

# Rilee D. Sanders

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## EDUCATION

**Scripps Institution of Oceanography - UCSD, San Diego, CA** 2022 – Present

- Ph.D. Marine Biology
- Advisor: Dr. James Leichter
- Dissertation Project: Southern California Bight Seagrass

**University of Southern California, Los Angeles, CA** 2019

- M.A. in Environmental Studies; GPA: 4.0
- Advisor: Dr. David Ginsburg
- Master's Project: "Assessing impacts of anchoring fragmentation on Catalina Island eelgrass (*Zostera marina*) community structure and health"

**University of Southern California, Los Angeles, CA** 2018

- B.S. Environmental Studies; Minor: Marine Biology; *magna cum laude* honors
- Relevant coursework: Ecology / Marine Biology / Conservation Biology / Geosystems / Coastal Processes / Climate Change and Environmental Management / Sustainability / Biology / Chemistry / Statistics / Calculus / Zoology / Coastal Policy / Phycology

## PROFESSIONAL EXPERIENCE

**Paua Marine Research Group** October 2022 – Present

- *Marine Biologist*: Conduct subtidal scientific diving operations, specializing in *Haliotis* species (abalone) recovery (abundance, size, and spatial distribution surveys) and *Zostera* species (eelgrass) restoration (transplant actions, mapping, and fish community and eelgrass structural surveys). Augment database management operations utilizing programming to systematize and administer quality control for biological and physical oceanographic data. Collaborate to generate data analysis and reporting materials.

**Scripps Institution of Oceanography - UCSD** September 2022 – Present

- *Ph.D. Graduate Student Researcher*: Dissertation research aims to elucidate crucial data gaps and enhance the understanding of open-coast seagrass habitats in the Southern California Bight, while simultaneously informing the efficacy of future seagrass restoration in the region. Manage the deployment of physical oceanographic sensors to twelve geographically discrete sites, while overseeing the collection of biological survey data and sediment samples. Operation of critical laboratory equipment. Perform statistical analyses, produce technical reports, and cooperatively develop grants and manuscripts.

**The Bay Foundation** December 2019 – September 2022

- *Marine Project Manager*: Coordinated and managed subtidal scientific diving operations focused on *Macrocystis pyrifera* (giant kelp) restoration, endangered and threatened *Haliotis* species (abalone) recovery, and *Zostera* species (eelgrass) research. Lead deployment, maintenance, and analysis of oceanographic sensors. Supervised and performed laboratory maintenance and project activities for *Haliotis* species spawning and rearing. Accomplished data aggregation, entry, and QA/QC while utilizing geospatial and statistical software to perform data analysis. Initiated, administered, and developed federal/state permits, reporting, and grant proposals. Monitored project budgets.

**NOAA White Abalone Research***October 2018; November 2021; January 2022*

- *Data Manager and Research Diver*: Collaborated with leading scientists on endangered species *Haliotis sorenseni* (white abalone) research cruises at San Clemente Island (two separate dates) and Cortez Bank. Completed extensive subtidal SCUBA surveys, and managed logistical, biophysical, species abundance, and habitat quality data management for the 22-diver research cruise.

**Department of the Interior – National Park Service***May – October 2019*

- *Biological Science Technician (GS-05)*: Worked as a full-time seasonal fisheries biologist for Channel Islands National Park in Ventura, California. Acted as an integral member of eight-person Kelp Forest Monitoring team, utilizing SCUBA and SSA expertise to conduct biological marine surveys to inform kelp forest and MPA management strategies. Supported data analysis and management and performed QA/QC, and generated technical figures and detailed reports for annual NPS publications.

**USC Wrigley Institute***January – October 2018*

- *Wrigley Fellow and Lab Technician*: Invited to assist on innovative five-person Kelp Biofuel Project and tasked with monitoring *M. pyrifera* nursery. Supported project organization, development of new protocols, and maintenance of optimal growth conditions. Investigated survivorship of *ex situ* raised juvenile *M. pyrifera* cohorts through *in situ* SCUBA monitoring. Maintained subtidal structures and instrumentation.

**California Science Center, Kelp Lab***January – June 2018*

- *Lab Technician*: Operated with USC and CSC researchers on an experimental methodology to grow *M. pyrifera*. Responsible for maintaining optimal nursery conditions and performing water quality analysis.

**USC Wrigley Institute***February 2017 – August 2019*

- *AAUS Research Diver*: Assisted Dr. Nathan Churches on oyster genomics and sustainable aquaculture project through SCUBA surveys, progress monitoring, and structure maintenance. Supported researchers investigating ruminant methane reduction by facilitating subtidal SCUBA-based collections of *Asparagopsis* and *Zonaria* from Catalina Island and processing samples for transport to research labs. Improved coastal sustainability pedagogy utilizing SCUBA at Catalina Island and Cape Eleuthera, Bahamas. Aided Bahamian researchers in *Acropora cervicornis* (staghorn coral) restoration. Assisted University of Queensland researchers on Heron Island (Australia) investigating impacts of coral bleaching on key fish species detection of chemical cues.

