

# Addison Ryne

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## EDUCATION

### California State University, Monterey Bay – Seaside, CA

B.S. Degree in Marine Science

Graduated December 2025

GPA: 3.965, Dean's List

### New York University – New York, NY

Completed 66 credits toward Individualized Major and Minor in Environmental Studies

Attended 08/2021-12/2023

GPA: 3.798, Dean's List

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## RESEARCH INTERESTS

- **Intertidal Ecology:** Studying species interactions and ecological processes in intertidal zones, with an emphasis on resilience to environmental stressors, especially in endangered species.
  - **Phytoplankton and Productivity:** Exploring the dynamics of phytoplankton populations and their role in marine productivity, using phytoplankton dynamics as ecosystem indicators to infer impacts on higher trophic levels.
  - **Oceanographic Phytoplankton Dynamics:** Investigating basin-scale and regional drivers (nutrient supply, circulation, upwelling, stratification) that shape phytoplankton community structure and productivity.
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## RESEARCH EXPERIENCE

### Nayak lab, FAU Harbor Branch Oceanographic Institute – Fall 2025

*PI:* Dr. Aditya Nayak

*Project Title:* Characterizing the Freshwater Cyanobacterium, *Microcystis aeruginosa*, Using Digital Holography

*Description:* Conducting MATLAB-based image processing and statistical analyses of phytoplankton datasets and contributing to peer-reviewed publication. **Manuscript in preparation.**

### Coastal Ecology Lab, CSU Monterey Bay – Fall 2025

*PI:* Dr. Alison J. Haupt

*Project Title:* Investigating Mechanisms of Black Abalone Habitat Selection

*Description:* Conducting field surveys and statistical analyses and performing a review of relevant literature to determine the factors that influence *H. cracherodii* habitat use. **Manuscript in preparation.**

### Ocean Predator Ecology Lab, CSU Monterey Bay – Fall 2025

*PI:* Dr. Salvador Jorgensen

*Project Title:* Growth Scaling in By-the-Wind Sailors (*Velella Velella*)

*Description:* Studying growth scaling in *V. velella* by designing and conducting field sampling of mass-stranded individuals, taking morphometric measurements, and analyzing sail-base scaling relationships in R. Collaborating with students at Stanford's Hopkins Marine Station for peer-reviewed publication. **Manuscript in preparation.**

**STEMSEAS Research Cruise**, National Science Foundation & Columbia University – Fall 2025

*PI:* Dr. Nicole Milette

*Project Title:* Synergistic effects of hypoxia and warming on zooplankton prey for higher trophic levels in coastal waters

*Description:* Contributed to ongoing research by collecting and processing plankton samples, operated CTD and Niskin rosette equipment, and investigated trophic implications of environmental stressors.

**Nayak lab**, FAU Harbor Branch Oceanographic Institute – Summer 2025

*PI:* Dr. Aditya Nayak

*Project Title:* Advancing Rapid Quantification of *Microcystis* Colonies in Freshwater Systems Using Digital Holography

*Description:* Worked as an intern to follow experimental procedure, image phytoplankton colonies, visualize and analyze results in MATLAB, write a formal scientific report of results, and orally present.

**Cooperative Learning Center**, CSU Monterey Bay – Summer 2025

*PI:* Micaela Colmenarez

*Project Title:* Analyzing Student Success Data for Future Teachers and STEM

*Description:* Statistically analyzed CSUMB MATH course outcomes, CLC support services, and Canvas use data to see if different supports lead to higher student success, with a final presentation of results.

**Projects in Marine Ecology (MSCI445)**, CSU Monterey Bay – Spring 2025

*PI:* Dr. Alison J. Haupt

*Project Title:* Shelter in the Splash Zone: Investigating Intertidal Crevice Characteristics That Support Black Abalone Habitat

*Description:* Completed a group capstone through a combination of intertidal field work and statistical analysis in R including historical data, culminating in a formal scientific paper and oral presentation.

**Coastal Ecology Lab**, CSU Monterey Bay – Spring 2025

*PI:* Dr. Alison J. Haupt

*Project Title:* Assessment of Abalone and Urchin Populations in Monterey

*Description:* Assisted in an ongoing study of urchin recruitment where I performed sonication and microscopic sample sorting to identify all present species and compile data for reporting.

