

# VICTORIA M. FULFER

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## **EDUCATION**

### **Ph.D. in Oceanography**

2020 - 2024

*In progress*; qualifying and comprehensive exams complete; expected completion: May 2024

University of Rhode Island Graduate School of Oceanography (URI-GSO)

Advisor: J. P. Walsh; GPA: 4.0/4.0

### **Master of Science in Oceanography**

2017 - 2020

University of Rhode Island Graduate School of Oceanography (GSO)

Advisor: Steven D'Hondt; GPA: 3.98/4.0; Received December 2019

### **Bachelor of Science in Cell and Molecular Biology**

2012 - 2016

University of Rhode Island, College of the Environment and Life Sciences

GPA: 3.64/4.0; Dean's List; Centennial Scholar; Magna Cum Laude

## **RESEARCH EXPERIENCE**

### **Visiting Researcher, National Oceanography Centre, Southampton, UK**

March 2023 – July 2023; Collaborators: Katsiaryna Pabortsava and Stefan Raimund

I was hired by The Ocean Race, a high profile around-the-world sailing race, to analyze surface water samples being collected as the boats race around the world for microplastic contamination. I optimized extraction, digestion, and identification methods using  $\mu$ FT-IR scanning microscopy/spectroscopy and image analyses tools to measure and identify all anthropogenic particles and polymer types present in each seawater sample.

### **Time Series of Shoreline Plastic Pollution in Nha Trang, Vietnam**

September 2022 – Present; Research Advisor: J. P. Walsh

Through a Fulbright Research Fellowship, I led a 15-week field campaign to complete a time series of macro- and microplastic pollution on the shorelines of Nha Trang, Khanh Hoa, Vietnam. Plastic pollution levels and environmental data were compiled to understand the seasonal changes in on- and offshore transport of plastic debris in Nha Trang Bay. Additionally, sediment cores were collected from the Mekong Delta and offshore Vietnam to assess riverine and offshore transport of pollution.

### **Shore to Seafloor: History, Sources, & Fate of Plastic Pollution in Narragansett Bay, RI**

March 2021 – Present; Research Advisor: J. P. Walsh

I studied the distribution of plastics in the sediment from Narragansett Bay to the Northeast Atlantic shelf. First, I quantified the distribution of microplastic deposition on shorelines and in subaqueous sediments. Second, I used sediment cores to investigate the history of microplastic pollution in the Bay. Finally, I used bathymetric scanning (multibeam and sidescan) and high-resolution sampling to study sediment, microplastic, and trace metal depositional patterns and transport in the lower Providence River. Plastic samples were analyzed using a combination of Raman and  $\mu$ FT-IR spectroscopy, trace metals using ICP-MS, radioisotopes ( $^{137}\text{Cs}$ ,  $^{210}\text{Pb}$ ) using alpha and gamma spectrometry, and organic carbon using loss on ignition (LOI; bulk organic matter) and a Costech 4010 Elemental Analyzer (TOC).

### **Microzooplankton Grazing on Microplastics**

January 2020 – March 2021; Research Advisor: Susanne Menden-Deuer

I studied the effect of microplastic ingestion on the growth and grazing rates of heterotrophic dinoflagellates in the laboratory using a combination of fluorescence activated cell sorting, flow cytometry, particle counting (Coulter Counter), and epifluorescence microscopy.

## **Global Respiration in Subseafloor Sediment**

May 2016-November 2019; Research Advisor: Steve D'Hondt

I calculated depth-integrated respiration rates from subseafloor sediment chemical measurements to develop a global model of respiration in subseafloor sediment and calculate the total respiration of the entire subseafloor biosphere.

## **TEACHING & EDUCATIONAL OUTREACH**

**Visiting Lecturer, Nha Trang University, Nha Trang, Vietnam;** September - December 2022

Ph.D. Program in Coastal Ocean Science and Management

Topics covered: Marine governance and spatial planning; Special area management plans; Ocean multi-use frameworks and challenges; science communication

**Adjunct Faculty, Roger Williams University, Bristol, RI;** August 2021 – December 2022

Department of Biology, Marine Biology and Environmental Science

**Mentor to Undergraduate Research Intern;** May 2021 – September 2022

**URI Diversity and Inclusion Badge Program Facilitator;** September 2020 - Present

Develop and facilitate workshops for graduate students completing the DIBP badge program.

*Fundamentals of Diversity: Social Identity, Power, and Privilege;* workshops led to date: 9

*Racism, Climate Change, and Environmental Justice;* workshops led to date: 7

**Narragansett Bay Classroom Instructor;** 2018 – Present

Develop and teach ocean science programs to K-8<sup>th</sup> grade classes.

**Proficiency in Ocean Data Science (PODS);** January 2017 – 2019

Member of a team developing research-based courses for undergraduates to help students gain analytical, coding and statistical skills for obtaining and analyzing marine science data; co-teacher of first 2 courses in 4 course series

**Mentor to High School Intern;** May - September 2017

Mentored a high school intern on an environmental science project.