**Friends of Ballona Wetlands***August – December 2016*

- *Watershed Technician*: Supervised and directed school and company tours by educating visitors about coastal wetland ecology and history. Assisted in habitat restoration initiatives. Implemented BMPs for wetland conservation by administering two key species removal projects. Aided with water quality testing for storm-water runoff.

## PUBLICATIONS AND TECHNICAL REPORTS

- in review Grime, B., **Sanders, R.**, Ford, T., Burdick H., & Claisse, J. (in review). Urchin gonad response to kelp forest restoration. [Unpublished manuscript].
- 2022 Obaza, A. K., Bird, A., **Sanders, R.**, Ware, R., & Ginsburg, D. W. (2022). Variable fish habitat function in two open-coast eelgrass species. *Marine Ecology Progress Series*, 696, 15-27.
- 2022 **Sanders, R.**, Grime, B., Burdick, H., Ford, T., Williams J., Williams C., Pondella, D. (2022). Palos Verdes kelp forest restoration project, year 8: July 2020-June 2021. Technical report prepared for California Department of Fish and Wildlife. Los Angeles, CA: The Bay Foundation.
- 2021 **Sanders, R.**, Grime, B., Ford, T., Burdick, H. (2021). Southern California Abalone Restoration, annual progress report. Technical report prepared for NOAA National Marine Fisheries Service. Los Angeles, CA: The Bay Foundation.
- 2021 Grime, B., **Sanders, R.**, Burdick, H., Ford, T., Williams J., Williams C., Pondella, D. (2021). Palos Verdes kelp forest restoration project, year 7: July 2019-June 2020. Technical report prepared for California Department of Fish and Wildlife. Los Angeles, CA: The Bay Foundation.
- 2020 Ford, T., Johnson, K., Burdick, H., Enyart, C., Tunioli, G., Grime, B., **Sanders, R.** (2020) Santa Monica Bay National Estuary Program annual technical report. Prepared for United States EPA. Los Angeles, CA: The Bay Foundation.
- 2020 **Sanders, R.**, Grime, B., Ford, T., Burdick, H. (2020). Southern California Abalone Restoration. Technical report. Prepared for NOAA National Marine Fisheries Service. Los Angeles, CA: The Bay Foundation.
- 2020 Grime, B., **Sanders, R.**, Ford, T., Burdick, H. (2020). Palos Verdes Kelp Restoration Project April 2015-June 2020. Programmatic technical report. Prepared for National Fish and Wildlife Foundation. Los Angeles, CA: The Bay Foundation.

## FUNDED GRANT AWARDS

- 2022 Santa Monica Bay Restoration Commission Proposition 50 (**\$741,000**) awarded to The Bay Foundation and Scripps Institution of Oceanography over two years for establishing an ecological monitoring program for *Zostera pacifica*.
- 2021 Pacific Marine and Estuarine Partnership (PMEP) funding (**\$65,000**) awarded to The Bay Foundation for Catalina Island Eelgrass (*Zostera marina*) Restoration.
- 2020 NOAA Coastal and Marine Habitat Restoration Grant (**\$672,000**) awarded to The Bay Foundation over three years for Southern California White Abalone (*Haliotis sorenseni*) Restoration.
- 2020 National Estuary Program Coastal Watersheds Grant funding (**\$240,000**) awarded to The Bay Foundation over two years for implementation of the Santa Monica Bay Subtidal Eelgrass (*Zostera pacifica*) Project.

## RECOGNITION AND RESEARCH SUPPORT

- 2022 Mia Tegner Fellowship, Scripps Institution of Oceanography, UCSD  
*2022-2023 graduate student fellowship (full salary, tuition, fees, insurance)*
- 2019 University of Southern California, Order of Arête  
*Highest commencement honor bestowed to graduate students*
- 2019 USC Provost Fellowship Grant recipient (\$1,000)
- 2018 University of Southern California, Order of Troy  
*Commencement honor for outstanding academic merit, service and leadership*
- 2018 Wrigley Institute Summer Fellowship Funding (\$3,000)
- 2018 USC Summer Undergraduate Research Fellowship Funding (\$3,000)

## CERTIFICATIONS AND SKILLS

### Field

- *Certifications:* AAUS Scientific Diver (130ft), 800+ dives (>550 hours of logged scientific dives); Motorboat Operator Training Course (MOTC) Certified; HAZMAT fill station operator; DAN First Aid/AED/CPR/Oxygen Provider; DAN Diving First Aid for Professional Divers; DAN Member Insurance.
- *Skills:* CRANE and CINP KFM survey methods expertise (southern CA fish, invertebrate, and algae species); sediment core collection; fish, invertebrate, planktonic, and algae collection utilizing diel midwater and surface plankton tows; Niskin bottles, beach seines, purse seiners, pole spears, sporophylls sampling, and genetic tissue samples; stereo-video transects; boat trailering and boat operation of vessels up to 28'; operation of YSI water quality sensors, wave sensors, light sensors, and dissolved oxygen sensors.

### Laboratory

- *Software:* R programming; MATLAB programming; ArcGIS; Microsoft Office; Adobe Premier, Final Cut Pro and iMovie videography editing
- *Data:* Proficiency in data entry; QA/QC; analysis; database management