

# Stephanie I. Anderson

Graduate School of Oceanography, University of Rhode Island

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## Education

### Ph.D. Oceanography

Narragansett, RI

GRADUATE SCHOOL OF OCEANOGRAPHY, UNIVERSITY OF RHODE ISLAND

2015-2021

- Dissertation: Phytoplankton thermal responses as drivers of community composition and biogeography in a changing environment
- Advisor: Dr. Tatiana Rynearson

### Single Subject Teaching Credential - Chemistry

Los Angeles, CA

LOYOLA MARYMOUNT UNIVERSITY

2012-2013

### B.A. Molecular, Cellular, and Developmental Biology

Boulder, CO

UNIVERSITY OF COLORADO AT BOULDER | *magna cum laude*

2008-2012

- Thesis: Identifying Purification and Storage Techniques for the Human Papillomavirus Type 16 Major Capsid Protein L1
- Advisor: Dr. Robert Garcea, M.D.

## Research Experience

### Postdoctoral Fellow

Narragansett, RI

GRADUATE SCHOOL OF OCEANOGRAPHY, UNIVERSITY OF RHODE ISLAND

2021-Present

- Using multi-stressor mesocosm experiments to evaluate the impact of marine heat waves on phytoplankton community physiology and diversity under varied nutrient regimes

### Graduate Research Assistant

Narragansett, RI

GRADUATE SCHOOL OF OCEANOGRAPHY, UNIVERSITY OF RHODE ISLAND

2015-2021

- Proposed new mechanism for phytoplankton seasonal succession, showcasing the importance of thermal trait variability using empirical data in an ecological simulation
- Mathematically redefined the phytoplankton growth-temperature relationship using quantile regression of a compilation of thermal growth data, which challenged a long-standing paradigm in ocean science
- Made projections for microbial growth and geographical range in the world's oceans for 2100 by employing Earth System Model output in conjunction with organismal thermal reaction norms
- Teased apart the relative effects of temperature and resource availability on phytoplankton species composition using k-means clustering of redundancy analysis ordinales
- Mentored two undergraduate students through the completion of their research projects, later presented at research symposiums
- Communicated scientific findings to a range of audiences, from scientists at three international oceanographic conferences to children enrolled in after-school enrichment programs

### Plankton Time-Series Analyst

Narragansett, RI

GRADUATE SCHOOL OF OCEANOGRAPHY, UNIVERSITY OF RHODE ISLAND

2015-2017

- Managed and contributed to one of the world's oldest oceanographic phytoplankton time-series in Narragansett Bay, RI
- Conducted weekly water sampling and specimen analysis, sampling for DNA, taxonomically identifying hundreds of phytoplankton species microscopically, and assessing total phytoplankton biomass
- Remodeled website to make data more accessible to outside researchers

### Departmental Honors

Boulder, CO

UNIVERSITY OF COLORADO AT BOULDER

2011-2012

- Developed a purification method using gas chromatography for the Human Papillomavirus Type 16 Major Capsid Protein L1

## Publications

Anderson S.I., Franzè G., Kling J.D., Wilburn P., Kremer C.T., Hutchins D.A., Litchman E., Menden-Deuer S., Rynearson. T.A., The Interactive Effects of Temperature and Nutrients on a Spring Phytoplankton Community. (*submitted to Limnology and Oceanography*).

**Anderson S.I.**, Barton A.D., Clayton S., Dutkiewicz S., Rynearson T.A., Marine Phytoplankton Functional Types Exhibit Diverse Responses to Thermal Change. (*in revision at Nature Communications*).

Kling J., Lee M.D., Webb E.A., Coelho J.T., Wilburn P., **Anderson S.I.**, Zhou Q., Wang C., Phan M.D., Kremer C.T., Litchman E., Rynearson T.A., Hutchins D.A. Dual thermal ecotypes detected within a nearly genetically-identical population of the unicellular marine cyanobacterium *Synechococcus*. *bioRxiv*. doi: <https://doi.org/10.1101/2020.05.27.119842>

**Anderson S.I.**, Rynearson T.A.(2020), Variability Approaching the Thermal Limits Drives Diatom Community Dynamics. *Limnology and Oceanography*. doi: <https://doi.org/10.1002/lno.11430>

**Anderson S.I.**, McDuffie K., Menezes S.(2020), Science Communication for Natural Resource Managers: Techniques and Examples in Marine Systems. *The Handbook of Natural Resources: Coastal and Marine Environments*, 5, 143-149.