**Marine Ecology (MSCI340)**, CSU Monterey Bay – Fall 2024

*PI:* Madison Heard

*Project Title:* Crab guardians: Sustaining kelp forest ecosystems through natural urchin control

*Description:* Completed a class-based project using PISCO data and a literature analysis resulting in a formal scientific report and oral presentation of results.

**Biological-Physical Oceanography (MSCI370)**, CSU Monterey Bay – Fall 2024

*PI:* Dr. Sherry Palacios

*Project Title:* Comparisons of Ocean Observing Data in Time and Space

*Description:* Participated in a collaborative classroom project where my team answered a research question using the NOAA's Integrated Ocean Observing System datasets and data analysis in R, presenting our results both orally and in writing.

**Biological-Physical Oceanography (MSCI370), CSU Monterey Bay – Fall 2024**

*PI:* Dr. Sherry Palacios

*Project Title:* Satellite Tracking and Ocean Observing Data

*Description:* Participated in a team class-based project where I collaborated to answer our research question by visualizing and interpreting data collected from loggerhead sea turtle tagging and the MODIS satellite, presenting our results both orally and in writing.

**Hudson River Park – October 2022**

*PI:* Dr. Matt Hare

*Project Title:* Fine-scale sampling reveals a genetic break in a high gene flow oyster along a high advection coastline

*Description:* Performed volunteer research into larval oyster recruitment in the Hudson River by handling deployed oysters to find evidence of spat and reporting data.

**NYU Thesis Research – October 2021**

Served as a data collection volunteer for a graduate student studying the efficacy of green spaces by measuring bird biodiversity in relation to impervious surfaces and noise level. Assisted in collecting bird occurrences, noise level monitoring, and impervious surface cover. Submitted data for each site.

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**LEADERSHIP, PARTICIPATION, AND FELLOWSHIPS**

**Central Coast Aquarium Volunteer – Fall 2025-Present**

Support animal husbandry and system maintenance; feed animals, clean tanks, perform water changes, collect seawater from the Cal Poly Pier, and operate and monitor water systems and chillers.

**Marine Life Studies Volunteer – Fall 2025-Present**

Support the nonprofit's mission to protect marine life through public education and community engagement; operate the gift shop to educate visitors about marine conservation and directly contribute to fundraising efforts; assist with data entry, participate in research vessel days collecting field observations, and create educational materials to support outreach and awareness.

**Marine Science Department Club President – Fall 2025**

Direct the executive board, delegate responsibilities, and serve as primary liaison with the advisor and faculty; organize and host general and board meetings; create agendas and oversee communications; coordinate events such as lectures, outings, and service projects; and ensure membership and compliance requirements are met.

**STEMSEAS Oceanographic Fellow – Fall 2025**

Selected as one of 10 nationally for NSF-funded shipboard research immersion program; conducted oceanographic sampling and data analysis; participated in cross-disciplinary research on hypoxia,

warming, and trophic interactions; gained training in shipboard techniques (CTD casts, Niskin sampling, plankton net tows); engaged in daily seminars, mentoring, and collaborative science communication to broaden understanding of large-scale ocean processes and their ecological impacts.

#### **Marine Science Department Club Treasurer – Fall 2024-Spring 2025**

Managed club budget; collaborated with officers to organize events such as guest lectures, outings, and community service; facilitated fundraising to support club activities and enhance student engagement; and promoted club activities through social media and campus communications.

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### **PROFESSIONAL EXPERIENCE**

**Biophysical Oceanography Technician, Fort Pierce, FL** August 2025-December 2025  
Conducted MATLAB-based image processing and statistical analyses for a publication in progress quantifying freshwater cyanobacteria colonies using digital holography. Managed and organized research datasets, interpreted results in collaboration with the PI and graduate researchers, and contributed to peer-reviewed publication. Presented research findings at scientific conferences and symposia.

**Cooperative Learning Center Reading & Writing Tutor, Seaside, CA** August 2024-December 2025  
Provide group and one-on-one tutoring sessions to undergraduate and graduate students in reading comprehension, academic writing, and critical analysis, as well as deliver on writing objectives such as course assignments, research papers, personal statements, and applications. Collaborate with faculty to implement workshops on writing topics. Completed tutoring training, including weekly subject meetings and CRLA Certification I. CRLA Certification II is in progress.

