meeting. Virtual Oral Presentation.
- Hudson, K.\***, Oliver, M. J., Kohut, J., Dinniman, M., Klinck, J., Moffat, C., Statscewich, H., Bernard, K., Fraser, W. (2021) A Recirculating Eddy Promotes Subsurface Particle Retention in an Antarctic Biological Hotspot. SCAR US Antarctic Science Meeting. Virtual Oral Presentation.
- Hudson, K.\***, M.J. Oliver, K. Bernard, M. Cimino, W. Fraser, J. Kohut, H. Statscewich, & P. Winsor. (2019) Using a coordinated glider fleet to investigate drivers of a biological hotspot in the Western Antarctic Peninsula. 8<sup>th</sup> EGO Meeting & International Glider Workshop, New Brunswick, NJ. Oral Presentation (10-minutes).
- Hudson, K.\*** & M. Patterson. (2017) Alternative methods for observing stratification dynamics using remote sensing technologies on discrete and continuous time scales. Benthic Ecology Meeting 2017, Myrtle Beach, SC. Scientific poster.
- Regional/Local:**
- Hudson, K.\***, Oliver, M. J., Kohut, J., Cohen, J. H., Dinniman, M., Klinck, J., Statscewich, H., Bernard, K., Fraser, W. (2021) Subsurface Eddy Facilitates Retention of Simulated Diel Vertical Migrants in a Biological Hotspot. University of Delaware Graduate Student Government 10th Annual Graduate Student Forum. Virtual Oral Presentation.

**Hudson, K.\***, Oliver, M. J., Kohut, J., Dinniman, M., Cohen, J., Cimino, M.A., Klinck, J., Moffat, C., Statscewich, H., Bernard, K., Fraser, W. (2021) A subsurface eddy may drive the biological hotspot near Palmer Deep Canyon. WAP Science Extravaganza. Virtual Oral Presentation.

**Hudson, K.\***, M.J. Oliver, K. Bernard, M. Cimino, W. Fraser, J. Kohut, H. Statscewich, & P. Winsor. (2019) Re-evaluating the canyon hypothesis in a biological hotspot on the West Antarctic Peninsula. University of Delaware College of Earth, Ocean, and Environment Graduate Student Symposium. Oral Presentation (A)

**Hudson, K.\***, M.J. Oliver, K. Bernard, M. Cimino, W. Fraser, J. Kohut, H. Statscewich, & P. Winsor. (2019) Re-evaluating the canyon hypothesis in a biological hotspot on the West Antarctic Peninsula. University of Delaware DENIN Symposium. Research talk (10-minutes).

**Hudson, K.\***, M.J. Oliver, K. Bernard, M. Cimino, W. Fraser, J. Kohut, H. Statscewich, & P. Winsor. (2019) Re-evaluating the canyon hypothesis in a biological hotspot on the West Antarctic Peninsula. Polar-izing Your Science Impact Workshop, Newark, DE. Scientific poster.

**Hudson, K.\*** & M. Patterson. (2017) Alternative methods for observing stratification dynamics using remote sensing technologies on discrete and continuous time scales. Northeastern University Research, Innovation, and Scholarship Expo 2017, Boston, MA. Scientific poster.

**Hudson, K.\***. (2017) Determining drivers of biodiversity change: an REU co-op experience in Bermuda. Northeastern University College of Science Co-op Expo, Boston, MA. Scientific poster.

**Hudson, K.\***. (2016) Exploring the life cycle of ocean instrumentation: a co-op in the Environmental Sample Processor (ESP) lab. Northeastern University College of Science Co-op Expo, Boston, MA. Scientific poster.

## RESEARCH GRANTS

### Submitted:

**Assessing the vertical distribution on microplastics along the West Antarctic Peninsula** March 2024

*Requested Amount:* £6,000 (~\$7,500 USD)

*Funding Organization:* Antarctic Science LTD

*Goal:* To support analysis of microplastics samples collected from vertical profiles along the Peninsula to build better understanding of vertical microplastic distributions

**PORTAL - MaPping the DistributiOn of MicRoplasTics on the Antarctic PeninsuLa** March 2024

*Requested Amount:* \$98,180

*Funding Organization:* National Geographic Society

### *Goals:*

- Understand vertical and horizontal distributions of microplastics along the Peninsula in systematic survey aboard the *R/V Falkor (too)* in late 2024
- Develop citizen science monitoring protocols to monitor for microplastics

