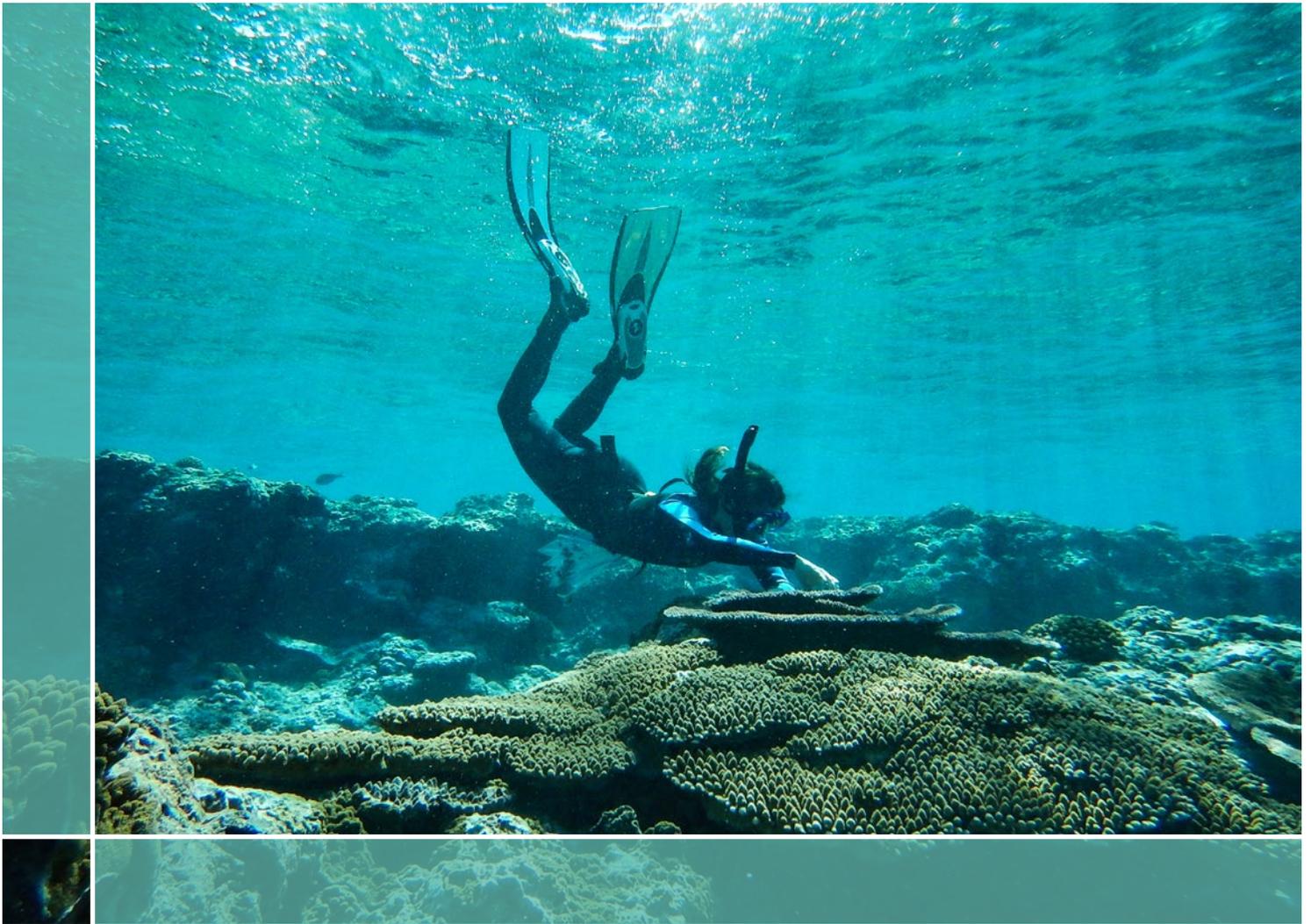


COAST

2022 Annual Report



Covering activities from July 1, 2021 - June 30, 2022

www.calstate.edu/coast

REMEMBERING DR. KENNETH H. COALE (1955-2022)

Dr. Kenneth H. Coale was a pioneer and leader in ocean science whose legacy will live on for decades. He was born in New York City in 1955, grew up in California, and attended University of California, Santa Cruz (UCSC) for his undergraduate education. He studied biology and, upon graduating, was hired as a technician in an oceanography laboratory at UCSC. Thus began his illustrious career in ocean chemistry and the study of trace metals that make organic life possible. Kenneth earned his doctorate from UCSC in 1988 and became a postdoctoral fellow at Moss Landing Marine Laboratories (MLML). He would go on to lead MLML from 1998-2011. During that time, he oversaw the construction of the current MLML facility after the original lab was destroyed during the 1989 Loma Prieta earthquake. Kenneth is best known for his work on the importance of iron as a “fertilizer” for the world’s oceans and leading historic large-scale, open-ocean iron-fertilization experiments. Later in his career, he focused on the cycling and impacts of other trace metals, particularly mercury. He retired from MLML in 2018, having mentored hundreds of students and fellow scientists and leaving a legacy of curiosity, innovation and care for others.

Kenneth was instrumental in the founding and development of the CSU Council on Ocean Affairs, Science & Technology (COAST) in 2008. He had a vision for marine science in the CSU and for California as a global leader in ocean science and policy. With his unwavering support and guidance, COAST grew from an idea into a well- established CSU-wide program that provides millions of dollars in funding to CSU faculty members and students to advance our knowledge of ocean and coastal systems.

Kenneth passed away July 11, 2022, at the age of 67. He will be deeply missed by his family, MLML, the COAST community and scientists across the world. COAST renamed its graduate student award program as the Dr. Kenneth H. Coale Graduate Scholar Awards to honor Kenneth and all that he accomplished.



“It is incumbent upon us, as scientists and educators, to provision the pioneers of the future.”

—Dr. Kenneth Coale



AY 2021-22 HIGHLIGHTS

- In Academic Year (AY) 2021-22, COAST invested more than \$850,000 in research, training and professional development for CSU faculty members and students.
 - This funding supported 22 faculty members and more than 200 students at campuses throughout the system.
 - Awards to faculty members and students constituted 60 percent of COAST's expenditures.
- The new Support for Ocean and Coastal Field Experiences Program provided more than \$26,000 to students to enable them to participate in fieldwork and field courses.
- Three projects totaling over \$860,000 were selected for funding through the State Science Information Needs Program (SSINP).
- Faculty members received more than \$2.8 million in external funding as a result of prior COAST support.
- In late June 2022, COAST received \$5 million in dedicated funding through an appropriation to the CSU in the Fiscal Year (FY) 2022-23 state budget. This support will allow COAST to expand its core programs for CSU faculty members and students, select additional projects for SSINP funding, and support fisheries research that informs marine conservation efforts statewide.

REVENUE AY 2021-22	AMOUNT	% OF TOTAL
Chancellor's Office Contribution	\$589,000	40.4%
Campus Contributions	\$233,750	16%
One-time State Funding	\$390,642	26.7%
Extramural Funding	\$36,200	2.5%
Miscellaneous Revenue	\$15,707	1.1%
Balance Forward From Previous Year	\$193,952	13.3%
TOTAL	\$1,459,251	100%

EXPENDITURES AY 2021-22	AMOUNT	% OF TOTAL
Student Support	\$409,844	29.2%
Faculty Research Funding	\$171,424	12.2%
State Science Information Needs Program	\$270,000	19.3%
Personnel	\$474,724	33.8%
Miscellaneous Expenditures	\$28,449	2.0%
Administrative Fee to Host Campus	\$49,465	3.5%
TOTAL	\$1,403,906	100%

SUPPORTING STATE NEEDS FOR SCIENTIFIC INFORMATION

In 2019, COAST received a one-time appropriation of \$3M in the FY 2019-20 state budget. The funding was specifically intended to allow the CSU to assist the state with its ocean- and coastal-related science information needs. COAST used this funding to establish the State Science Information Needs Program (SSINP), which focuses exclusively on supporting California's highest-priority needs for marine, coastal and coastal watershed-related scientific information. SSINP funds scientific research needed to fill knowledge gaps identified by state agencies and the legislature and facilitate informed policy development and evidence-based decision making in a timely and actionable manner.

Unlike funding opportunities that require applicants to identify stakeholders' information needs, SSINP engages state agencies as grant solicitations are developed to ensure that their needs are well represented. Structured interviews with state agencies with relevant jurisdiction to identify their specific science information needs inform the development of requests for proposal (RFPs). Following rigorous scientific review by qualified experts, state agency representatives provide input on how well highly ranked proposals will meet their needs, thereby ensuring that SSINP-funded projects will benefit the state of California. In addition, awards made through SSINP provide numerous opportunities for the CSU, including increased faculty scholarship, student engagement and workforce development.

