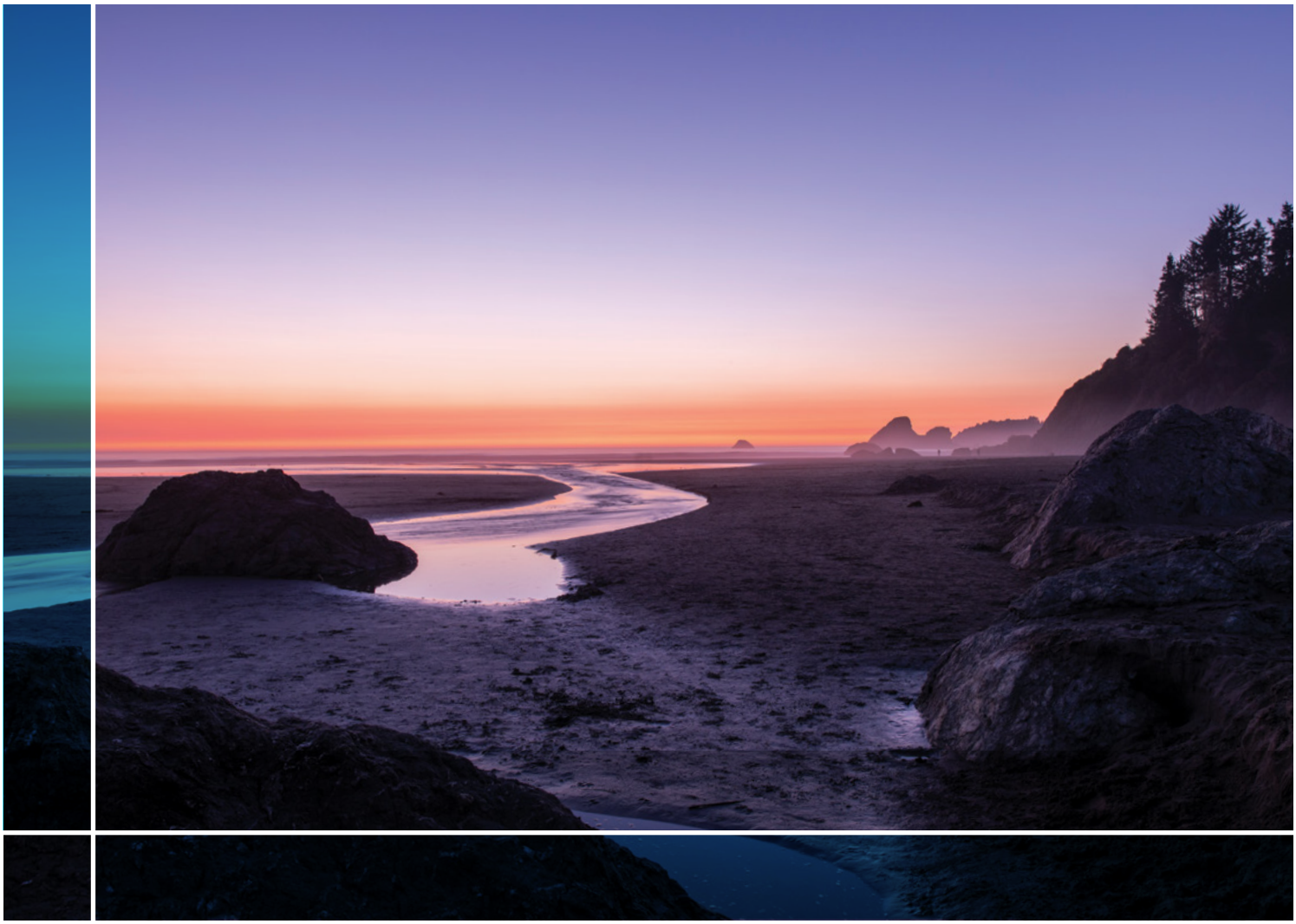
The California State University
COUNCIL ON OCEAN AFFAIRS, SCIENCE & TECHNOLOGY

COAST

2021 Annual Report



Covering activities from July 1, 2020 - June 30, 2021

www.calstate.edu/coast

A FORCE FOR CHANGE

Many of us in marine and coastal fields have known for years that our disciplines lack racial and ethnic diversity, as well as representation from other historically excluded groups including, but not limited to, women, LGBTQIA+ community members, students who are socioeconomically disadvantaged and individuals with disabilities. Despite decades of well-funded programs intended to increase diversity in STEM, the problem persists in many fields, including those that are central to ocean and coastal research.1 To address this persistent inequity, the CSU Council on Ocean Affairs, Science & Technology (COAST) has made a conscious and deliberate decision to address issues ranging from unconscious bias to structural and systemic racism in our community.