**Investigating the Distribution of Microplastics (~1 - 5000  $\mu\text{m}$ ) along the Antarctic Peninsula** February 2024

*Requested Amount:* \$60,000

*Funding Organization:* L'Oreal USA For Women in Science Postdoctoral Fellowship

*Goals:* To provide additional equipment, financial, and student support for Project PORTAL

### Selected for Funding:

**Advanced Cyberinfrastructure Coordination Ecosystem: Services & Support (ACCESS) Allocation** September 2022

Award Value: \$88,956

Title: Modeling the Physical Oceanography Adjacent to *Pygoscelis* Penguin Colonies along the West Antarctic Peninsula

Award Number: EES220028

- Provided resource allocation on the Ookami cluster at Stony Brook University for postdoctoral research

**National Science Foundation Office of Polar Programs Postdoctoral Research Fellowship** February 2022

Award Amount: \$289,335

Length: 24 months

Title: *Pygoscelis* Penguin Response to Potential Prey Retention along the West Antarctic Peninsula

Award Number: 2138277

- Supported postdoctoral research at Stony Brook University from 2022-2024

**Northeastern University Provost's Advanced Research/Creative Endeavor Award**

Fall 2015

Amount: \$1,300

- Supported Honors Thesis research at Northeastern University from 2016-2017

**Beta Beta Beta Biological Honors Society Research Award**

Fall 2015

Amount: \$2,200

- Supported Honors Thesis research at Northeastern University from 2016-2017

Not Selected for Funding:

**Investigating the Distribution of Microplastics (~1 - 5000  $\mu\text{m}$ ) along the Antarctic Peninsula**

December 2023

*Requested Amount:* N/A

*Funding Organization:* Schmidt Ocean Institute

*Goals:*

- Understand vertical and horizontal distributions of microplastics along the Peninsula in systematic survey aboard the *R/V Falkor (too)* in 2025
- Develop citizen science monitoring protocols to monitor for microplastics

TRAVEL AWARDS

**University of Delaware College of Earth Ocean and Environment Stavros Howe Memorial Grant**

May 2019

Amount: \$2,600

- Supported travel to AniMove 2019 Summer School

**Rocky Mountain Biological Laboratory REU Travel Award**

July 2017

Amount: \$1,000

- Supported travel to Ecological Society of America Annual Conference in 2017

**Bermuda Institute for Ocean Sciences Educational Programs Travel Award**

July 2017

Amount: \$1,000

- Supported travel to Ecological Society of America Annual Conference in 2017

**Northeastern University Presidential Global Scholarship**

Spring 2016

Amount: \$6,000

- Supported travel and housing at Bermuda Institute of Ocean Sciences in 2016

STUDENTS MENTORED

Stony Brook University:

Undergraduates:

- Katherine Walton, Data + Computing = Discovery! Research Experience for Undergraduates (REU) student (Summer 2023 - Present)
- Bodin Kim-Dailey, undergraduate intern (Spring 2023 – Fall 2023)
- Beatrice Wicker, undergraduate intern (Fall 2022)

High School Students:

- Tej Parekh, high school student (Fall 2022 – Fall 2023)

TEACHING & MENTORING EXPERIENCE

Graduate Level & Higher:

**PhD Career Ladder Program (PCLP)**

Stony Brook, NY

Group Leader

Fall 2023

- Leading discussions on career participation, including identifying transferable skills, informational interviews, and resume/CV writing for postdoctoral associates at Stony Brook University

**CEOE Empathic Peers Offering Wisdom, Encouragement, and Resources (EmPOWER)**

Lewes, DE

Lead Mentor for SMSP Lewes Spring 2020 – 2021  
➤ Acted as a resource and mentor for incoming graduate students during their first year in graduate school

Undergraduate:

**Society for Women in Marine Sciences, Stony Brook Chapter** Stony Brook, NY  
Mentor Spring 2023

- Serving as a mentor for undergraduate students in the marine sciences
- Providing resources, internship, and career advice

**Share Your Skills Graduate Student Organization** Lewes, DE  
Member Spring 2020 – 2021

- Designed and built presentations on R statistical and graphic basics to advanced undergraduates
- Facilitated breakout room discussions on applying to graduate school

**Bermuda Institute of Ocean Sciences** St. George's, Bermuda, October 2016

- Presented examples of ordination methodologies in R using vegan package
- Tutored students with ANOVA analysis in R