## **AWARDS & FELLOWSHIPS**

Fulbright U.S. Student Program – Research Fellowship, Vietnam (Sept 2022 – present)

NASA Rhode Island Space Grant Consortium Graduate Fellowship (2021 – 2022)

American Geophysical Union Voices for Science Policy Fellowship (2021 – 2022)

Robert P. & Dolores C. McKenna Graduate Scholarship, URI-GSO (2020)

Germaine & Francis Webb Graduate Fellowship in Oceanography, URI-GSO (2019)

Henry S. Farmer Award in Biological Oceanography, URI-GSO (2018)

## **PUBLICATIONS**

**V. M. Fulfer** & J. P. Walsh. Extensive estuarine sedimentary storage of plastics from city to sea: Narragansett Bay, Rhode Island, USA. *Scientific Reports* **13**, 10195 (2023).

<https://doi.org/10.1038/s41598-023-36228-8>

**V. M. Fulfer** and S. Menden-Deuer. Heterotrophic Dinoflagellate Growth and Grazing Rates Reduced by Microplastic Ingestion. *Frontiers in Marine Science*. (2021).

S. D'Hondt, R. Pockalny, **V. M. Fulfer**, A. J. Spivack. Subseafloor life and its biogeochemical impacts. *Nature Communications* **10**, 3519 (2019).

**V. M. Fulfer**, R. Pockalny, and S. D'Hondt. Global respiration in subseafloor sediment. *PNAS* (*in review*).

**V. M. Fulfer**, Corbett, R., Walsh, J. P. A Century of Microplastic Deposition in an Urban Estuary, Narragansett Bay, RI, (*in prep.*)

**V. M. Fulfer**, Nguyen, Kim Anh, Walsh, J. P. A monsoonal time-series of macroplastic debris deposition on the shorelines of Nha Trang, Vietnam (*in prep.*)

## **INVITED PRESENTATIONS**

**Fulfer, V.M.** *Suffocating: The plastic problem in Vietnam, from single-use to microplastics.* Vietnam Embassy Seminar, Da Lat, Vietnam (December 5, 2022)

**Fulfer, V.M.** and J. P. Walsh. *Examining Coastal Microplastics: Insights from the U.S. (Rhode Island) and Planned Work near Nha Trang.* Oral Presentation. 13th Scientific Conference of University of Science, Viet Nam National University Ho Chi Minh City (VNUHCM-US-Conf'22). Ho Chi Minh City, Vietnam (November 24, 2022)

**Fulfer, V.M.** and J. P. Walsh. *Examining Coastal Microplastics: Insights from the U.S. (Rhode Island) and Planned Work near Nha Trang.* Bien Dong Conference, Nha Trang Institute of Oceanography, Nha Trang, Khanh Hoa, Vietnam (September 14 2022)

**Fulfer, V.M.** *The Impact of Microplastic Ingestion on Heterotrophic Dinoflagellate Growth and Grazing Rates.* Bien Dong Conference, Nha Trang Institute of Oceanography, Nha Trang, Khanh Hoa, Vietnam (September 14 2022)

**Fulfer, V. M.,** Pockalny, R. and S. D'Hondt. *Global Patterns of Net Respiration in Subseafloor Sediment.* Fall 2019 C-DEBI Meeting, Monterey, CA (Nov 12- 14, 2019)

## **SELECTED PRESENTATIONS**

**Fulfer, V. M.** and J.P. Walsh. *Plastic Distributions and Transport through the Providence River and Narragansett Bay, RI.* Oral Presentation. Ocean Sciences Meeting (March 3, 2022).

**Fulfer, V. M.** *The Importance of Funding Science in a Rapidly Changing World.* Presented to Senator Sheldon Whitehouse, Senator Jack Reed, and Representative Jim Langevin; *virtual* (May 12, 14 & 21, 2021)

**Fulfer, V. M.** *Research at Sea during the COVID-19 Pandemic: NES-LTER EN655 Recap.* Oral Presentation. NES-LTER Summer Meeting. *virtual* (July 31, 2020)

**Fulfer, V. M.,** Carolyn Harris, Megan Mullis, Mary Sabuda, Alex L. Sessions, Victoria J. Orphan, Woodward Fischer, et al., *Biogeochemical Sulfur Cycling in Hypersaline Mono Lake Sediments.* Poster. AGU Fall 2018 Meeting (December 10- 14, 2018)

## **FIELD EXPERIENCE**

### **Field Experiences**

Sediment and water sampling in estuary and salt ponds aboard R/V *Cap'n Bert*

Bathymetric scanning and sediment sampling aboard pontoon vessel

Sediment sampling and shoreline plastic transects, Nha Trang, Vietnam

Sediment, microbial mat, and water sampling, Mono Lake, CA

### **Oceanographic Cruises**

**NES-LTER, R/V Endeavor;** Aug. 2019, Feb. 2020; July 2020, Oct. 2020, Jan. 2021

**EN622 R/V Endeavor;** September 2018; 18 days; Co-Chief Scientist

**EN610 R/V Endeavor;** March 2018; 7 days

**EN710 R/V Endeavor;** October 2023; 4 days

## **REFERENCES**

J. P. Walsh, Professor of Oceanography, Director of Coastal Resources Center, URI-GSO  
[jpwalsh@uri.edu](mailto:jpwalsh@uri.edu), +1 401-874-6233

Kelton McMahon, Associate Professor of Oceanography, URI-GSO  
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Robert Pockalny, URI-GSO Associate Dean of Academic Affairs; Associate Marine Research Scientist  
[rpockalny@uri.edu](mailto:rpockalny@uri.edu); +1 401-874-6926