OCEAN AND COASTAL COMPENSATORY MITIGATION AND ASSOCIATED RESTORATION

In 2021, COAST met with state natural resource management agencies including Department of Fish and Wildlife (CDFW), Coastal Commission, Ocean Protection Council (OPC), State Water Resources Control Board, State Lands Commission, and State Coastal Conservancy. Agency staff identified the need for information regarding compensatory mitigation, the practice of requiring that damages from certain activities be "compensated for" through actions that provide environmental benefits. As a result of the scoping process, COAST released an RFP on ocean and coastal compensatory mitigation and associated restoration in July 2021. Three projects totaling \$860,885 were selected for funding after a rigorous evaluation process that involved state agencies.

The State Science Information Needs Program (SSINP) has resulted in an investment of \$3.2 million in ocean and coastal research in the CSU.

“We are pleased that COAST has funded a suite of projects designed to fill critical data gaps and improve the state’s understanding of the role of artificial reefs in marine mitigation programs. We value and appreciate the ability to work with COAST to identify priority research needs and look forward to collaborating with the research projects as they proceed.”

Charlton H. Bonham, Director, California Department of Fish and Wildlife



Dr. Jeremy Claisse (Cal Poly Pomona), Dr. Daniel Pondella (Occidental College), “Assessing current biological and physical status of California’s artificial reefs with comparisons to natural reefs to improve compensatory mitigation outcomes” \$345,255

Dr. Claisse and Dr. Pondella will collect physical and biological information from 10 artificial reefs covering 32 acres off the Southern California coast. This information will support CDFW in the development of an artificial reef management plan.

Dr. Kerry Nickols (CSUN), Dr. Mark Steele (CSUN), Dr. Will White (Oregon State University), “Understanding production and attraction on artificial reefs to improve the science of mitigation” \$220,279

Dr. Nickols and co-principal investigators (PIs) will use data from an artificial reef established in 2008 to compensate for damages associated with the San Onofre Nuclear Generating Station to answer an important scientific question regarding whether artificial reefs attract fish from other areas or “produce” fish by virtue of providing additional habitat.

Dr. Sean Anderson (CSU Channel Islands), Dr. Richard Ambrose (UCLA), “Improved mitigation frameworks: Guidance for Improved Restoration Efficacy Across California’s Coastal Zone” \$295,351

Dr. Anderson and Dr. Ambrose will convene expert working groups to create guidance to help state agencies develop scientifically sound compensatory mitigation requirements. Specific guidance will be developed for systems of particular concern such as kelp and oyster beds, salt marshes, and sandy beaches. OPC is providing \$100,000 in funding as part of the total award amount indicated above.

COAST received dedicated funding through an appropriation to the CSU in the FY 2022-23 state budget in late June 2022. This support will allow SSINP to continue, and COAST anticipates releasing two additional SSINP RFPs in 2022 and 2023.

CALIFORNIA SEA GRANT NEW FACULTY FUNDING PROGRAM

Dr. Amanda Kahn, Moss Landing Marine Laboratories, San José State, was awarded funding by California Sea Grant (CASG) in AY 2020-21 for a project that began in AY 2021-22. CASG’s 2020 New Faculty Funding solicitation was focused on supporting early-career faculty. Under the auspices of SSINP, COAST provided the required 50 percent nonfederal match to Dr. Kahn (and four other PIs funded in AY 2020-21).

AWARD RECIPIENTS	PROJECT TITLE	COAST FUNDING	CASG FUNDING	TOTAL FUNDING
Dr. Amanda Kahn Moss Landing Marine Laboratories, San José	Ecophysiology of Olympia oysters grown in aquaculture, and implications for outplanting success	\$29,974	\$59,877	\$89,851

Over the last two years, COAST provided \$147,124 as match for five projects. CASG provided \$294,175 in additional funding for a total investment of \$441,299 in research by new faculty members.

OUTREACH AND STAKEHOLDER ENGAGEMENT

On January 28, 2022, COAST convened a legislative visit to Upper Newport Bay, Orange County, the site of an SSINP-funded project on native oyster restoration and living shorelines. State Senator Dave Min and Assemblymember Cottie Petrie-Norris hosted this event, which highlighted research conducted by Dr. Danielle Zacherl, Cal State Fullerton; Dr. Joseph Carlin, Fullerton; Dr. Christine Whitcraft, Cal State Long Beach; and Dr. Luke Miller, San Diego State. Staff from the offices of Senator Tom Umberg, Senator Josh Newman and Assemblymember Patrick O'Donnell attended along with representatives of the State Coastal Conservancy and a local nonprofit organization, Orange County Coastkeeper, a partner on the project. Government relations staff from Cal State Fullerton and Cal State Long Beach also attended.

COAST hosted a webinar as part of California Ocean Day on March 29, 2022. One hundred and fifty ocean and coastal policy professionals from across the state attended "Microplastics: California's Big Little Plastic Problem." The three-member panel included Dr. Eunha Hoh, professor, School of Public Health, San Diego State, who presented research findings from her SSINP-funded project, "Assessing Fate and Toxicity of Microplastics Under Coastal Environment Conditions." Additional panelists were Senator Ben Allen, State Senate District 26, and Dr. Scott Coffin, research scientist, State Water Resources Control Board. Collectively, the panel discussed the impacts of microplastics and microfibers on ecological and human health and state of California efforts to control these pollutants.



SUPPORTING FACULTY RESEARCH

COAST has developed a suite of programs to support CSU faculty members' research, pursuit of extramural funding and professional development. Over the years, we have refined these programs and created new ones to best serve the faculty and advance the CSU at both state and national levels. The collective goals of these programs are to increase 1) the total amount of extramural funding for ocean and coastal research and education in the CSU, 2) the number of externally funded CSU ocean- and coastal-related principal investigators, and 3) the overall research capacity of the CSU.

The following table provides a summary of COAST awards made to CSU faculty members in AY 2021-22. Please note that this table does not include SSINP awards, which can be found in the previous section.

FACULTY AWARD PROGRAM	NUMBER OF AWARDS	NUMBER OF FACULTY MEMBERS SUPPORTED	NUMBER OF PARTICIPATING CAMPUSES	FUNDING AMOUNT
Grant Development Program	5	7	7	\$99,996
Rapid Response Funding Program	7	9	7	\$60,642
Seminar Speaker Series Program	2	1	2	\$866
Short Course, Workshop and Symposium Funding Program	1	2	2	\$9,920
TOTAL	15	19		\$171,424



GRANT DEVELOPMENT PROGRAM

The Grant Development Program (GDP) supports CSU faculty members and research associates to develop and submit full proposals to external funding agencies and organizations for ocean and coastal research and educational projects. Awards fund activities necessary to maximize subsequent success in obtaining external funding, such as reassigned time and summer salary, data collection, sample analysis and data analysis, and student support. The award maximum in AY 2021-22 was \$20,000.

COAST provided \$99,996 in support to faculty members through the GDP in AY 2021-22. Awards began May 1, 2022, and are 18 months in duration, ending October 31, 2023.

AWARD RECIPIENTS	PROJECT TITLE
Dr. Andrea Bonisoli Alquati Biological Sciences, Pomona	Trophic transfer efficiency of PFAS in a coastal marine trophic web
Dr. Lani Gleason Biological Sciences, Sacramento	Comparative transcriptomics in the intertidal snail <i>Tegula</i> genus to examine heat stress adaptation in the era of climate change
Dr. Jaime Matera Anthropology, Channel Islands Dr. Ellen Hines Geography & Environment, San Francisco	Assessing marine mammal bycatch in Chilean artisanal fisheries
Dr. Douglas Pace Biological Sciences, Long Beach	Determining the adaptive value and molecular correlates of developmental plasticity in larvae of the Pacific sand dollar, <i>Dendraster excentricus</i>
Dr. Maddie Schroth-Glanz Statistics, San José Dr. Heather Liwanag Biological Sciences, San Luis Obispo	Where are the whales? Filling in conservation monitoring gaps along California's Central Coast with bioacoustics

RAPID RESPONSE FUNDING PROGRAM

The Rapid Response Funding Program provides funding for unanticipated, urgent projects that require a response outside of the existing annual COAST funding opportunities. Awards must be used to support activities associated with unexpected or sudden events.

In October 2021, a submarine oil pipeline off the coast of Huntington Beach in Southern California ruptured, releasing approximately 25,000 gallons of crude oil into the coastal environment. Within five days, COAST responded by releasing a special RFP for projects in direct response to the spill.

In AY 2021-22, the award maximum for standard Rapid Response Awards was \$7,500; it was \$10,000 for awards related to the Huntington Beach oil spill. COAST made seven awards, totaling \$60,642.