**Northeastern University Marine Science Center** Nahant, MA  
Teaching Assistant for Diving Research Methods April 2016

- Supervised and assisted student SCUBA divers during diving sessions and demonstrated necessary skills
- Filled oxygen tanks and prepared tasks for student divers to complete while diving

**Northeastern University Husky Ambassadors** Boston, MA  
Member of Husky Development Committee January – April 2016 & January – April 2017

- Provided constructive feedback on undergraduate-led campus tours
- Assisted in monthly organizational meetings and trainings

**Northeastern University Honors Program** Boston, MA  
Enhancing Honors Mentor September – December 2013

- Served as a mentor for incoming freshmen students in the honors program
- Facilitated discussions and group activities

K-12:  
**High School Women in Science and Engineering (WISE)** Stony Brook, NY  
Instructor Fall 2022 – Spring 2023

- Designed and taught short-course (10 sessions) to teach high school students about biological and physical oceanography to high-school seniors
- Served as a mentor for independent research projects

**Science Club for Girls** Cambridge, MA  
Mentor Scientist September – December 2012

- Taught an ocean science curriculum in an after-school program aimed at getting 5<sup>th</sup> grade girls interested and involved in science, technology, engineering, and math (STEM) fields

HONORS

3<sup>rd</sup> Place presentation at 2023 Stony Brook University Postdoc Spotlight November 2023  
Letters to a Pre-Scientist Excellent Explanations Award July 2023  
E. Sam Fitz Award May 2023

*The E. Sam Fitz Award recognizes a well-rounded individual who shows evidence of high academic achievement, professional service, and community service from the School of Marine Science and Policy in the College of Earth, Ocean, and Environment at the University of Delaware*

University of Delaware Doctoral Fellowship July 2020 – July 2021  
2<sup>nd</sup> Place Student Talk at 2019 CEOE Graduate Student Symposium April 2019  
University of Delaware Woman of Promise 2019 April 2019  
Patricia and Charles Robertson Graduate Fellow June 2017 – February 2022  
NSF Graduate Research Fellowship Honorable Mention Spring 2017



## PROFESSIONAL SERVICE

### **Peer Reviewer for:**

- *Oceanography & Limnology*
- *Deep-Sea Research Part I*
- *Geophysical Research Letters*
- *Journal of Geophysical Research: Oceans*
- *PLoS One*

### **Society for Women in Marine Sciences (SWMS) Steering Committee**

Spring 2023 – Present

#### Communications Lead

- Managing SWMS online presence, including website, email, and social media (Twitter, Instagram, Facebook)
- Creating bi-monthly newsletter for members providing updates on funding opportunities and webinars
- Initiating contact with partner organizations (Black in Marine Science, Black Women in Ecology, Evolution, and Marine Sciences, and others) to increase collaborations between organizations
- Soliciting and editing blog and social media content from SWMS Chapters

### **CEOE Empathic Peers Offering Wisdom, Encouragement, and Resources (EmPOWER)**

Lewes, DE

#### Steering Committee Chair

Spring 2020 – 2021

- Chaired inaugural CEOE EmPOWER Steering Committee, led Steering Committee meetings
- Recruited Peer Mentors and facilitated matching of mentor-mentee pairs
- Designed and facilitated department/campus based and college-wide stress relieving events, including virtual game and trivia nights
- Designed and facilitated professional development events, including workshops on imposter syndrome (chaired panel and breakout room discussions on 11/11/2020) and mental resilience and wellness (5/5/2021)

### **CEOE Lewes Graduate Student Association**

Lewes, DE

#### Co-chair

Spring 2020 – Spring 2021

- Facilitated department-wide happy hours to build community between students and faculty
- Organized college-wide apparel orders and virtual graduate student symposium

### **CEOE Society for Women in Marine Sciences (SWMS) Chapter**

Lewes, DE

#### Co-chair

Fall 2018 – Spring 2020

- Led group discussions on being a minority in marine sciences
- Organized fund raising events and collaborated with other university chapters on a workshop on science communication

### **Northeastern University Office of New Student Orientation**

Boston, MA

#### Orientation Leader

May – August 2013

- Worked as a member of a team to serve as a resource for incoming students and families
- Led student groups through 2-day orientation to get acclimated to the university