**Anderson S.I.** "Identifying Purification and Storage Techniques for the Human Papillomavirus Type 16 Major Capsid Protein L1" (2012). *Molecular, Cellular, and Developmental Biology Undergraduate Contributions*. Available at: [https://scholar.colorado.edu/mcdb\\_ugrad/1](https://scholar.colorado.edu/mcdb_ugrad/1)

## **Presentations**

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**Anderson S.I.**, Barton A.D., Clayton S., Dutkiewicz S., and Rynearson T.A.. Changing Rates and Shifting Ranges: Assessing the Phytoplankton Global Response to Ocean Warming. Ocean Sciences, San Diego, CA. February 2020.

Bishop I., **Anderson S.I.**, Collins S., and Rynearson T.A.. Intraspecific Variability in Thermal Tolerance Buffers Southern Ocean Diatoms from Biogeographic Range Contraction in a Warming Ocean. Ocean Sciences, San Diego, CA. February 2020.

**Anderson S.I.**, Kling J., Kremer C., Franzè G., Hutchins D., Litchman E., Menden-Deuer S., and Rynearson T.A.. Winners and Losers in a Changing Tide: Temperature-Nutrient Impact on Phytoplankton Community Dynamics. ASLO, San Juan, Puerto Rico. February 2019.

Kling J., Phan M., Fu F., **Anderson S.I.**, Franzè G., Wilburn P., Kremer C., Litchman E., Rynearson T.A., and Hutchins D.. Thermal Diversity in a Coastal Marine *Synechococcus* Community Selected Under Low and High Temperatures. ASLO, San Juan, Puerto Rico. February 2019.

**Anderson S.I.** and Rynearson T.A.. Life at the Edge: Physiology at the Thermal Limits Drives Diatom Community Dynamics. RI NSF EPSCoR Research Symposium, Kingston, RI. April 2018.

Franzè G., **Anderson S.I.**, Kremer C., Kling J., Wilburn P., Hutchins D., Litchman E., Rynearson T.A., Menden-Deuer S.. Direct and indirect effects of temperature and nutrient on plankton community dynamics. Ocean Sciences, Portland, Oregon. February 2018.

**Anderson S.I.**, Rynearson T.A.. Thermal traits and community structure in diatoms. Trait-Based Approaches to Ocean Life, Bergen, Norway. August 2017.

**Anderson S.I.**, Rynearson T.A.. In hot water? Thermal trait variability among diatom species. RI NSF EPSCoR Research Symposium, Providence, RI. April 2017.

**Anderson S.I.**, Rynearson T.A.. Thermal trait variability in seasonally differentiated morphologically cryptic diatom species. ASLO, Honolulu, HI. March 2017.

Canesi K.L., Rynearson T.A., **Anderson S.I.** New Methods and an old time series reveal temporal trends in diversity among morphologically cryptic diatom species. ASLO, Honolulu, HI. March 2017.

## **Honors & Awards**

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2019	<b>Davis Family Endowed Scholarship for Fisheries Oceanography</b> , (\$3650)	<i>Narragansett, RI</i>
2019	<b>Turner Designs Student Award</b> , (\$500), Travel award	<i>Narragansett, RI</i>
2018	<b>Ann Durbin Memorial Award</b> , (\$462), For excellence in biological oceanography	<i>Narragansett, RI</i>
2016/19	<b>University of Rhode Island Alumni Award</b> , (\$1,000), Travel award	<i>Narragansett, RI</i>
2013	<b>Segal AmeriCorps Education Award</b> , (\$5,500) Dedication to the Teach for America program	<i>Los Angeles, CA</i>
2013	<b>Teacher of the Month</b> , Manual Arts High School	<i>Los Angeles, CA</i>
2012	<b>Magna cum laude</b> , University of Colorado at Boulder	<i>Boulder, CO</i>
2010	<b>National Society of Collegiate Scholars</b> , National Honors Society	<i>Boulder, CO</i>

## Research Cruises

2018	<b>AE1812</b> , R/V Atlantic Explorer, May 2-16; Chief Scientist: Dr. Tatiana Rynearson	Bermuda to Narragansett, RI
2017	<b>Phosphorus Hydrocarbon And Transcriptomics (PHAT); AR16</b> , R/V Neil Armstrong, May 3-22; Chief Scientist: Dr. Benjamin Van Mooy	Woods Hole to Bermuda
2016-2017	<b>Antarctic Diversity Among Plankton and their Transformations (ADAPT); NBP17-01</b> , R/V Nathaniel B. Palmer, Dec 24-Jan 21; Chief Scientist: Dr. Tatiana Rynearson	Southern Ocean Transect

## Teaching Experience

### Graduate Teaching Assistant

Narragansett, RI

GRADUATE SCHOOL OF OCEANOGRAPHY, UNIVERSITY OF RHODE ISLAND

2018-2019

- Teaching Assistant for graduate level Biological Oceanography
- Constructed and facilitated data analysis tutorials using statistics, ordination, and graphics packages in R (e.g. vegan, ggplot)
- Led classes of 20 students on three oceanographic day cruises, conducting biological sampling in coastal waters
- Provided graduate students with constructive and consistent writing and statistical feedback on their scientific reports

### AP Science and Math Tutor

Los Angeles, CA

C2 EDUCATION

2015

- Prepared students for AP and college entrance exams through personalized instruction.