STANDARD RAPID RESPONSE AWARD RECIPIENTS	PROJECT TITLE
Dr. Camille Antinori Economics, San Francisco Dr. Phil King Economics, San Francisco	Valuing public access to recreational and subsistence fishing along the Berkeley waterfront
Dr. Trent Biggs Geography, San Diego	Exceptional drought, coastal stream restoration and anadromous fish habitat
Dr. Emmanuel Gabet Geology, San José	Documenting the geomorphic impacts of the removal of a small dam in the coast ranges

HUNTINGTON BEACH OIL SPILL RAPID RESPONSE AWARD RECIPIENTS	PROJECT TITLE
Dr. Andrea Bonisoli Alquati Biological Sciences, Pomona	Oil exposure to birds as a result of the Huntington Beach oil spill
Dr. Jesse Dillon Biological Sciences, Long Beach Dr. Christine Whitcraft Biological Sciences, Long Beach	Assessing impacts of the Huntington Beach oil spill on benthic sediment decomposer communities in Talbert Marsh
Dr. Erika Holland Biological Sciences, Long Beach Dr. Christine Whitcraft Biological Sciences, Long Beach	Oil-related pollutants in Southern California estuaries impacted by the Huntington Beach oil spill
Dr. Petr Vozka Chemistry and Biochemistry, Los Angeles	Mapping biodegradation of subsurface oil in Huntington Beach sands

SHORT COURSE, WORKSHOP AND SYMPOSIUM FUNDING PROGRAM

In AY 2021-22, COAST made one Short Course, Workshop and Symposium Funding Program award for \$9,920 to Dr. Janet Kübler at CSUN and Dr. Rafael Cuevas Uribe at Cal Poly Humboldt. They convened an interdisciplinary symposium during the California Seaweed Festival at the San Francisco State Estuary and Ocean Science Center on October 7-8, 2022. The symposium highlighted CSU seaweed expertise and was open to the public.

EXTRAMURAL FUNDING

In AY 2020-21, faculty members secured over \$2.8 million in extramural funding as a result of prior COAST support.

CAMPUS	PRINCIPAL INVESTIGATOR	DEPARTMENT	FUNDING AGENCY	PRIOR COAST SUPPORT	AMOUNT TO CSU
Los Angeles	Dr. Pat Krug	Biological Sciences	NSF Population & Community Ecology, Integrative Ecological Physiology	2016-17 Grant Development Program Award	\$602,791
San Diego	Dr. Matt Edwards	Biology	NSF Convergence Accelerator Research	Multiple awards	\$557,577
Channel Islands	Dr. Kiki Patsch	Environmental Science and Resource Management	BEACON	Multiple awards	\$75,000
San Francisco	Dr. Ellen M Hines	Geography & Environment	NOAA Southwest Fisheries	2012-13 Collaborative Resource Sharing Award	\$60,000
Los Angeles	Dr. Andres Aguilar	Biological Sciences	NSF Mid-Career Advancement Award	2018-19 Grant Development Program Award	\$373,704
Stanislaus	Dr. Ritin Bhaduri	Biological Sciences	Fulbright Scholar Research Award	Multiple undergraduate student awards	\$30,000
Northridge	Dr. Nyssa Silbiger	Biology	NSF CAREER	2019-20 Grant Development Program Award	\$799,551
San Diego	Dr. Hilary McMillan	Geography	NSF GEOPATHs	2019-20 Grant Development Program Award	\$82,050
Humboldt	Dr. Jasper Oshun	Geology			\$145,352
Sacramento	Dr. Amelia Vankeuren	Geology			\$86,849
TOTAL					\$2,812,874

CONTRIBUTION TO OVERALL CSU RESEARCH AND DEVELOPMENT FUNDING

COAST inventories the external grant and contract activity of its members across the system annually with the goal of demonstrating the collective impact of faculty members involved in ocean and coastal research. AY 2020-21 expenditure data were collected for all externally-funded grants and contracts for faculty members associated with COAST at each campus. Filtering the data to include only research and development (R&D) expenditures for ocean and coastal projects shows that these activities constitute 8.8 percent of the CSU's overall externally-funded R&D expenditures for the year (\$259,675,000).

AWARDS TO COAST FACULTY	NUMBER OF AWARDS	NUMBER OF INDIVIDUAL PIS	EXPENDITURES
Ocean and Coastal R&D Only	319	143	\$22,772,874



SUPPORTING STUDENT DEVELOPMENT

COAST is committed to 1) increasing the diversity of marine and coastal science undergraduate and graduate student populations within the CSU, 2) creating a more inclusive and diverse marine science community in California and 3) ultimately increasing the diversity of marine science professionals nationwide. To achieve those goals, COAST supports CSU undergraduate and graduate students engaged in ocean- and coastal-related research with CSU faculty members through research awards, support for field experiences, travel grants and internships. COAST support helps students meet their financial obligations and devote more time to their academic work and research projects than would be possible otherwise. This helps them stay enrolled, persist in STEM majors, and attain their degrees in less time.

In AY 2021-22, COAST made 208 awards totaling \$409,844 to 201 individual students.

STUDENT PROGRAM	NUMBER OF AWARDS	NUMBER OF PARTICIPATING CAMPUSES	FUNDING AMOUNT
Support for Ocean and Coastal Field Experiences Program	17	7	\$26,380
Graduate Student Research Award Program	46	13	\$138,000
CA Sea Grant Graduate Research Fellowship Match	2	2	\$25,000
Student Travel Award Program	13	6	\$11,957
Summer Internship Program	26	14	\$103,900
Undergraduate Student Research Support Program	104	23	\$102,798
General Support	-	-	\$1,809
TOTAL	208		\$409,844

The goals of the COAST student programs are to 1) stimulate student interest in ocean- and coastal-related careers, 2) increase student participation in faculty-mentored research and 3) provide students with the opportunity to obtain the skills necessary to join a highly skilled, technologically advanced workforce. A number of the programs utilize high-impact practices (HIPs), including undergraduate research, internships and field experiences, to help students develop their scientific identity and foster a sense of belonging.



NEW THIS YEAR: SUPPORT FOR OCEAN AND COASTAL FIELD EXPERIENCES PROGRAM

Research by colleagues at UC Santa Cruz shows that participation in field experiences increases student engagement in STEM, supports persistence, and can even reduce achievement gaps (Race et al. 2021; Beltran et al. 2020; Zavaleta et al. 2020). However, field experiences can be prohibitively expensive: costly personal gear may be needed (hiking boots, SCUBA gear, outdoor equipment), travel may be required, and there are often extra fees for residential field courses. To increase access to field experiences, particularly for economically challenged students, we need to reduce the cost barriers, and we need to facilitate positive and rewarding experiences that inspire and encourage students to pursue STEM disciplines.

To address these issues, COAST launched a program in the spring of 2022 designed to encourage more students, particularly those from historically excluded groups, to participate in ocean and coastal field experiences. The Support for Ocean and Coastal Field Experiences Program provides funds to defray costs associated with fieldwork and field courses to students with financial need so that they are able to do something that they wouldn't be able to do otherwise. Students can apply for funds to buy gear they need (and it's theirs to keep), travel to conduct fieldwork, and cover the additional costs of field courses. To broaden participation, priority is given to students who have little or no field experience.

In May and June of 2022 alone, COAST received applications from 27 students totaling \$47,000, demonstrating significant need for this type of support. COAST awarded a total of \$26,380 to eight graduate students and nine undergraduate students from seven campuses (Appendix). Decisions were based on eligibility and prior experience (again, with a preference for those with little or no experience).

Reports from AY 2021-22 awardees demonstrate that the program is working exactly as intended and having immense impacts. The following is from a student who receives financial aid, is the first person in her family to go to college, and identifies as a member of a racial or ethnic group that has been historically excluded from marine and coastal science. Her testimonial speaks to the ways this program helps students succeed:

Without the support from COAST, I definitely would have not been able to participate in this opportunity. I never go camping so I did not own any of the camping gear that we were required to bring. I had recently missed out on two field trips in my geomorphology class due to this exact reason. I was afraid that this was going to be a similar situation and was very worried about how I was going to accomplish acquiring all of the camping gear and attire needed. Thankfully, I came across this opportunity due to my professor sharing it with us and it completely changed my life.

²SFSU data not included.

Throughout my trip I kept thinking how grateful I was for having received the help from COAST because I was able to fully appreciate this fieldwork experience without needing to worry I was missing anything or that what I had brought was not appropriate. This trip included a lot of firsts for me and having the materials needed eased a lot of the anxiety that comes with doing things out of your comfort zone. For example, during our fieldwork we had to hike down rivers and the terrain was not always the best. I was nervous about some of the tasks that we had to do but knowing I had the appropriate water shoes to navigate the rocks and waters helped me tremendously. I did not have to worry that I was not properly prepared for the tasks we had to complete. My sleeping bag, pad and pillow also kept me surprisingly super comfortable throughout our stay! I was so grateful that I was getting a good rest each day because that was something that I was worried about at first.

This field experience was life-changing! I found out that I do love being outside working in the field and I learned so much about what I am capable of. I learned a lot about what it takes to be a scientist out in the field from my professors and it was such a rewarding and amazing experience.