## WORKSHOPS & ADDITIONAL COURSEWORK

### **The Inclusive STEM Teaching Project**

October – November 2023

- Seven-week online course to improve awareness, self-efficacy, and ability to create inclusive STEM learning environments
- Participated in synchronous discussion group on course topics

### **AGU Postdoctoral Research Fellowship Program Leadership Academy and Network for Diversity and Inclusion in the Geosciences**

January 2022 – October 2023

- Participated approximately 80 hours of in-person and virtual workshops on diversity, equity, and inclusion (DEI) subjects such as inclusive mentoring, implicit bias, and similar DEI topics

### **2023 Belonging, Accessibility, Justice, Equity, Diversity, and Inclusion (BAJEDI) Workshop**

October 2023

Online workshop hosted by the Polar Early Career Community Office and THRIVE Lifeline

- Learning how to build actionable items to increase BAJEDI in polar science

### **Foundations of Science Communication I**

Spring 2023

Synchronous online audited course through the Alan Alda Center for Communicating Science at Stony Brook University

- Learned theater-based techniques to excite, engage, and encourage audiences to want to learn more about science

### **Research Mentoring for Postdocs**

Spring 2023

- Completed workshop grounded in evidence-based mentoring training curriculum from the Center for the Improvement of Mentored Experiences in Research (CIMER)

### **Scientists Teaching Science**

Summer 2022

Asynchronous online course

- Learned active-learning and inquiry-based techniques for teaching science, technology, engineering, and math (STEM) topics
- Learned how to design effective STEM courses

### **Delmarva SWMS Symposium: Diving into Science Communication**

Cambridge, MD

Held at University of Maryland, Horn Point Laboratory

September 13-14 2019

- Participated in discussions on science communication and women in marine science
- Facilitated an outreach activity for 6-12 grade girls on physical oceanographic and coastal processes

### **AniMove Summer School 2019**

New Haven, CT

Held at Yale University

June 2019

- Learned animal movement analysis techniques using R statistical analysis, including the move package
- Analyzed penguin movement data and presented on preliminary findings

### **Polar-izing Your Science Impact Workshop**

Newark, DE

Held at University of Delaware

January 9 – 11 2019

- Learned science communication tools and techniques in the context of polar science and research

### **Marine Technology Society Glider School**

New Brighton, NJ

Held at Rutgers University

June 12 – 16 2017

- Learned how to operate and pilot autonomous underwater Slocum gliders

## OUTREACH EXPERIENCE

### **Skype a Scientist**

2023 – Present

- Presenting research topics and general science ideas to K-12 classrooms virtually

### **Letters to a Pre-Scientist**

2022 - Present

- Pen pal program aimed to introduce middle school students from underrepresented groups to STEM fields

### **Delmarva SWMS Symposium: Diving into Science Communication**

Cambridge, MD

One-time event on September 14, 2019 at University of Maryland, Horn Point Laboratory

- Facilitated an outreach activity for 6-12 grade girls on physical oceanographic and coastal processes using model ecosystems

### **DigiGirlz Day 2019**

Georgetown, DE

One-time event on May 15, 2019 at Delaware Technical Community College – Georgetown Campus

- Facilitated activity demonstrating neutral buoyancy and glider ballasting procedures to middle school girls interested in STEM fields
- Facilitated a glider construction activity using SeaGlide kits for a small group

### **Milford Central Academy Science Night**

Milford, DE

One-time event on January 18, 2018 at Milford Central Academy

- Facilitated activity demonstrating neutral buoyancy and glider ballasting procedures to K-12 students

**University of Delaware Coast Day** Lewes, DE  
Annual event at the University of Delaware Hugh R. Sharp Campus; participated on October 8, 2017, October 7, 2018, and October 6, 2019

- Presented lab research in 30-minute presentations in Global Visualization Lab
- Explained Slocum gliders and research conducted in Robotics Discovery Lab

**Public Tours of University of Delaware Hugh R. Sharp Campus** Lewes, DE  
50+ Tours conducted between June 2018 and February 2022

- Facilitated tours of Global Visualization Lab for members of the public (including local Boy and Girl Scout Troops, school groups, special interest groups, etc.)
- Described research activities, glider deployments, and public data sets

**Delaware SeaGrant Climate Change Teacher Workshop** Lewes, DE  
Annual event at the University of Delaware Hugh R. Sharp Campus; participated on June 26-28, 2018 and June 25, 2019

