JAMES RYAN BRADY

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EDUCATION

Bachelor of Science
Major: Marine Science
Minor: Chemistry
California State University, Monterey Bay (CSUMB)

RESEARCH EXPERIENCE

Effects of sediment grain size and shell length on the burial rate of Pismo clams in the Monterey Bay. Coastal Ecology Lab: Olivia Beaudoin, MLML, and Dr. Alison Haupt, CSUMB 2025

- *Project description:* Led the **first controlled experimental study** quantifying burial rates in *Tivela stultorum* (Pismo clam). Examined how sediment grain size and shell length influence burial duration and depth, **developing novel methods** for maintaining live specimens in aquaria. Results provide insight into habitat parameters that promote restoration and persistence of local populations. Currently co-authoring a **peer-reviewed manuscript** in collaboration with a graduate researcher at Moss Landing Marine Laboratories.
    - *Relevant Skills:* Marine organism husbandry, aquarium systems, experimental design and implementation

Geological habitat variability and its effect on populations of *Tivela stultorum* (Pismo clam) within Monterey Bay. Coastal Ecology Lab: Olivia Beaudoin, MLML, and Dr. Alison Haupt, CSUMB 2024-2025

- *Project description:* Conducted the **first comprehensive survey of *Tivela stultorum*** (Pismo clam) population dynamics in Monterey Bay since the 1960s. Investigated how **sedimentary and geological habitat characteristics** influence the spatial distribution, abundance, and age structure of Pismo clam populations. The findings contribute to identifying environmental conditions that support the maintenance and restoration of local populations. Currently co-authoring a manuscript in collaboration with a graduate researcher from Moss Landing Marine Laboratories for **submission to a peer-reviewed journal**.
    - *Relevant Skills:* Quantitative marine population ecology, sediment and habitat analysis, sediment sizing, statistical and spatial data analysis

Growth Scaling in By-the-Wind Sailors (*Velella Velella*)
Ocean Predator Ecology Lab: Dr. Salvador Jorgensen, CSUMB, and Dr. Robin Elhai, Stanford Current

- *Project description:* Investigating growth allometry in ***Velella velella*** through field sampling of mass-stranded individuals along the central California coast. **Designed and implemented** morphometric measurement protocols to quantify sail-to-base scaling relationships and analyzed allometric trends using R. Currently collaborating with researchers at Stanford University's Hopkins Marine Station on a manuscript in preparation for **peer-reviewed publication**.
    - *Relevant Skills:* Experimental design and field sampling, morphometric and allometric analysis, scientific collaboration

Supervised machine learning of continental and archipelago asphaltenes utilizing Wolfram Mathematica. Dr. Arun Sharma, CSUMB

2023

- *Project description:* Utilized **Wolfram Mathematica** to expand an existing molecular dataset from 255 to 1,530 structures, ensuring balanced labeling for classification analysis. Implemented and validated a machine learning classifier based on **molecular topological descriptors**, achieving high predictive accuracy with minimal error across both training and testing datasets. Findings were **peer-reviewed and published** in *Results in Chemistry*.
    - *Relevant Skills:* Data preprocessing and augmentation, Machine learning model development and validation, and literature review.

Surf zone monitoring of Monterey Bay Marine Protected Areas (MPAs).
Dr. Scott Hamilton, MLML.

2024

- *Project description:* Conducted field surveys of surf-zone fish and algal communities within Marine Protected Areas (MPAs) and reference sites using baited remote underwater video (BRUV) systems and beach seine sampling. Quantified species abundance and community composition to assess MPA effectiveness. Findings are intended to inform evidence-based policy and management decisions for coastal marine conservation.
    - *Relevant Skills:* Marine biodiversity assessment, data collection, species identification

Developing low-impact ocean instruments to monitor juvenile sharks and rays.
Dr. Salvador Jorgensen, MLML.

2024

- *Project description:* Developed and implemented non-invasive tagging methodologies to monitor the movement of *Myliobatis californica* (bat rays) and *Triakis semifasciata* (leopard sharks). Designed and programmed an Arduino MKR NB 1500 system to provide real-time notifications upon biologger detachment. This work enhances ethical tracking techniques for elasmobranch research and long-term movement ecology studies.
    - *Relevant Skills:* Biologging, Arduino programming, sensor integration, marine vertebrate behavior, and movement ecology

From watershed to whales: Tracking the source and transport of microplastics in the greater Monterey Bay region to inform risk assessments.
Chad King, NOAA.

2024

- *Project description:* Applied gravity separation techniques to isolate and quantify microplastics of varying sizes from sand samples. Samples were then chemically analyzed to identify polymer composition and potential sources of contamination. Results contribute to understanding microplastic pathways and support policy development aimed at reducing plastic pollution.
    - *Relevant Skills:* Environmental sample processing, microplastic identification

Collection and tagging of juvenile green sea turtles (*Chelonia mydas)* around Anegada Island, British Virgin Islands.
Association of Reef Keepers (ARK) 2019

- *Project description:* Captured untagged sea turtles using multiple field techniques and applied both PIT and flipper tags to individual animals. Integrated new tagging data into an existing long-term database to support population monitoring and tracking of individual movement and growth.

