Addison Ryne

(913) - 777 - 9152 | aryne@csumb.org
www.linkedin.com/in/addison-ryne

Marine science undergraduate with field, cruise, and lab experience in biological-physical oceanography and intertidal ecology

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EDUCATION

California State University, Monterey Bay – Seaside, CA
B.S. Degree in Marine Science
Expected graduation 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

RESEARCH INTERESTS

- **Intertidal Ecology:** Studying species interactions and ecological processes in intertidal zones, with an emphasis on resilience and adaptation to environmental stressors.
- **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.
- **Algal Biology:** Researching the biology, physiology, and ecological significance of algae, with an emphasis on species interactions, adaptation to environmental change, and ecosystem services.

RESEARCH EXPERIENCE

Nayak lab, FAU Harbor Branch Oceanographic Institute – Fall 2025 (Current)
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 manuscript preparation for peer-reviewed publication.

Coastal Ecology Lab, CSU Monterey Bay – Fall 2025 (Current)
PI: Dr. Alison J. Haupt
Project Title: Investigating Mechanisms of Black Abalone Habitat Selection
Description: Designing and conducting field surveys and statistical analyses and performing a review of relevant literature to determine the factors that influence *H. cracherodii* habitat use.

Jorgensen Lab, CSU Monterey Bay – Fall 2025 (Current)
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. Currently collaborating with students at Stanford's Hopkins Marine Station on manuscript preparation for peer-reviewed publication.

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.

LEADERSHIP, PARTICIPATION, AND FELLOWSHIPS

Marine Science Department Club President – Fall 2025 (Current)
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.

Marine Life Studies Volunteer – Fall 2025 (Current)
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.

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.

PROFESSIONAL EXPERIENCE

Cooperative Learning Center Reading & Writing Tutor, Seaside, CA August 2024-Current
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.

PRESENTATIONS

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

Ryne, A., Bennett, M., & Nayak, A.R. "Advancing Rapid Quantification of *Microcystis* Colonies in Freshwater Systems Using Digital Holography." To be presented at the CSUMB Fall Research Competition (abstract accepted), 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).

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

SKILLS AND CERTIFICATIONS

- **Laboratory:** Gel electrophoresis, PCR, 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 and analysis in R (tidyverse, dplyr, ggplot2, mosaic), statistical analysis and data visualization in R (regression models, ANOVA, hypothesis testing), experience with EndNote, Zotero, MATLAB, and ArcGIS
- **Field surveys**: Unit point contacts, transects, quadrats, invertebrate species identification, in situ measurement of species, water quality testing (pH, turbidity, chlorophyll), plankton netting
- **Tutoring:** CRLA Level I Certified (Level II in progress), experience with academic writing, scientific communication, and literature reviews
- **Certifications:** Responsible Conduct of Research (CITI), Human Subjects Research (CITI), Gender Equity and Title IX (CSU), Workplace Violence Prevention (CSU)