GRADUATE STUDENT RESEARCH AWARD PROGRAM

In AY 2021-22, 46 graduate students from 13 campuses were supported through the Graduate Student Research Award Program (Appendix). Applicants are able to request the \$3,000 award be provided directly to them through their campus financial aid office for their personal use (e.g., living expenses, tuition and fees, child care), be made available to them through their department for the purchase of materials and supplies, services or travel in support of their research, or any combination of the two. Applicants construct their own budgets and obtain departmental approval as part of the application process. This enables students to conduct their work and complete their theses efficiently and effectively.



“COAST represents the first competitive scholarship I’ve ever been awarded, and it reaffirms the confidence in myself as a science student of color... Applying to the COAST scholarship has bettered my understanding of scientific writing and what it means to be successful in science communication and proposal writing. It was a fantastic and fruitful opportunity and I am grateful for those who have recognized my growing capability as a young scientist in the field.”

*–D’Andre Alejandro, San Francisco State
Graduate Student Research awardee
(2020-2021¹)*

¹ 2021-22 Graduate Student Research awardees have not turned in their final reports yet; a quote from a 2020-21 awardee is presented to demonstrate the impact of the program.

“Participating in a research project has been one of the best experiences in my life. As a first-generation student, from parents that have little academic background, I never thought I would go to a university or even try to pursue a degree in chemistry.”

—Marcos Carreon, Stanislaus State Undergraduate Student Research Support Program awardee

“This internship was an incredible and invaluable experience to me. I have gained countless important new skills and, above all, gained confidence in my own capabilities as a student, a learner and a young scientist.”

—Mila Berntsen, Cal Poly San Luis Obispo Undergraduate Student Summer Intern

UNDERGRADUATE STUDENT RESEARCH SUPPORT PROGRAM

The Undergraduate Research Support Program provides funding to each campus to support undergraduate students involved in ocean and coastal research. Campus representatives are responsible for implementing this program and awarding the funds on their respective campuses.

The amount was doubled this year from \$2,500 to \$5,000 because unused funds carried forward from previous years, when COVID-19 greatly reduced campus research activities. All 23 campuses successfully allocated their funding and supported 104 students (Appendix). Four campuses provided matching funds totaling \$7,175 that augmented students' projects.

SUMMER INTERNSHIP PROGRAM

Through the Summer Internship Program, CSU students work side by side with professionals involved in marine and coastal research, management and policy. COAST interns gain valuable work experience and learn professional and technical skills that complement their education and provide significant employment opportunities. Additionally, these students are better able to make informed decisions about STEM-related fields and advanced degrees they may wish to pursue. Since the program began in 2011, 144 interns have been placed with state and federal agencies, nonprofits and private companies. Many COAST interns have been hired by their hosts following their internship, demonstrating that the program is a valuable pipeline for both employers and CSU students.

In summer 2021, 11 students—including eight undergraduates—from eight campuses were placed with seven hosts (Appendix). Because of COVID-19, most of these internships were a mix of both remote and in-person work. New projects included management of striped marlin in the eastern Pacific Ocean and investigation of invasive species in San Francisco Bay.

In summer 2022, 15 students—including 13 undergraduates—from nine campuses were placed with 12 hosts (Appendix). Most interns were able to engage with their hosts in-person at least some of the time. There were several new partners this year including the NOAA National Marine Fisheries Service Southwest Fisheries Science Center and the San Francisco Bay Conservation and Development Commission. New projects included working with ocean satellite data, seafood ecolabeling, and Indigenous community engagement.

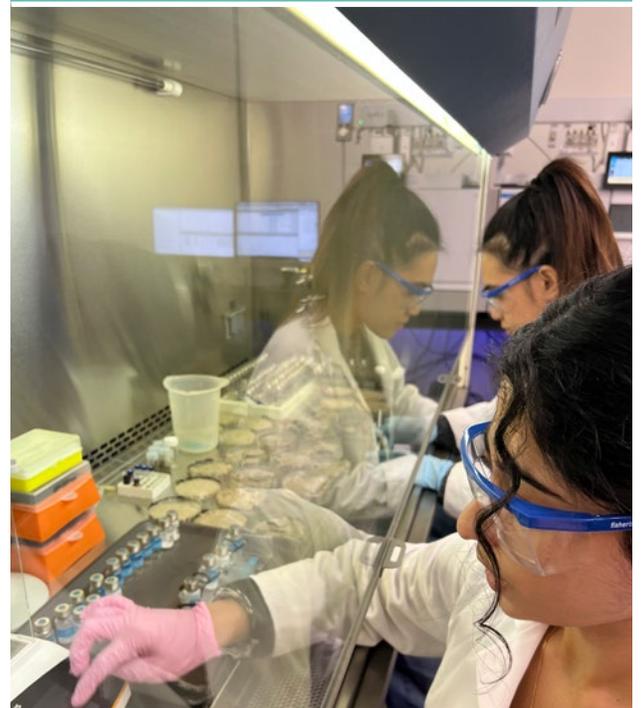


STUDENT TRAVEL AWARD PROGRAM

The Student Travel Award Program supports continuing CSU undergraduate and graduate students to attend and present the results of their original ocean and coastal research at scientific meetings and conferences. The goals of the program are to enable students to participate in transformative experiences and to highlight CSU research at a national level. COAST provided \$11,957 in travel support to two undergraduate and 11 graduate students from six campuses (Appendix).

“My presentation was well-received, and I was pleasantly surprised at how supportive the audience was, especially as I am an undergraduate student and felt very intimidated to present to other researchers who are much further in their career and established in their field. Numerous attendees complimented the fact I was confident enough to attend and participate as an undergraduate student, as they acknowledged that they would not have been able to do so at that stage in their life. I am grateful for the entire experience and for the support from CSU COAST in making this possible.”

—Kaitlin Macaranas, CSU Bakersfield Student Travel Awardee



LOOKING AHEAD

Over the next 12 months, COAST will

- Refine the Support for Ocean and Coastal Field Experiences Program, which provides funding to students to defray expenses associated with field experiences.
- Provide resources, training and support to CSU faculty members and students who want to actively work to create a more inclusive marine science community.
 - Provide professional training on implicit bias and microaggressions, active bystander intervention and codes of conduct for CSU graduate students.
 - Curate resources for the Anti-Racism and Diversity Resources section of our website.
- Provide professional development opportunities for CSU faculty members on a topic of their choosing.
- Release a fourth SSINP solicitation for proposals on a topic yet to be determined.
- Convene meetings and briefings with state agencies, lawmakers and legislative committee staff to update them on the findings of the SSINP-supported projects.
- Pursue extramural funding to increase ocean- and coastal-related research and educational activities for undergraduate and graduate students.

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APPENDIX

STUDENT AWARDS AND SUPPORT

SUPPORT FOR OCEAN AND COASTAL FIELD EXPERIENCES PROGRAM

*Undergraduate student

CAMPUS	STUDENT	DEPARTMENT/DEGREE PROGRAM	AWARD
Fullerton	Taylor Naquin	Biology	\$4,000
	Barbara Orozco	Biology	\$1,484
	Vivan Sieu	Biology	\$4,000
Humboldt	Ethan Acevedo*	Biological Sciences	\$545
	Victoria Cifelli	Biological Sciences	\$1,233
	Emily Dwyer*	Biological Sciences	\$1,582
	Bailey McCann	Biological Sciences	\$2,343
	Jake Vargas	Biological Sciences	\$917
Monterey Bay	Valeria Rodriguez*	Applied Environmental Science	\$287
Sacramento	Hailey Odell*	Biology	\$500
San Diego	Kian Bagheri	Environmental Engineering Joint Doctoral Program	\$4,192
	Christiana Pineda*	Geography and Environment	\$800
	Fernanda Portillo*	Geography and Environment	\$1,510
	Callie Summerlin*	Environmental Sciences	\$165
	Ryan Ursiny*	Geography and Environment	\$965
San Francisco	Giusi Adragna*	Biology	\$437
San José	Keenan Guillas	Moss Landing Marine Laboratories	\$1,420

