

# Diana N. Fontaine

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## EDUCATION

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**University of Rhode Island – Graduate School of Oceanography** 2018 – present

Ph.D. Candidate: Biological Oceanography

*Dissertation:* From coast to open ocean: drivers of phytoplankton composition and net primary production–Advisor: Dr. Tatiana Rynearson

**University of San Diego** 2012 – 2016

B.A. Marine Science, History Minor, *Magna Cum Laude*

*Study Abroad:* Art History, Florence University of the Arts January 2014

*Senior Honors Thesis:* Temporal and Spatial Patterns of Barnacle Settlement within the Southern, CA Rocky Intertidal–Advisor: Dr. Nathalie Reyns

## EXPERIENCE

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**University of Rhode Island – Graduate School of Oceanography (URI-GSO)** Narragansett, RI  
*Graduate Research Assistant* 2018 – present

Apply both field and lab-based methods to examine the environmental drivers of phytoplankton community composition and net primary productivity (NPP). Carry out field-based incubation experiments to measure NPP using carbon-13 and help with microzooplankton grazing incubations as part of the Northeast US Shelf Long Term Ecological Research (NES-LTER) Program. Assist with phytoplankton culture care and experiments in the lab. Served as team lead for research cruises and mentored students both at sea and in the lab.

**Running Tide Technologies, Inc.** Portland, ME  
*Biological Oceanography Intern* Summer 2022

Assisted on multiple projects involving ocean carbon dioxide removal. Helped build the company's knowledge base and consulted on projects involving pelagic ecology. Co-authored Running Tide's first Environmental Impact Assessment.

**Smithsonian Environmental Research Center** Edgewater, MD  
*Biological Science Technician, Marine Invasions Laboratory* 2016 – 2018

Conducted research as a plankton analyst to test Ballast Water (BW) management systems. Performed domestic and international shipboard BW management compliance testing in accordance with United States Coast Guard regulations. Additionally, performed lab experiments on plankton culture experiments resulting in peer-reviewed publications.

**University of San Diego** San Diego, CA  
*Undergraduate Research Assistant* 2014 – 2016

Examined how physical oceanographic processes influence barnacle larval transport from offshore to the rocky intertidal. Sampling involved both collecting larval samples on small boats in coastal waters and settlement plates from the rocky intertidal which evolved into my honors senior thesis and resulted in various research presentations.

University of San Diego  
Undergraduate Teaching Assistant

San Diego, CA  
2014 – 2015

Served as a teaching assistant for General Chemistry lab. Trained students on lab procedures, monitored their progress throughout the lab period and assisted when necessary.

## RESEARCH SKILLS

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### Lab approaches

- Benchwork: stable isotope sample preparation and processing, microscopy, DNA extraction, polymerase chain reaction, gel electrophoresis, sample preparation for sequencing
- Plankton culturing: cell transfers, media preparation, assess growth via fluorescence and microscopy
- Computer-based: bioinformatic analysis and data processing for 18S and 16S amplicon sequences

### Field approaches

- Various sampling types: net sampling, niskin sampling, intertidal surveys, settlement plate surveys
- Water filtration: molecular sample collection, chlorophyll-*a*, carbon stable isotopes, particulate and dissolved organic carbon
- Ship-based instrument deployment and recovery: CTD, Bongo Nets, ROV
- Scuba diving

### Software

- R/Rstudio, Github, Linux/Unix, Wordpress

## PUBLICATIONS

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Fontaine, D.N. and Rynearson, T.A., Multi-year time series reveals temporally synchronous diatom communities with annual frequency of recurrence in a temperate estuary. *Submitted to Limnology and Oceanography*.

Canfield, K., Sterling, A.R., Hernández, C.M., Chu, S.N., Edwards, B.R., Fontaine, D.N. et al. Building an inclusive wave in marine science: Using surveys to inform intersectional inclusion at Society for Women in Marine Science Symposia. *In preparation for submission to Progress in Oceanography*.

McNair, H.M., Fontaine, D.N., Rynearson, T.A., Menden-Deuer, S. Grazing and the decline of the North Atlantic spring bloom. *In preparation*.

Castillo Cieza, S.A., Marrec, P., Fontaine, D.N. et al. Unusual *Hemiaulus* Diatom Bloom Influences Ocean Productivity in Atlantic Northeastern Shelf Waters. *In preparation for submission to Biogeosciences*.