In the last year, we have implemented a sustained campaign to raise awareness around equity, diversity and inclusion (EDI) issues in higher education, STEM, and ocean and coastal science with the ultimate goal of creating a more inclusive community that embraces diversity and is better because of it. We are committed to engaging and supporting students who have been historically excluded from marine science and promoting their professional development. We will help our faculty members become more inclusive mentors, teachers and allies for students and colleagues from historically excluded groups. We believe that the students we train today will be our leaders, teachers and practitioners in the near future, and when we have more diverse perspectives and approaches, we develop better solutions.

To learn more about COAST's efforts to fight structural racism and increase equity and inclusive diversity, please visit the Anti-Racism and Inclusive Diversity Resources section of our website. We have a number of resources for faculty members and students, including a curated, dynamic list of books, articles, podcasts and other resources to help understand systemic racism in the U.S. and what we can do about it. We welcome your suggestions and input!

We are a year into our EDI programming, and we know we are just beginning. We are working across the CSU and with external partners to leverage funding and resources to make real progress. We know we have a long way to go, and we hope you will join us.

Dr. Krista Kamer, COAST Director

[1] Bernard, R.E., Cooperdock, E.H.G., "No progress on diversity in 40 years." Nature Geoscience 11, 292-295 (2018).

O'Brien, L.T., Bart, H.L. and Garcia, D.M., "Why are there so few ethnic minorities in ecology and evolutionary biology? Challenges to inclusion and the role of sense of belonging." Social Psychology of Education 23, 449-477 (2020).

OUR MISSION

COAST's mission is to help the state of California maintain a healthy ocean and sustainable use of coastal resources. COAST coordinates and promotes research and education across the 23 campuses of the CSU to advance our knowledge of marine resources and provide solutions to local, state and national issues. COAST promotes workforce development in STEM and other marine-related disciplines and communicates with California's governments, industries and communities to support informed decision-making and responsible policy development.

OUR VISION

COAST envisions a California that actively and sustainably manages its coast and ocean through the application of scientific knowledge by a well-educated, diverse and environmentally literate workforce and citizenry.

AY 2020-21 HIGHLIGHTS

In academic year (AY) 2020-21, COAST made significant investments in new research through the State Science Information Needs Program (SSINP) and developed strategic new partnerships that resulted in additional funding from external sources. In total, this led to an investment of $2.24 million in new ocean and coastal research in the CSU in AY 2020-21. This research will inform policy development and evidence-based decision-making in a timely and actionable manner.

COAST also continued to make significant investments in faculty and student research through its traditional programs and provided new professional development opportunities for both faculty members and students. COAST provided $392,052 to support basic and applied research and workforce training. Between existing and new programs, COAST awarded over $2.40 million to 37 individual faculty members and 129 individual students at 21 campuses. These awards constituted 83 percent of COAST's expenditures in AY 2020-21.

In addition to supporting research, COAST provided critical equity, diversity and inclusion (EDI) training opportunities and resources to faculty members and students throughout the year. We have had broad audiences for several of our events and are making a positive impact.

REVENUE AY 2019-20	AMOUNT	% OF TOTAL
Annual Chancellor's Office Contribution	$529,927	17.3%
Annual Campus Contributions	$212,500	6.9%
One-time State Funding	$1,949,901	63.6%
Extramural Funding	$358,066	11.7%
Miscellaneous Revenue	$15,705	0.5%
TOTAL	**$3,066,099**	**100%**

EXPENDITURES AY 2019-20	AMOUNT	% OF TOTAL
Student Support	$237,132	8.2%
Faculty Research Funding	$154,920	5.4%
State Science Information Needs Program	$2,010,376	69.8%
Program and Strategic Development	$14,000	0.5%
Outreach and Communications	$1,500	0.1%
Personnel	$388,226	13.5%
Program Operations	$17,450	0.6%
Administrative Fee to Host Campus	$56,329	2.0%
TOTAL	**$2,879,933**	**100%**

BUILDING A MORE INCLUSIVE MARINE SCIENCE COMMUNITY

COAST recognizes the lack of representation of racial and ethnic minorities in marine and coastal science and related fields, as well as that of other historically excluded groups of people. This includes the geosciences, specifically ocean sciences, and ecology and evolutionary biology. To facilitate the development of a more inclusive marine and coastal science research community, COAST is committed to fighting systemic and structural racism and ensuring that individuals from diverse backgrounds and groups historically excluded from marine science and related fields are included, supported and valued.

As a first step, COAST hosted several events in AY 2020-21 to raise awareness of the ways in which racism, sexism and other forms of discrimination permeate society and higher education. We placed an emphasis on training for faculty members because they are in positions of power with regard to students: Faculty members have significant opportunity to act as either gatekeepers—who can restrict student engagement and limit success—or trusted stewards—who will act in students' best interests and equitably foster their development.