**Cooperative Learning Center R Software & Statistics Tutor, Seaside, CA** January-May 2025  
Provided group and individual tutoring to undergraduate students in the Applied Statistics (STAT250) course, with specific support for R programming. Completed tutoring training, including weekly subject meetings with faculty to discuss learning targets and course materials.

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### **PRESENTATIONS**

**Ryne, A. R.,** Haupt, A.J. “Investigating Mechanisms of Black Abalone Habitat Selection.” To be presented at the Science After Dark adult lecture series, Central Coast Aquarium, Avila Beach, CA. (January 2026).

**Ryne, A.,** Bennett, M., & Nayak, A.R. “Advancing Rapid Quantification of *Microcystis* Colonies in Freshwater Systems Using Digital Holography.” Presented at the 106th Annual Meeting of the Western Society of Naturalists, San Diego, CA. (November 2025).

**Ryne, A.,** Bennett, M., & Nayak, A.R. “Advancing Rapid Quantification of *Microcystis* Colonies in Freshwater Systems Using Digital Holography.” Presented at the CSUMB Fall Research Competition (Third Place Awarded), CSUMB, Seaside, CA. (November 2025).

**Ryne, A.**, Bennett, M., & Nayak, A.R. “Advancing Rapid Quantification of *Microcystis* Colonies in Freshwater Systems Using Digital Holography.” Presented at the UROC Summer Research Symposium, CSUMB, Seaside, CA. (August 2025).

**Ryne, A.**, Bennett, M., & Nayak, A.R. “Advancing Rapid Quantification of *Microcystis* Colonies in Freshwater Systems Using Digital Holography.” Presented at the 51st Annual Harbor Branch Summer Intern Symposium, FAU Harbor Branch Oceanographic Institute, Fort Pierce, FL. (July 2025).

Co-Presenter, “Bridging the Gaps: Resources for Writing and Learning Across Disciplines.” Presented at the Northern California Writing Centers Association, University of Nevada, Reno Writing & Speaking Center, Reno, NV. (April 2025).

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## RELEVANT COURSEWORK

- **MSCI 270:** Introduction to Oceanography
- **MSCI 337:** Robotics for Ecological Research
- **MSCI 340:** Marine Ecology
- **MSCI 341:** Conservation Genetics
- **MSCI 345:** Marine Biodiversity
- **MSCI 350:** Quantitative Marine Science
- **MSCI 370:** Bio-Physical Oceanography
- **MSCI 445:** Projects in Marine Ecology
- **ENVST 100:** Environmental Systems Science
- **ENVST 101:** Environment & Society
- **ENVST 275:** Where the City Meets the Sea: Studies in Coastal Urban Environments
- **ENVST 300:** Advanced Topics: Climate and Life
- **ENVST 320:** Introduction to Conservation Analysis
- **ENVST 325:** Fundamentals of Ecology
- **ENVS 332:** Intro to GIS/GPS
- **STAT 250:** Applied Statistics: Science Technology
- **BIOL 135:** Cell & Molecular Biology
- **CHEM 111:** Chemistry II
- **PHYS 220:** Physics I
- **MATH 241:** Calculus I

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## SKILLS AND CERTIFICATIONS

- **Laboratory:** Gel electrophoresis, PCR, qPCR, genome sequencing (WGS), spectrophotometry, microscopy (light, confocal), sample preparation, sonication, buffer preparation, dilution series, Bradford assays, titrations (acid-base, redox, precipitation), flow cytometry, laser imaging
- **Software & data analysis:** Microsoft Office (Excel, Word, PowerPoint), tidy data entry and QA/QC, data wrangling in R (tidyverse, dplyr, ggplot2, mosaic), statistical analysis and data visualization in R (regression models, ANOVA, hypothesis testing), robotic programming (Arduino), experience with EndNote, Zotero, MATLAB, and GPS/GIS mapping (ArcGIS Pro)

- **Field surveys:** Unit point contacts, transects, quadrats, invertebrate & algal species identification, in situ measurement of species, water quality testing (pH, turbidity, chlorophyll), plankton netting, CTD & Niskin rosette systems, multi-corer
- **Tutoring:** CRLA Level II Certified, experience with academic writing, scientific communication, & literature reviews
- **Certifications:** Responsible Conduct of Research (CITI), Human Subjects Research (CITI), Gender Equity and Title IX (CSU), Workplace Violence Prevention (CSU)