Soler-Figueroa, B.M., Fontaine, D.N., Carney, K.J., Ruiz, G.M., Tamburri, M.N., 2020. Characteristics of global port phytoplankton and implications for current ballast water regulations. *Marine Pollution Bulletin* 155, 111165.  
<https://doi.org/10.1016/j.marpolbul.2020.111165>

Rynearson, T.A., Flickinger, S.A., **Fontaine, D.N.**, 2020. Metabarcoding reveals temporal patterns of community composition and realized thermal niches of *Thalassiosira* Spp. (Bacillariophyceae) from the Narragansett Bay Long-Term Plankton Time Series. *Biology* 9, 19. <https://doi.org/10.3390/biology9010019>

Batista, W.R., Fernandes, F.C., Neves, M.H.C.B., Nascimento, T.S., Lopes, R.S.C., Lopes, C.C., Ziegler, G.P., Soler-Figueroa, B.M., Sparks, D., **Fontaine, D.N.**, Carney, K.J., Quiñones-Oquendo, L.E., Ruiz, G.M., 2018. Synthetic lipids as a biocide candidate for disinfection of ballast water. *Marine Pollution Bulletin* 137, 702–710. <https://doi.org/10.1016/j.marpolbul.2018.11.018>

## SELECTED PRESENTATIONS

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**Fontaine, D.N.**, Rynearson, T.A. 2022. “Small cells with big impacts: phytoplankton production on the Northeast US Shelf.” Long-Term Ecological Research All Scientists’ Meeting, Asilomar Conference Grounds, Asilomar, CA. *Poster*.

**Fontaine, D.N.**, Rynearson, T.A. 2021. “Worlds Apart: Comparison of microscopy and metabarcoding in a time series reveals lack of agreement but highlights diatom community temperature dependence.” Association for Limnology and Oceanography Conference, Virtual. *Talk*.

**Fontaine, D.N.** 2020. “Who’s there?: Uncovering diatom diversity in Narragansett Bay.” Student Seminar, URI-Graduate School of Oceanography, Narragansett, RI. *Talk*.

**Fontaine, D.N.** 2020. “The power of phytoplankton: estimating rates of primary production across a spatial gradient.” Student Seminar, URI-Graduate School of Oceanography, Narragansett, RI. *Talk*.

**Fontaine, D.N.**, Santos, N., Turner K. 2019. “Investigating the role of nutrients on phytoplankton community composition in Narragansett Bay, RI.” Chemical Oceanography Symposium, URI-Graduate School of Oceanography, Narragansett, RI. *Talk*.

**Fontaine, D.N.**, Turner, K., Hooks, B. 2019. “Dinocyst-based reconstructions of Arctic sea ice and SST over the past 6000 years: Comparison to modern trends. Geological Oceanography Research Symposium, URI-Graduate School of Oceanography, Narragansett, RI. *Poster*.

**Fontaine, D.N.**, Hauer, M., Gardiner, C. 2018. “Melting sea ice and ocean production: Implications for carbon cycling in the Arctic.” Biological Oceanography Poster Symposium, URI-Graduate School of Oceanography, Narragansett, RI. *Poster*.

**Fontaine, D.N.**, Reynolds, N., Pineda, J., Lenz, S., Hargenrader, C. 2016. Temporal and Spatial Patterns of Barnacle Settlement within the Southern, CA Rocky Intertidal. *Benthic Ecology Meeting*. Portland, ME. *Poster*.

## RESEARCH GRANTS AND AWARDS

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### Grants:

Lawrence Hinman Honors Research Grant	2016
Office of Undergraduate Research Grant	2016

## Awards:

Germain and Francis Webb Graduate Fellowship in Oceanography	2021
Ann Durbin Memorial Fund Award	2019
Alcalá Scholarship	2012 – 2016
Alcalá 100	2016

## SYNERGISTIC ACTIVITIES

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### Leadership:

<b>Student Representative</b> , URI-GSO Educational Policy Committee	2022
Worked with an interdisciplinary team of professors, research scientists and students to evaluate the effectiveness of the URI-GSO's Program Requirements resulting in an updated student manual and associated requirements.	
<b>Student Representative</b> , URI-GSO Student-Alumni Committee	2021 – 2022
Co-led the Student-Alumni Networking Series which included speaker invitations and discussion facilitation and helped coordinate programs to foster relationships between current graduate students and the alumni network of URI-GSO.	
<b>Editor-In-Chief</b> , <i>Oceanbites</i>	2020 – 2022
Managed our WordPress site and a team of 30 authors. Held monthly leadership meetings to advance <i>Oceanbites'</i> mission and collaborated with undergraduate professors to bring science communication into the classroom.	
<b>Coordinator</b> , <i>Oceanbites-SURFO Summer Collaboration</i>	2019 – 2022
Presented to a group of summer undergraduate researchers about science communication and writing skills. Worked with small groups of students to workshop their blog-style writing and published their work on the <i>Oceanbites</i> website.	
<b>Co-chair</b> , <i>URI Chapter of Society for Women in Marine Science</i>	2019 – 2021
Planned various events for members such as job panels, mental health workshops, and mentorship activities. Coordinated, together with a small committee, an international virtual symposium with over 300 participants.	
<b>Communications Chair</b> , <i>Chowder &amp; Marching, URI-GSO's student group</i>	2019 – 2020
Worked on a team of students to build community in our graduate program through social events, workshops, and outdoor activities.	
<b>Social Media Coordinator</b> , <i>Oceanbites</i>	2019 – 2020
Managed Instagram and Twitter accounts to engage our readers.	

### Writing:

<b>Consultant</b> , URI Graduate Writing Center	2021 – 2022
Consulted peers with their writing at various stages and worked with them on writing skill development. Hosted workshops for the broader graduate student community.	
<b>Writer</b> , <i>GSO Office of Public Engagement</i>	2019 – 2022
Wrote press releases about recent research. Stories include: "The things we do for science: A trek to the Southern Ocean."	

	“Investigating the Secret Life of Diatoms.”	
	“Welcomed home by calm seas.”	
	“Fitting in science between the roaring waves and blustery winds.”	
	“Pursuing ocean science in the midst of a global pandemic.”	
	“High school student follows his passion for science at GSO.”	
<b>Writer,</b>	<i>NASA Earth Science Blog</i>	2021
	“Small bugs with a big impact.”	
<b>Participant,</b>	<i>Oceanbites-Bowdoin College Collaboration</i>	2021
	Worked with a pair of undergraduate students to edit their science blog-style writing for logical flow and their use of stylistic elements to enhance message delivery.	
<b>Writer,</b>	<i>Oceanbites</i>	2018 – 2022
	Wrote blog articles once per month about recent oceanographic research and edited other authors’ posts.	
<b>Pen-pal,</b>	<i>Letters to a Pre-Scientist Program</i>	2019 – 2020
	Communicated with a seventh grader via pen-pal letters. Described life as a scientist and discussed various aspects about ocean science.	
<b>Science Engagement:</b>		
<b>Judge,</b>	<i>NES-LTER Data Jam Program</i>	2019 – present
	Evaluate school group project reports that use NES-LTER data to gain experience and familiarity with the scientific method.	
<b>Outreach scientist,</b>	<i>Narragansett Bay Classroom</i>	2019 – 2022
	Field trip presenter of “Protecting our Shorelines”	2021
	Virtual field trip presenter of “Marine Food Webs”	2020
	Content reviewer for 4 <sup>th</sup> grade science material	2020
	Field trip presenter of “Rocky Shorelines”	2019
<b>Participant,</b>	<i>Best of Banff Virtual Science Communication Workshop</i>	2021
	Learned about and practiced different methods to explain science, especially to an uncertain audience.	
<b>Presenter,</b>	<i>Bay Informed Discussion Series</i>	2019 –2020
	Presented to a general audience about: “Hitchhikers of the sea: Catching a ride across an ocean” “Life Aboard the R/V Endeavor”	
<b>Exhibitor and Tour Guide,</b>	<i>Graduate School of Oceanography Open House</i>	2018, 2021, 2022
	Engaged with local Rhode Islanders to describe the importance of phytoplankton in the ocean. Led tours aboard the R/V Endeavor.	
<b>Exhibitor,</b>	<i>Women in Science Day at Mystic Aquarium</i>	2018
	Discussed oceanography and phytoplankton with school-age children.	
<b>SERC Citizen Science educator</b>		2016 – 2018
	Worked with the public in the field to collect traps and count crab species.	
<b>Non-science service:</b>		
<b>Volunteer,</b>	<i>Yellow Horse Equine Therapeutic Programs</i>	2021 – 2022

Facilitated participants' physical and emotional growth using equine assisted therapy.  
**Volunteer, Cool Club** 2013 – 2016  
 Worked with a peer group to build relationships with intellectually disabled college students.