- Assisted teachers in data collection and presentations

**National Ocean Sciences Bowl (NOSB) Volunteer** Boston, MA and Lewes, DE  
Participated in Blue Lobster Bowl (2014, 2016-2017) and Chesapeake Bay Bowl (2018)

- Served multiple roles (Team Challenge Grader, Science Judge, Moderator, Scorekeeper) to facilitate NOSB competitions for competing students

## ORGANIZATIONS

**Society for Women in Marine Sciences (SWMS)** 2017 – Present

- Steering Committee (2023 – Present)  
Communications Lead (2023 – Present)
- Stony Brook University Chapter (2022 – Present)
- University of Delaware Chapter (2017 – 2022)  
Co-chair: October 2018 – 2019

**American Geophysical Union** 2020 – Present

**Association of Polar Early Career Scientists** 2020 – Present

**UD CEOE Lewes Graduate Student Association** 2017 – 2022  
Co-chair: May 2020 – 2021

**CEOE Empathic Peers Offering Wisdom, Encouragement, and Resources (EmPOWER)** 2020 – 2021

- Chair: Spring 2020 – Spring 2021
- Lead Mentor SMSF Lewes: Spring 2020 – Spring 2021

**Beta Beta Beta Biological Honors Society Chi Delta Epsilon Chapter** 2014 – 2017

**Northeastern University NUScience Magazine** 2012 – 2017

- President: January – April 2017
- Editor-in-Chief: May – December 2014, January – May 2016
- Editor: September 2013 – April 2014
- Staff Writer: January – April 2013

**Northeastern University Husky Ambassadors** 2012 – 2017

- Husky Development Committee: January – April 2016, January – April 2017
- Programming Committee: September 2013 – April 2014

**Northeastern University Marine Biology Club** 2012 – 2017

- President: 2013 – 2014

## AT-SEA EXPERIENCE

**R/V Hadar, Palmer Station** Antarctica  
December 2019 – March 2020: Bi-weekly CTD casts and water sampling for LTER C-019; Bi-weekly acoustic and predator surveys for LTER C-019 and Project SWARM

**R/V Hugh R. Sharp, University of Delaware** Lewes, DE  
April 26 – May 9, 2018: Member of science crew for InTro 2018 cruise (Chief Scientist: Dr. Brad Penta); responsible for zooplankton net sampling

**R/V Joanne Daiber, University of Delaware**

Lewes, DE

June 2017 – December 2018: Several day-long cruises to deploy and/or recover autonomous underwater vehicles

March 2019: Day-long cruise to test LISS-HOLO1 for deployment during Project SWARM

**R/V Sea Dance, Bermuda Institute of Ocean Sciences**

St. George's, Bermuda

September – November 2016: Several day-long cruises to collect water samples for DNA processing, ocean acidification, and nutrient testing; and deploy and/or recover underwater camera arrays

**R/V Kraken, Northeastern University Marine Science Center**

Nahant, MA

May – August 2016: Several day-long cruises to test and deploy moorings and OpenROV for Honors Thesis

**NOAA Ship Henry B. Bigelow, NOAA**

Newport, RI

November 9 – 19, 2015: Member of science crew for annual NOAA *A. fundyense* cyst cruise in the Gulf of Maine

**R/V Tioga, Woods Hole Oceanographic Institute**

Woods Hole, MA

June 15 – 19, 2015: Deployment ESPjake and collection of *A. fundyense* samples

July 6 – 9, 2015: Collection of *A. fundyense* samples to groundtruth ESPjake

August 1 – 7, 2015: Collection of *Pseudo-nitzschia* samples

## SKILLS

**Laboratory:** Opening and ballasting Slocum gliders, pipetting, dissections, culture maintenance, PAM fluorometry, light microscopy, water filtering, chlorophyll extraction, Fluorescence Induction and Relaxation (FIRe), Imaging Flow Cytobot processing

**Field:** Deployment and recovery of Slocum gliders, sample collection via CTD/Niskin rosette, setting and retrieving traps/settling plates, population counts via quadrat/transect, species identification, organism tagging/measuring, water sampling and quality analysis, video surveying, sediment sampling via Craib corer

**Computer:** Familiar with PC and Mac operating systems; adept at Microsoft Office, Image J, R (statistical analysis and programming); basic knowledge of Adobe Illustrator, ArcGIS

## CERTIFICATIONS

- Carpentries Instructor
- NAUI Advanced Open Water Diver
- Basic Mariner Training (course taken at SUNY: Maritime in August 2022)