GRADUATE STUDENT RESEARCH AWARDS

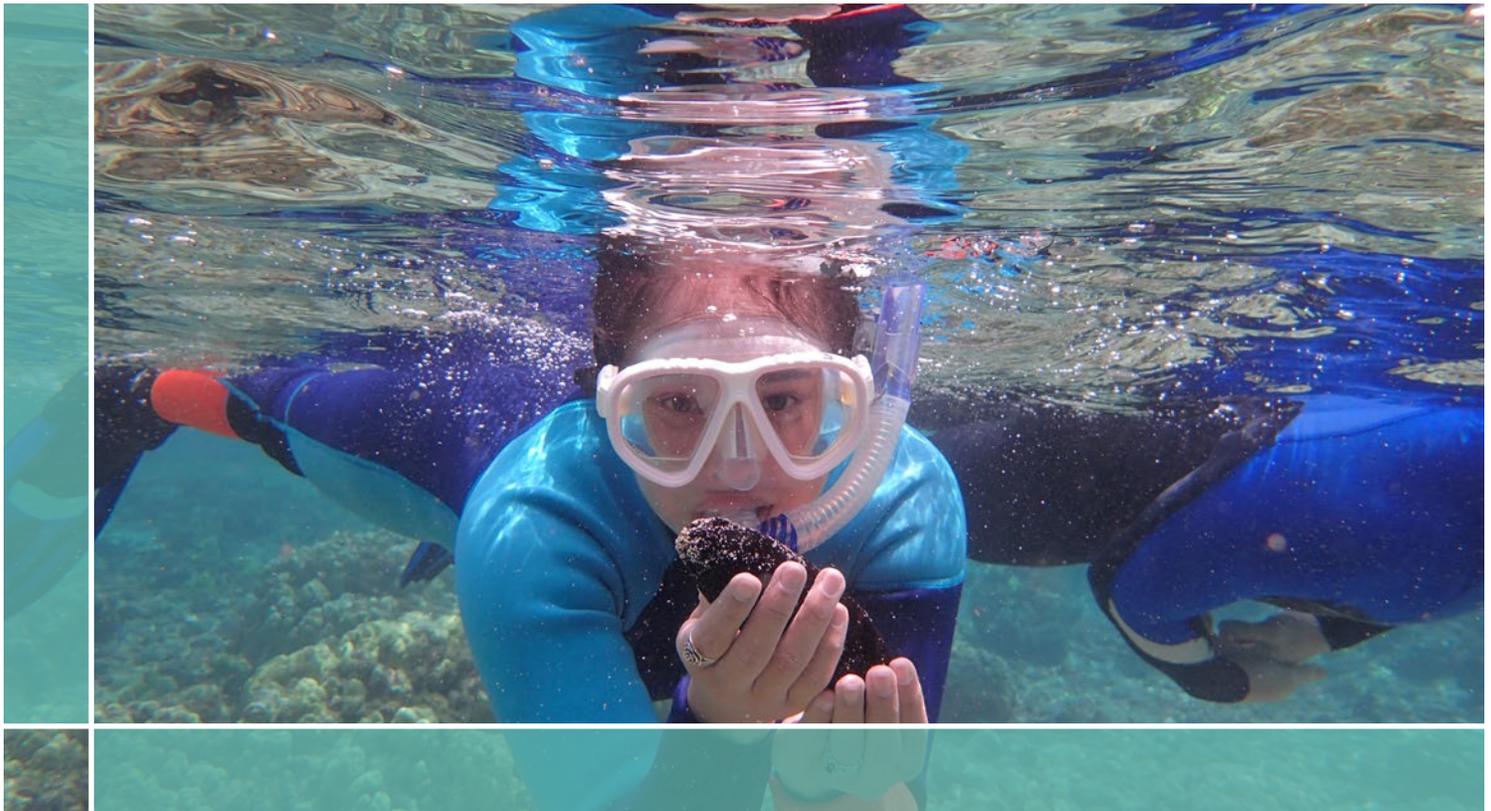
Each award is \$3,000.

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE
Fullerton	Anabell Espinosa Pico	Biology	Dr. Ryan Walter	Cranial variation on California pipefishes
	Taylor Naquin	Biology	Dr. Jennifer Burnaford	Spatial distribution of tissue chemistry in intertidal brown algae
Humboldt	Lilamarie Bowen	Natural Resources	Dr. Dan Barton	The impacts and interactions of human disturbance on reproductive success in Western Gulls
	Fiona Connor	Environmental Resources Engineering	Dr. Eileen Cashman	Investigating the effectiveness of microplastic removal and the relationship between microplastics, microbial communities, and nitrogen in the natural treatment systems at the Arcata Wastewater Treatment Facility
	Marzia Fattori	Fisheries Biology	Dr. Rafael Cuevas Uribe	Effect of temperature on recruitment and growth of bull kelp seeded on gravel, and growth comparison between two substrates to test for effectiveness as restoration methods
	Rose Harman	Biological Sciences	Dr. Paul Bourdeau	The influence of environmental forcing on predator-prey interactions in nearshore ecosystems: leopard shark (<i>Triakis semifasciata</i>) foraging in Humboldt Bay
	Hannah Joss	Natural Resources	Dr. James Graham	Monitoring bull kelp canopy at high spatial resolutions along the northern-most coast of California
	Juhi Lafuente	Fisheries Biology	Dr. Eric Bjorkstedt	Multiple-stressor impacts on survival and growth of North Pacific krill (<i>Euphausia pacifica</i>) in the California Current Ecosystem
	Parker Lund	Biological Sciences	Dr. Catalina Cuellar-Gempeler	Invasive anemones buffer host-associated microbiota against thermal stress
	Robyn Norman	Biological Sciences	Dr. Dawn Goley	Characterizing the habitat use of gray whales (<i>Eschrichtius robustus</i>) and the temporal and spatial variation of their invertebrate prey base
	Katherine Stonecypher	Environmental Science & Management	Dr. Alison O'Dowd	Diet, growth and survival of coho salmon (<i>Oncorhynchus kisutch</i>) in off-channel flood plain and estuarine habitats
Long Beach	Anita Arenas	Biological Sciences	Dr. Christine Whitcraft	Ecology of <i>Iris pseudacorus</i> in its nonnative range and effects on invertebrate communities in a Southern California estuary
	Elizabeth Jahn	Biological Sciences	Dr. Chris Lowe	Density and abundance of juvenile white shark (<i>Carcharodon carcharias</i>) prey species along the beaches of Southern California

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE
Long Beach	Ariana Lee	Biological Sciences	Dr. Douglas Pace	Assessing the phenotypic plasticity response in low-fed larvae of <i>Dendraster excentricus</i> when switched to high food conditions
	Sergio Madrigal Mora	Biological Sciences	Dr. Chris Lowe	The dynamics of Pacific nurse shark aggregations under seasonally fluctuating water temperatures
	Benjamin Nguyen	Biological Sciences	Dr. Darren Johnson	Natural selection on personality variation of a marine snail
	Kameron Wong	Biological Sciences	Dr. Erika Holland	The effects of Ca ²⁺ disrupting pollutant tetrabromobisphenol A on DREAM-mediated gene transcription in adult zebrafish, <i>Danio rerio</i>
Los Angeles	Ulysses Hernandez	Biological Sciences	Dr. Elizabeth Torres	Targeted eDNA detection and DNA metabarcoding of California marine ostracod crustaceans
Monterey Bay	Katrina Giambertone	Marine Science	Dr. Cheryl Logan	Exploring mechanisms of coral thermal tolerance in Galápagos <i>Pocillopora</i> colonies
	Travis Leggett	Marine Science	Dr. James Lindholm	The influence of reef connectivity on urchin and kelp populations near a submarine canyon in Carmel Bay, California
	Bryan Van Orman	Applied Environmental Science	Dr. Nathaniel Jue	Relationships between the gut microbiome, diet, environment, and host genotype: a molecular approach to trophic interactions in <i>Oncorhynchus mykiss</i> juveniles
Northridge	Jack Corso	Biology	Dr. Peter Edmunds	Coral-algal competitive interactions within marginal reef environments
	Jamie Kerlin	Biology	Dr. Nyssa Silbiger	Direct and indirect effects of disturbance and neighborhood on coral growth rate and survivorship
	Kiran Reed	Biology	Dr. Mark Steele	Evaluating the nonconsumptive effects of giant sea bass (<i>Stereolepis gigas</i>)
Pomona	Brenda Calderon	Biological Sciences	Dr. Jeremy Claisse	Spatial and habitat variation in diet composition and associated life history patterns of garibaldi in the Southern California Bight
	Matthew Kim	Biological Sciences	Dr. Jeremy Claisse	Using industry ROV footage to analyze fish assemblages associated with subsea oil and gas pipelines in Southern California