### High School Chemistry Teacher

Los Angeles, CA

TEACH FOR AMERICA

2012-2014

- Joined highly selective national teacher corps and committed two years to teaching in under-resourced public schools.
- Developed and implemented science curriculum for 250 students that resulted in 68% of students passing statewide end-of-year assessment; a 20% increase from the previous year.
- Built relationships with students outside the classroom by mentoring students at the annual science fair and coaching the girls' junior varsity basketball team

### Undergraduate Biology Teaching Assistant

Boulder, CO

UNIVERSITY OF COLORADO AT BOULDER

2011-2012

- Facilitated student discussion during undergraduate lectures and led exam review sessions.

### Calculus Learning Assistant

Boulder, CO

UNIVERSITY OF COLORADO AT BOULDER

2011

- Led recitation sessions each week and guided students through new course material.
- Engaged in weekly discourse about STEM pedagogy.

## Community Engagement

2019-2020	<b>Summer Undergraduate Research Fellowship in Oceanography (SURFO)</b> , Presented Biological Oceanography Introductory Lecture	Narragansett, RI
2017-2019	<b>Narragansett Bay Classroom</b> , Lead summer outdoor explorations for K-12 students	Narragansett, RI
2019	<b>Hamilton Elementary</b> , Engaged elementary students in ocean density lesson	North Kingston, RI
2019	<b>Society for Women in Marine Science (SWMS)</b> , Graduate school panel	Kingston, RI
2016-2019	<b>METCALF Annual Science Immersion Workshop for Journalists</b> , Assisted with lesson on reading scientific literature and engaging in scientific methods	Narragansett, RI
2018	<b>Northwest Passage Project</b> , Presented lesson on Arctic plankton to visiting high school students	Narragansett, RI
2018	<b>Women in Marine Science</b> , Exhibit Presenter at Mystic Aquarium	Mystic, CT
2018	<b>4-H Teen Science Cafe</b> , Presented potential career paths in oceanography to middle school students	Exeter, RI
2018	<b>Bay-Informed Discussion Series</b> , Community presentation on the importance of marine microbes	Narragansett, RI
2017-2018	<b>URI Graduate School of Oceanography Open House</b> , Led interactive DNA extraction demonstrations for the public	Narragansett, RI
2016-2017	<b>Bio-at-Noon Seminar Series Organizer</b> , Organize seminar series that brings outside scientists for informal discussion at the Graduate School of Oceanography	Narragansett, RI
2016	<b>Ocean Sciences Bowl</b> , Assisted in grading at regional high school oceanography competition	Avery Point, CT
2016	<b>Girls Reaching Remarkable Levels (GRRL) Tech</b> , Led phytoplankton microscopy lab for high school girls	Kingston, RI
2016	<b>Teach for America, RI</b> , Engaged elementary school students and teachers in lessons about the ocean, including food webs and phytoplankton	Providence, RI
2016	<b>Rhode Island Educators Cruise</b> , Directed Rhode Island science teachers in field research aboard the R/V Endeavor	Narragansett, RI

## Mentorship

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During my doctoral studies, I mentored two undergraduate students through the completion of their research projects, later presented at research symposiums.

## Skills and Certifications

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**Certifications:** Single Subject Teaching Credential

**Computation:** R (fluent), Python and IPython Notebook (proficient), Matlab and C++ (basic), SQL (familiar)

**Machine Learning:** Regression Analysis, Clustering (e.g. k-means), Time-Series Analysis, Classification (e.g. decision trees)

**Software:** LaTeX

**Laboratory Techniques:** Molecular: DNA extraction, PCR, Sanger sequencing, microsatellites

Other: Aseptic cell culturing, Microscopy, Plankton taxonomy, CHN Analysis, Chlorophyll extraction, Flow Cytometry, Ship-board sampling and sample processing (preservation)

**Workshops:** ANGUS Next Generation Sequence Analysis Workshop, UC Davis, Summer 2017

**Memberships:** Association for the Sciences of Limnology and Oceanography  
Society for Women in Marine Science