- *Relevant Skills:* Wildlife capture, wildlife handling, marine population monitoring

PUBLICATIONS

2024 Sharma AK, Arsala S, **Brady J**, Franke M, Franke S, Gandhok S, Gringas SO, Gomez A, Huie K, Katz K, Kozlo S, Longoria M, Molnar L, Peña N, Regis S. Machine learning to identify structural motifs in asphaltene. *Results in Chemistry* 7: 101551. https://doi.org/10.1016/j.rechem.2024.101551

PRESENTATIONS

Mallicoat L, **Brady R**, Beaudoin O, Haupt A (2024, August 9). Investigating the current population status of the Pismo clam (*Tivelia stulorum*) within Monterey Bay. CSUMB UROC Summer Research Symposium. Seaside, CA

Mallicoat L, **Brady R**, Beaudoin O, Haupt A (2024, November 9). Investigating the current population status of the Pismo clam (*Tivelia stulorum*) within Monterey Bay. Western Society of Naturalists. Portland, OR

Beaduoin O, **Brady R**, Malicoat L, Alvarez K, Takahashi T, Hauot A (2024, November 9). Geological habitat variability and its effect on populations of *Tivela stultorum* (Pismo clam) within Monterey Bay. Western Society of Naturalists, Portland, OR

Mallicoat L, **Brady R**, Beaudoin O, Haupt A (2025, April 3). Investigating the current population status of the Pismo clam (*Tivelia stulorum*) within Monterey Bay. Benthic Ecology Meeting. Mobile, AL

Mallicoat L, **Brady R**, Beaudoin O, Haupt A (2025, April 18). Investigating the current population status of the Pismo clam (*Tivelia stulorum*) within Monterey Bay. CSUMB Spring Showcase. Seaside, CA

Mallicoat L, **Brady R**, Beaudoin O, Haupt A (2025, November 8). Effects of grain size and shell length on the burial rates of Pismo clams (*Tivelia stultorum)*. Western Society of Naturalists, San Diego, CA

Weiand E, Khan K, Malicoat L, **Brady R**, Beaudoin O, Haupt A (2025, November 8). Geological habitat variability of Pismo Clam (*Tivela stultorum)* populations in Monterey Bay. Western Society of Naturalists, San Diego, CA

Beaduoin O, **Brady R**, Malicoat L, Alvarez K, Takahashi T, Hauot A (2025, November 8). Geological habitat variability and its effect on populations of *Tivela stultorum* (Pismo clam) within Monterey Bay. Western Society of Naturalists, San Diego, CA

PROFESSIONAL AND RELATED EXPERIENCE

Lead Dive Program Volunteer 2024-2025
CSU Monterey Bay

- Organized and executed scuba dives for various courses for the largest scientific diving program in the United States.
- Supervised and managed groups of volunteers, assisting with instruction.
- Organized and executed over 80 dives.
- Started and ran the social media page for the program, effectively increasing engagement and public outreach.

Divemaster 2025
Catalina Sea Camp

- Safely and effectively instructed 12-17-year-olds in various SCUBA courses, with an emphasis on marine education.
- Organized and executed over 100 dives.
- Efficiently managed the waterfront to prevent accidents, including sailing, SCUBA diving, snorkeling, kayaking, and motorboats.

Divemaster
Bamboo Reef Dive Centers

- Safely and efficiently organized and executed dives for people of all ages, many of whom were experiencing cold water diving for the first time.
- Organized and executed over 50 dives.

Volunteer
Marine Life Studies

- Support the nonprofit's mission to protect marine life through public education and community engagement
- Assist with data entry and participate in research vessel days, collecting field observations
- Create educational materials to support outreach and awareness.

HONORS AND AWARDS

- **Dean's List** Fall 2021 - Spring 2025
  - California State University, Monterey Bay
  - Maintained a 3.50 grade point average, with a minimum of 12 units.
- **Outstanding Research Poster**
  - 2024 CSUMB UROC Summer Research Symposium.
- **CSU COAST & Jim and Peggy Ryan Marine Science Undergraduate Research Award**
  - $1000 awards to support undergraduate research projects in marine and coastal science.
- **ASCA Duck Race Festival**
  - Placed 3rd out of 40 teams
  - Designed, built, and programmed an inflatable duck, utilizing an Arduino Uno and Blue Robotics T200 thrusters.

RELATED COURSEWORK

- MSCI 340 - Marine Ecology
- MSCI 380 - Scientific Diving Techniques
- MSCI 350 - Quantitative Marine Science
- MSCI 370 - Biological Physical Oceanography
- MSCI 345 - Marine Biodiversity and Functional Morphology
- MSCI 437 - Ocean Instrumentation Projects
- MSCI 445 - Projects in Marine Ecology

- MSCI 475 - Marine Conservation Biology
- MSCI 337 - Robotics for Ecological Research
- MSCI 270 - Introduction to Oceanography
- CHEM 210 - Organic Chemistry
- CHEM 305 - Environmental Chemistry
- CHEM 295 - Molecular Modeling
- CHEM 395 - Physical Chemistry
- PHYS 220 - Physics I
- BIO 210 - Molecular and Cell Biology and Animal Physiology
- BIO 210L - Molecular and Cell Biology and Animal Physiology Lab
- BIO 211 - Ecology, Evolution, Biodiversity, and Plants
- STAT 250 - Applied Statistics for Science and Technology
- ENVS 332 - Intro to GIS/GPS