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE
San Diego	Karina Arzuyan	Biology	Dr. Matthew Edwards	Effects of associated macroalgae on rhodolith (<i>Lithothamnion australe</i>) conditions in the time of climate change
	Kelly Hollman	Civil Engineering	Dr. Natalie Mladenov	Photoirradiation and degradation kinetics of microfiber leachates
San Francisco	Marina Bozinovic	Geographic Information Science	Dr. Ellen Hines	Applying passive acoustic monitoring to address spatial risk management of baleen whales in Greater Farallones and Cordell Bank National Marine Sanctuaries
	Jesse Espinoza	Integrative Biology	Dr. Sarah Cohen	Assessing the stress and recovery of algal symbionts in host anemones experiencing salinity and temperature fluctuations in the temperate intertidal
	Erick Ortiz	Interdisciplinary Marine and Estuarine Sciences	Dr. Michelle Jungbluth	Characterizing the diversity and food web support provided by microorganisms to native fishes in restored wetlands
San José	Taylor Azizeh	Moss Landing Marine Laboratories	Dr. Birgitte McDonald	Using fine-scale data to understand the foraging ecology of late chick-rearing emperor penguins (<i>Aptenodytes forsteri</i>) at Cape Crozier, Antarctica
	Basil Darby	Moss Landing Marine Laboratories	Dr. Thomas Connolly	Impact of submesoscale coherent structures on vertical motion and horizontal transport along the coast of Northern California
	Jason Gonsalves	Moss Landing Marine Laboratories	Dr. Thomas Connolly	Quantifying oceanographic and atmospheric drivers of island mass effect within the Phoenix Islands Protected Area
	Logan Grady	Moss Landing Marine Laboratories	Dr. Thomas Connolly	Wave-driven kelp wake as a mechanism for vertical mixing within a kelp forest off of Monterey Peninsula
	Keenan Guillas	Moss Landing Marine Laboratories	Dr. Amanda Kahn	The behavior and energetics of demosponges in response to suspended sediments
	Marine Lebec	Moss Landing Marine Laboratories	Dr. Maxime Grand	Automated nutrient analysis via programmable flow injection: from benchtop to unattended operation at shore stations
	Jessica Metter	Moss Landing Marine Laboratories	Dr. Maxime Grand	Methane reduction or ozone depletion? Estimating the environmental impact of growing large quantities of <i>Asparagopsis</i> for cattle consumption
	Emma Nicholson	Moss Landing Marine Laboratories	Dr. Birgitte McDonald	Usage of a unique California wetland: harbor seal (<i>Phoca vitulina</i>) population patterns in Elkhorn Slough, California

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE
San José	Amy Parsons	Evolution and Ecology	Dr. Scott Shaffer	Characterizing the influence of urbanization on California gull (<i>Larus californicus</i>) microbiomes
	Gregory Smith	Biological Sciences	Dr. Scott Shaffer	Fate of double-brooded offspring in a long-lived seabird species
San Luis Obispo	Kathleen Elder	Biological Sciences	Dr. Tim Bean	Marine resource use by terrestrial mammals in island versus mainland coastal ecosystems
	Molly Murphy	Biological Sciences	Dr. Heather Liwanag	Mom, is that you? A northern elephant seal pup's ability to vocally recognize its mother in a densely populated rookery
San Marcos	Dulce Robles Martinez	Biological Sciences	Dr. Diego Sustaita	Comparative foot morphology and climbing performance of the salt marsh harvest mouse and occurring rodent species in the Suisun Marsh, California
Sonoma	Maria Velazquez	Biology	Dr. Brent Hughes	Assessing the effects of kelp forest restoration on species diversity and ecosystem function



UNDERGRADUATE RESEARCH SUPPORT PROGRAM AWARDS

Some awards may include unspent funds from previous years. Campuses marked with an * provided match funding.

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
Bakersfield	Kaitlin Macaranas	Biology	Dr. Rae McNeish	Aquatic and terrestrial landscape features affect the atmospheric deposition of microplastics and nutrients	\$4,431
	Natalie Nunez	Biology	Dr. Rae McNeish	Impact of water scarcity and drought conditions on plastic and natural leaf degradation	\$2,500
Channel Islands	Ariana Arias	Environmental Science and Resource Management	Dr. Dan Reineman	Microplastics in SoCal sandy beaches	\$1,000
	Sean Haran	Environmental Science and Resource Management	Dr. Dan Reineman	Surfers Point Beach resource quality monitoring	\$350
	Joong Soo Kim	Environmental Science and Resource Management	Dr. Sean Anderson	Microplastics in California's sandy beaches	\$895
	Veronica Simental	Environmental Science and Resource Management	Dr. Sean Anderson	Water quality and microplasticity of Conejo Creek Tributary	\$215
	Kurt Skowronski	Environmental Science and Resource Management	Dr. Dan Reineman	Beach cleanup day microplastics	\$1,000
	Alexandria Swims	Environmental Science and Resource Management	Dr. Sean Anderson	Conejo Creek Valley water quality	\$750
Chico	Carlos Melchor	Chemistry	Dr. Monica So	Cleaning up oil-contaminated water with metal-organic framework-coated melamine sponges	\$1,250
	Madison Payne	Biological Sciences	Dr. David Stachura	Examining the negative effects of Camp Fire toxins on the immune system	\$1,797
	Adil Sayed	Earth and Environmental Sciences	Dr. Sandrine Matiasek	Distribution and seasonal variability of metal accumulation in bioswale plants	\$2,066

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
Dominguez Hills	Kelsie Kaufman	Biology	Dr. Samantha Leigh	Pervasiveness of microplastics in the Southern California Bight	\$1,750
	Kevin Mosqueda	Biology	Dr. Samantha Leigh	Microplastic pervasiveness in Southern California marine ecosystems	\$1,750
	Diego Rodriguez	Biology	Dr. Charlene McCord	The impacts of microfragmentation and thermal stress on massive coral	\$1,500
East Bay*	Tiffany Hopkins	Earth and Environmental Science	Dr. Patty Oikawa	A study of the phenology of a tidal wetland system	\$2,000
	Hamed Jalala	Biological Sciences	Dr. James Murray	Magneto-sensory orientation discrepancies across different populations of the sea slug <i>Tritonia tetraquetra</i>	\$2,000 (\$2,500)
	Jackelyn Marroquin	Public Health	Dr. Patty Oikawa	A study of Eden Landing tidal wetland ecosystem phenology	\$1,000 (\$2,000)
Fresno	Yugjeet Grewal	Biology	Dr. Steve Blumenshine	Estimating stable isotope incorporation rate in juvenile Chinook salmon	\$1,000
	Caoilinn Hardy	Biology	Dr. Steve Blumenshine	Chinook salmon conservation data analysis	\$1,000
	Harleen Kaur	Biology	Dr. David Lent	A comparison of the lateral pallium in <i>Muraenidae</i> species to determine the relationship between spatial memory and habitat complexity	\$1,000
Fullerton*	Nicholas Felix	Biology	Dr. Kristy Forsgren	Histopathology of flatfishes from Orange County Sanitation District reference and wastewater outfall sites	\$545

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
Fullerton*	Lizbeth Gonzales	Biology	Dr. Jennifer Burnaford	Potential effects of COVID-related human activity on mussel population structure: comparisons between MPA and non-MPA shores	\$275
	Brianna Herrera	Biology	Dr. Danielle Zacherl	Impact of varying substrates and human-activity levels on condition index of <i>Ostrea lurida</i> and <i>Mytilus galloprovincialis</i>	\$750
	Justin Hertel	Biology	Dr. Erin (Misty) Paig-Tran	Comparing methods of age determination in <i>Sardinops sagax</i>	\$250
	Joann Lam	Biology	Dr. Jennifer Burnaford	Potential effects of COVID-related human activity on mussel population structure: comparisons between MPA and non-MPA shores	\$275
	Trina Miller	Biology	Dr. Jennifer Burnaford	Trash surveys (quantity, types, and retention of trash) in the rocky intertidal zone	\$275
	Renee Serna	Biology	Dr. Ryan Walter	Drift on: comparing seasonal and annual genetic variation of restored eelgrass beds in Newport Bay, California	\$1,000
	Jennifer Telish	Biology	Dr. Kristy Forsgren	Proteomic analysis of androgenic regulation of the transition between primary and secondary ovarian follicle development in coho salmon (<i>Oncorhynchus kisutch</i>)	\$552
	Kim Yumul	Biology	Dr. Danielle Zacherl	Effects of <i>Watersipora</i> spp. on the recruitment of the native Olympia oyster, <i>Ostrea lurida</i>	\$750 (\$1,000)

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
Humboldt	Cody Carlson	Fisheries Biology	Dr. Rafael Cuevas Uribe	Integrated multi-trophic aquaculture (IMTA)	\$500
	Stuart Goran	Oceanography	Dr. Tamara Barriquand	The effects of offshore upwelling on nearshore biological productivity off the Trinidad headline	\$500
	Katie Hoy	Oceanography	Dr. Tamara Barriquand	The effects of offshore upwelling on nearshore biological productivity off the Trinidad headline	\$500
	Emma Modrick	Oceanography	Dr. Tamara Barriquand	Time series analysis of acoustic doppler current profiler in Humboldt Bay	\$198
	Daniel Montoya	Fisheries Biology	Dr. José Marín Jarrín	Quantifying shotgun shell and wad waste on the shorelines of Humboldt Bay	\$400
	Shelsy Morales	Oceanography	Dr. Jeffrey Abell	The effects of offshore upwelling on nearshore biological productivity off the Trinidad headline	\$500
	Maya Noble	Biological Sciences	Dr. Paul Bourdeau	The effects of abiotic and biotic turbidity on predatory behaviors of the Pacific rock crab	\$500
	David Zeitz	Chemistry	Dr. Claire Till	Analytical determination of chlorophyll in seawater for an upper division instrumentation course	\$454
	Sandra Zepeda	Biological Sciences	Dr. Rafael Cuevas Uribe	Growing <i>Nereocystis luetkeana</i> under two light technologies (LED and fluorescent)	\$500