## MENTORSHIP

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Hailey Millet, undergraduate student, University of Rhode Island. 2019 – 2020  
 Lydia Núñez Rosario, undergraduate student, Ana G. Mendez University, Puerto Rico 2019  
 Tyla Morin, high school student, MET School, Providence, RI 2018 – 2019

## RESEARCH CRUISES AND FIELDWORK

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### Cruises:

**R/V Endeavor** – EN627 Quonset, RI – Narragansett, RI  
 PI: Heidi Sosik, NES-LTER Winter Transect Cruise February 1 – February 6, 2019  
**R/V Endeavor** – EN644 Quonset, RI – Narragansett, RI  
 PI: Heidi Sosik, NES-LTER Summer Transect Cruise August 19 – August 24, 2019  
**R/V Armstrong** – AR39B Woods Hole, MA – Woods Hole, MA  
 PI: Sheri White, Ocean Observatories Initiative Pioneer 13 October 5 – October 9, 2019  
**R/V Endeavor** – EN649 Narragansett, RI – Narragansett, RI  
 PI: Heidi Sosik, NES-LTER Winter Transect Cruise February 1 – February 6, 2020  
**R/V Endeavor** – EN655 Narragansett, RI – Narragansett, RI  
 PI: Heidi Sosik, NES-LTER Summer Transect Cruise July 25 – July 28, 2020  
**R/V Endeavor** – EN661 Narragansett, RI – Narragansett, RI  
 PI: Heidi Sosik, NES-LTER Winter Transect Cruise February 3 – February 8, 2021  
**RRS James Cook** – JC214 Southampton, UK – Southampton, UK  
 PIs: Deborah Steinberg and Jason Graff, NASA EXPORTS Atlantic Cruise May – June 2021  
**R/V Endeavor** – EN668 Narragansett, RI – Narragansett, RI  
 PI: Heidi Sosik, NES-LTER Winter Transect Cruise July 16 – July 21, 2021  
**R/V Armstrong** – AR61B Woods Hole, MA – Woods Hole, MA  
 PI: Sheri White, Ocean Observatories Initiative Pioneer 17 November 8 – November 15, 2021  
**R/V Atlantis** – AT46 Woods Hole, MA – Woods Hole, MA  
 PI: Heidi Sosik, NES-LTER Winter Transect Cruise February 16 – February 21, 2022  
**R/V Endeavor** – EN687 Woods Hole, MA – Woods Hole, MA  
 PI: Heidi Sosik, NES-LTER Summer Transect Cruise July 29 – August 3, 2022  
**R/V Endeavor** – EN695 Port of Davisville, RI – Port of Davisville, RI  
 PI: Heidi Sosik, NES-LTER Winter Transect Cruise January 11 – January 16, 2023

### Other fieldwork:

**Long-term nearshore survey** Edgewater, MD  
 PI: Greg Ruiz 2016 – 2018  
 Seined for fish in the Rhode River and participated in local small-boat trips to collect traps.  
**Ballast Water Management System Testing** Various locations

PIs: Greg Ruiz and Mario Tamburri 2016 – 2018  
Fieldwork included international sampling efforts onboard cargo carriers and domestic testing of Ballast Water Management Systems using a barge outfitted with mock ballast tanks.

**Nearshore larval transport: physical and biological processes** San Diego, CA  
PI: Nathalie Reyns 2014 – 2016

Daily collection of settlement plates from the rocky intertidal to examine barnacle settlement dynamics. Collected more than 6,000 settlement plates from the rocky intertidal over two years. Additionally participated in day trips to coastal waters to collect net samples of barnacle larvae.

## **CERTIFICATIONS**

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### **Certifications:**

**Diversity and Inclusion Badge Program** 2020 – 2021

Workshops included:

“Fundamentals of Diversity: Social Identity, Power and Privilege”

“Racism, Climate Change and Environmental Justice”

“Battle Tactics for a Sexist Workplace”

“Identity in STEM: Creating Inclusive Spaces in Scientific Research”

“Becoming a White Anti-Racist Ally”

**University of Rhode Island Career Development Program** 2019 – 2021

Workshops included:

“Creating an Individual Development Plan”

“Fundamentals of Diversity and Inclusion”

“Effective Mentorship”

“Fundamentals of Science Communication”

“Communicating Scientific Uncertainty”

“Time Management”

“Project Management”

**PADI Open Water Diver** 2016