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
Long Beach	Priscilla Alvarez	Biological Sciences	Dr. Christine Whitcraft	Seasonal variability in the diet of the federally endangered California least tern	\$500
	Felicity Erikson	Biological Sciences	Dr. Chris Lowe	Drone pilot licensing	\$250
	Javier Mata	Biological Sciences	Dr. Chris Lowe	Drone pilot licensing	\$250
	Alex Mendelson	Biological Sciences	Dr. Bruno Pernet	Are larvae of <i>Ficopomatus enigmaticus</i> either "founders" or "aggregators," and does the proportion of founders versus aggregators differ among families?	\$500
	Keomonyroth Nuon	Biological Sciences	Dr. Bruno Pernet	Are larvae of <i>Ficopomatus enigmaticus</i> either "founders" or "aggregators", and does the proportion of founders versus aggregators differ among families?	\$500
	Cameron Powell	Biological Sciences	Dr. Darren Johnson	Effects of ocean acidification on energy balance and productivity of <i>Macrocystis pyrifera</i>	\$1,250
	Hannah Sherrod	Biological Sciences	Dr. Erika Holland	Detection and characterization of microplastics in whale feces	\$500
	Amanda Tsai	Biological Sciences	Dr. Jesse Dillon	Culture-based investigations of bacterial communities in a novel intestinal organ in the heart urchin <i>Brisaster townsendi</i>	\$500
	Moses Villeda	Biomedical Engineering	Dr. Siavash Ahrar	Millifluidic platforms for the cultivation of <i>Dendroaster excentricus</i>	\$1,250

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
Los Angeles	Yvanna Escobar	Biological Sciences	Dr. Andres Aguilar	Sequencing and assembly of the Pacific sanddab genome	\$700
	Athena Lodevico	Biological Sciences	Dr. Andres Aguilar	Population genetics of brown box crabs	\$700
	Jennifer Michel	Geosciences and Environment	Dr. Michael Beland	Modeling tidal marsh canopy heights and stem densities using small unmanned aerial systems and structure-from-motion	\$1,000
	Oscar Murillo	Geosciences and Environment	Dr. Michael Beland	Using small unmanned aerial systems and photogrammetry techniques to generate bare-earth digital elevation models in a densely vegetated salt marsh	\$1,000
	Vo Nguyen	Chemistry and Biochemistry	Dr. Petr Vozka	Mapping biodegradation of subsurface of oil in Huntington Beach sands	\$700
Maritime*	Jacques Descouts	Engineering	Dr. Tomas Oppenheim	Oceanographic research buoy	\$990
	Kyle Hebert	Marine Transportation	Dr. Jennifer Murphy	The relationship between ammonium concentrations and tidal current fluctuations through the Carquinez Strait: part 2	\$1,000
	Morgan Illman	Sciences and Mathematics	Dr. Alex Parker	Collaborative proposal: estimating real-time primary production: applying the light-productivity model to Cal Maritime buoy data	\$300
	Ella Jones	Sciences and Mathematics	Dr. Alex Parker	Collaborative proposal: estimating real-time primary production: applying the light-productivity model to Cal Maritime buoy data	\$300 (\$300)
	Margaret Malmquist-West	Engineering/ Sciences and Mathematics	Dr. Tomas Oppenheim	RSCA stereo camera calibration	\$875

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
Maritime*	Dominic Terrusa	Oceanography	Dr. Alex Parker	Collaborative proposal: estimating real-time primary production: applying the light-productivity model to Cal Maritime buoy data	\$1,410
Monterey Bay	Leta Dawson	Marine Science	Dr. Alison Haupt	Habitat cover and its effects on abalone populations	\$1,000
	Hannah Kim	Marine Science	Dr. Cheryl Logan	Exploring mechanisms responsible for thermal tolerance in Galapagos corals	\$500
	Kaitlyn Rooney	Marine Science	Dr. Alison Haupt	Intertidal relationship between algal cover and abundance of purple sea urchins, <i>Strongylocentrotus purpuratus</i> , on the Monterey Peninsula	\$1,000
	Emily Vidusic	Marine Science	Dr. Alison Haupt	A comparison of multiple methods to measure purple sea urchin population densities within the Monterey Peninsula intertidal	\$500
	Dominic Villareal	Marine Science	Dr. Cheryl Logan	CBASS: coral bleaching autonomous stress system	\$1,000
	Spencer Winter	Biology	Dr. Zurine De Miguel	Speckled sanddab cell proliferation during adult neurogenesis	\$1,000
Northridge	Daniel Carcamo	Biology	Dr. Mark Steele	Evaluating the nonconsumptive effects of giant sea bass	\$1,000
	Sofie Gronborg Lund Hansen	Biology	Dr. Mark Steele	Management-based differences in the dietary niches of California reef fishes	\$892

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
Pomona	Daniel Aguilar	Biological Sciences	Dr. Jeremy Claisse	Assessing the variation in gut length among garibaldi with comparison to other damselfish (<i>Pomacentridae</i>) and marine fish species	\$500
Sacramento	Lina Alegria	Biological Sciences	Dr. Lani Gleason	Growth and survival of juvenile red abalone <i>Haliotis rufescens</i> in response to heat stress and starvation	\$700
	Alivia De Luze	Biological Sciences	Dr. Timothy Davidson	The effects of marine wood-borers on red mangrove (<i>Rhizophora mangle</i>) in native and nonnative habitats	\$1,233
	Hanna Franklin	Biological Sciences	Dr. Lani Gleason	Investigating the transcriptomic responses to heat stress and starvation in the economically important red abalone <i>Haliotis rufescens</i>	\$833
	Jazmine Harvey	Biological Sciences	Dr. Lani Gleason	Identifying population-specific DNA methylation patterns in the marine snail <i>Tegula funebris</i> to examine thermal tolerance	\$700
	Jessica Hopper	Biological Sciences	Dr. Ron Coleman	Otolith examination in striped bass	\$700
	Bear Waymire	Biological Sciences	Dr. Ron Coleman	Fish in the American River naturally die after spawning—what happens next?	\$827

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
San Bernardino	Manuel Madrigal	Biology	Dr. Tomasz Owerkowicz	Effects of hypoxia and hyperoxia on cardiac output distribution in the American alligator (<i>Alligator mississippiensis</i>)	\$2,500
	Liset Maldonado	Biology	Dr. Joseph Heras	Identifying gene candidates associated with depth adaptations across multiple species of marine rockfishes (genus: <i>Sebastes</i>)	\$2,500
San Diego	Crisila Aban	Biology	Dr. Kevin Hovel	The California spiny lobster's prey-choice when presented with three ecological relevant prey species: <i>A. senhousia</i> , <i>Mytilus</i> species and <i>Strongylocentrotus purpuratus</i>	\$1,000
	Megan Canchola	Biology	Dr. Matthew Edwards	The effects of nutrient concentration on nitrogen uptake in <i>Ulva lactuca</i> as it relates to bioremediation in coastal watersheds	\$1,000
	Mia Gil	Civil, Construction and Environmental Engineering	Dr. Natalie Mladenov	Evaluating leaching and degradation of compounds from microfibers using fluorescence spectroscopy	\$1,000
	Nadia Markel	Biology	Dr. Brian Hentschel	Movement and host selection by a commensal polychaete living on sea urchins	\$1,000
	Tina Tran	Civil, Construction and Environmental Engineering	Dr. Eunha Hoh	Microplastics degradation in the environment and its effects	\$1,000

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
San Francisco	Elora Chatain	Biology	Dr. Sarah Cohen	Investigation of pedicellariae distribution among genetic lineages of <i>Leptasterias</i> species	\$1,140
	Andrea Hoppe	Biology	Dr. Sarah Cohen	Observing the relationship between eelgrass pathogen density and temperature and salinity levels in Drakes Estero and Tomales Bay	\$400
	Erika Ono-Kerns	Biology	Dr. Sarah Cohen	Determining the presence of <i>Sarcocystis neurona</i> in marine invertebrates	\$1,400
	Holly Robillard	Biology	Dr. Sarah Cohen	Climate concerns: how increasing temperatures affect the size and behavior of the aggregating anemone, <i>Anthopleura elegantissima</i>	\$1,215
San José	Nick Edholm	Geology	Dr. Ryan Portner	Investigation of fragmentation processes producing volcanoclastic deposits in deep marine environments	\$2,500
	Diana Garcia	Biological Sciences	Dr. Maya deVries	Sustainable shellfish in an acidified ocean	\$2,500
San Luis Obispo	Cassidy Andrasz	Biological Sciences	Dr. Elena Keeling	Analysis of gene expression investigating biology underlying high regenerative ability of marine invertebrate <i>Botrylloides violaceus</i>	\$500
	Siobhan Kassem	Biological Sciences	Dr. Emily Bockmon	Organic contributions to total alkalinity in Morro Bay	\$500
	Eva Kokkino	Biological Sciences	Dr. Alexis Pasulka	Algal culturing from Cal Poly Pier	\$500
	Delaney Moon	Biological Sciences	Dr. Kevin Johnson	Monitoring Olympia oyster (<i>Ostrea lurida</i>) larval abundance and recruitment in Morro Bay	\$500

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
San Luis Obispo	Madison Roger	Agricultural and Environmental Plant Science	Dr. Scott Steinmaus	Riparian vegetation project	\$500
	Olivia Ross	Biological Sciences	Dr. Benjamin Ruttenberg	What is the abundance and size class distribution of Pismo clams along Pismo Beach?	\$500
	Janae Shew	Biological Sciences	Dr. Sean Lema	Humboldt Bay marine mitochondrial genome sequencing	\$500 (\$875)
	Adelle Wilkin	Statistics	Dr. Maddie Schroth-Glanz	Marine bioacoustics monitoring along the Central Coast of California	\$500 (\$500)
	McKenna Williamson	Biological Sciences	Dr. Heather Liwanag	Assessment of male northern elephant seal behavior during the 2022 breeding season at the Piedras Blancas Rookery	\$500
San Marcos	Luis Gutierrez	Biological Sciences	Dr. Darcy Taniguchi	Investigating biodiversity of marine protists off the California coast and its relation to phytoplankton growth and grazing mortality rates	\$1,105
	Brad Hunter	Biological Sciences	Dr. Elinne Becket	Engineering a mock coastal environment for in vitro assay development	\$1,300
	Yesenia Mora	Biological Sciences	Dr. Diego Sustaita	Prey responses to predator cues: identifying the stimulus of loggerhead shrike wing-flashing behavior	\$1,300
	Elizabeth Murguia	Biological Sciences	Dr. Elinne Becket	Taxonomic and antibiotic resistance changes to coastal microbiomes in response to rainstorm runoff	\$1,300

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
San Marcos	Arianna Ramirez	Biological Sciences	Dr. Diego Sustaita	Swimming kinematics of the salt marsh harvest mouse from the Suisun Marsh in the San Francisco Bay Estuary	\$1,300
Sonoma	Taylor Nelson	Biology	Dr. Brent Hughes	The effects of ocean warming on urchin herbivory pressure to bull kelp (<i>Nereocystis luetkeana</i>)	\$2,500
	Adam Paoletti	Biology	Dr. Daniel Crocker	Effects of maternal stress on offspring phenotype in elephant seals	\$2,500
Stanislaus	Marcos Carreon	Biological Sciences	Dr. Amanpreet Manchanda	Combating ocean acidification by use of silica nanotubes for carbon dioxide sorption	\$3,000



STUDENT TRAVEL AWARDS

*Undergraduate student.

CAMPUS	STUDENT	FACULTY MENTOR	CONFERENCE	CONFERENCE LOCATION	AMOUNT
Bakersfield	Amy Fetters	Dr. Rae McNeish	Joint Aquatic Sciences Meeting	Grand Rapids, MI	\$1,071
	Kaitlin Macaranas*	Dr. Rae McNeish	Joint Aquatic Sciences Meeting	Grand Rapids, MI	\$568
Fullerton	Georget Orah	Dr. Jennifer Burnaford	Society for Advancement of Chicanos/Hispanics and Native Americans in Science 2021 National Conference	Remote	\$475
Humboldt	Blair Winnacott	Dr. Eric Bjorkstedt	American Fisheries Society Conference	Baltimore, MD	\$240
Long Beach	Anita Arenas	Dr. Christine Whitcraft	Joint Aquatic Sciences Meeting	Grand Rapids, MI	\$2,000
	Peter Nilsson	Dr. Bruno Pernet	Society for Integrative and Comparative Biology	Phoenix, AZ	\$866
	Bridget Steiner	Dr. Bruno Pernet	Society for Integrative and Comparative Biology	Phoenix, AZ	\$847
	Aaron Sugimoto	Dr. Erika Holland	Society of Environmental Toxicology and Chemistry	Remote	\$212
Monterey Bay	Emma Debasitis	Dr. John Olson	Joint Aquatic Sciences Meeting	Grand Rapids, MI	\$1,000
	Shawn Melendy	Dr. John Olson	Joint Aquatic Sciences Meeting	Grand Rapids, MI	\$1,894
	Ethan Switzer*	Dr. Steve Moore	Benthic Ecology Meeting Society	Portsmouth, NH	\$935
	Michelle Tarian	Dr. John Olson	Joint Aquatic Sciences Meeting	Grand Rapids, MI	\$1,000
Northridge	Emily Ladin	Dr. Larry Allen	Joint Meeting of Ichthyologists and Herpetologists	Remote and Phoenix, AZ	\$850

SUMMER 2021 INTERNSHIP PROGRAM

*Undergraduate student.

HOST ORGANIZATION	INTERNSHIP LOCATION	CSU STUDENT HOME CAMPUS
California Department of Fish and Wildlife Marine Region	Emerging Box Crab Fishery <i>Santa Barbara</i>	Jayda Parsons* <i>Bakersfield</i>
		Whitney Jones* <i>Pomona</i>
	Northern California Marine Invertebrate Fisheries Management <i>Bodega Bay</i>	Jordan Mann* <i>San Diego</i>
		Gabrielle Yang* <i>Pomona</i>
	Southern California Marine Invertebrate Fisheries Management <i>San Diego</i>	Micah Pehrson* <i>San Luis Obispo</i>
California Ocean Science Trust	Science-Policy <i>Remote</i>	Amanda Chiachi <i>Northridge</i>
Channel Islands National Marine Sanctuary	Ocean Exploration <i>Santa Barbara</i>	Danny Dorado* <i>Bakersfield</i>
NOAA National Marine Fisheries Service Protected Resources Division	Abalone Conservation <i>Long Beach</i>	Cerille (Micah) Castrillo* <i>Dominguez Hills</i>
NOAA National Marine Fisheries Service Sustainable Fisheries Division	Highly Migratory Species <i>Remote</i>	Michaela Melanson <i>San José</i>
Smithsonian Environmental Research Center	Invasive Species <i>Tiburon</i>	Emily Haydis* <i>Monterey Bay</i>
Tijuana River National Estuarine Research Reserve	Bioindicator Trends and Analysis <i>San Diego</i>	Alexa Buss <i>Pomona</i>

SUMMER 2022 INTERNSHIP PROGRAM

*Undergraduate student.

HOST ORGANIZATION	INTERNSHIP LOCATION	CSU STUDENT HOME CAMPUS
California Department of Fish and Wildlife Marine Region	Northern California Marine Invertebrate Fisheries Management <i>Bodega Bay</i>	Madeleine Frost* <i>Humboldt</i>
		Leta Dawson* <i>Monterey Bay</i>
	Southern California Marine Invertebrate Fisheries Management <i>San Diego/Remote</i>	Lauren (Lolo) Rostami* <i>Long Beach</i>
		Moana Bullock* <i>Monterey Bay</i>
California Ocean Science Trust	Science to Accelerate Equitable Climate Adaptation <i>Remote</i>	Emilia Antrim-Caldari* <i>San Marcos</i>
California State Lands Commission	Environmental Justice Policy Implementation and Justice, Equity, Diversity and Inclusion <i>Remote</i>	Alondra Ruiz Contreras* <i>Fullerton</i>
California State Lands Commission	Marine Invasive Species <i>Remote</i>	Hiu Ting (Tiffany) Ko* <i>Sonoma</i>
Channel Islands National Marine Sanctuary	Ocean Exploration <i>Santa Barbara</i>	Michael Guzman* <i>San Marcos</i>
NOAA Monterey Bay National Marine Sanctuary	Indigenous Community Engagement Strategy <i>Monterey/Remote</i>	Nichole Chaidez* <i>San Luis Obispo</i>
NOAA National Marine Fisheries Service Coast Watch West Coast Regional Node	Ocean Satellite Data <i>Remote</i>	Jesse Espinoza <i>San Francisco</i>
NOAA National Marine Fisheries Service Protected Resources Division	Abalone Conservation <i>Long Beach/Remote</i>	Mila Berntsen* <i>San Luis Obispo</i>
NOAA National Marine Fisheries Service Southwest Fisheries Science Center	Coastal, Marine and Natural Resource Social Science Research <i>Santa Cruz/Remote</i>	Ashlee Wells* <i>Sonoma</i>
NOAA Office of National Marine Sanctuaries, West Coast Region	Ocean Policy <i>Monterey/Remote</i>	Jason Gonsalves <i>San José</i>
San Francisco Bay Conservation and Development Commission	Adapting to Rising Tides Program <i>Remote</i>	Amelia Stonkus* <i>San Luis Obispo</i>
Tijuana River National Estuarine Research Reserve	Bioindicator Trends and Analysis <i>Imperial Beach/Remote</i>	Nour Nuhaily* <i>San Marcos</i>



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