- Inclusive Diversity in Scientific Research, Teaching and Mentoring Panel at the 2020 virtual COAST annual meeting, November 13, 2020: The panel highlighted specific ways faculty members can be more inclusive in their research activities, teaching and mentoring individual students. The panelists were
  - Dr. Asmeret Asefaw Berhe, professor and Falasco Chair in Earth Sciences, Life & Environmental Sciences Department, interim associate dean of the Graduate Division, UC Merced;
  - Dr. Viji Sathy, professor, Department of Psychology and Neuroscience, and special projects assistant to the dean of Undergraduate Education, University of North Carolina at Chapel Hill; and
  - Priya Shukla, Ph.D. student and lead mentor at the Coastal and Marine Sciences Institute at UC Davis and San Diego State alumna.

  More than 200 people registered for the annual meeting, and because it was virtual, participants from across the CSU in numerous departments were able to attend.

FROM ATTENDEES OF DR. TERRELL MORTON'S TALK:

"Dr. Morton brought more detail into his presentation than I'd heard before. It was helpful to hear more about the need to deconstruct some of the paradigms of 'success' in STEM and find more effective ways of listening to students and scientists from underrepresented minority backgrounds. I'm going to have to chew on those ideas quite a bit more and do some of the reading he suggested."

"This talk was one of the most engaging and approachable talks I have been to on the subject. Dr. Morton really grounded CRT in reality for me. The metaphors and examples used in the talk really helped me understand how CRT might be applied in practice in higher ed and the classroom in general."

"I have a much clearer understanding of what critical race theory is and how to address questions about it. I didn't know much about this topic before, so this webinar was a very helpful introduction."

- Implicit Bias Workshop, January 13, 2021: The workshop explored how bias works and how we can reduce its harmful effects through a mix of presentations, large group discussions, small group discussions, interactive activities and evidence-based strategies for addressing implicit bias. The workshop was specifically for CSU faculty members, administrators and staff who are involved in COAST, and 45 people attended.
- A Conversation on Power, Structural Racism and Perceptions of Normality in STEM Through a Lens of Critical Race Theory, April 28, 2021: CSU COAST and the CSU Program for Education & Research in Biotechnology (CSUPERB) jointly hosted Dr. Terrell Morton, assistant professor of Identity and Justice in STEM Education at the University of Missouri-Columbia, who discussed identity, positionality, systemic racism and implications for racially-minoritized people in STEM. Through an approach informed by critical race theory (CRT), Dr. Morton prompted participants to examine their own identities to determine where they can take action toward racial equity and justice and change the perception of what is "normal" in STEM. The webcast consisted of a presentation followed by a facilitated conversation with Dr. Morton. More than 380 people from throughout the CSU registered for this event, and we received very positive feedback.

In addition to these events, COAST continues to add material to its Understanding and Combating Systemic Racism webpage, a curated, dynamic list of books, articles, podcasts, websites and other media to help understand systemic racism in the U.S. and what we can do about it. We disseminate information about the material on our website and other resources to COAST members through our faculty email list, which has more than 600 subscribers.

In the coming year, we will host a series of professional trainings for both faculty members and students on implicit bias and microaggressions, active bystander intervention and codes of conduct. We will also host Dr. Erika Zavaleta from UC Santa Cruz, an expert on field experiences for students from historically excluded groups, at the 2021 annual meeting.

COAST will continue its anti-racism and inclusive diversity programming indefinitely.

SUPPORTING STATE NEEDS FOR SCIENTIFIC INFORMATION

The CSU COAST State Science Information Needs Program (SSINP) resulted in $2.24 million invested in ocean and coastal research within the CSU in AY 2020-21.

In 2019, COAST received a one-time appropriation of $3 million in the FY 2019-20 state budget. The purpose of the funding is to allow the CSU to assist the state with its marine, coastal and coastal watershed science information needs. COAST used this funding to establish the State Science Information Needs Program (SSINP), which focuses directly and exclusively on supporting the state of California's highest priority marine, coastal and coastal watershed needs for 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.

SSINP is unique because unlike funding opportunities that require applicants to identify stakeholder needs for information, SSINP engages state agencies from the beginning of the process to ensure that their needs are well represented in grant solicitations. For all of the requests for proposal (RFPs) issued through the SSINP to date, structured interviews with state agencies with relevant jurisdiction were conducted to identify their specific science information needs. Following rigorous scientific review by qualified experts, state agency representatives provided input on how well highly ranked proposals would meet their needs, thereby ensuring that SSINP-funded projects will benefit the state of California. In addition, awards made through SSINP provide a wealth of opportunities for the CSU, including increased faculty scholarship, student engagement and workforce development.

Two RFPs were issued in AY 2019-20; the proposals for each were evaluated, and funding recommendations were made during AY 2020-21.

MICROPLASTICS AND MICROFIBERS

Microplastics and microfibers, which are less than 5 millimeters in length, are ubiquitous throughout marine and coastal environments and are increasingly of interest because of their harmful effects on the environment, wildlife and human health. COAST worked closely with the California Ocean Protection Council (OPC), State Water Resources Control Board and the National Oceanic and Atmospheric Administration (NOAA) Marine Debris Program to select the following two projects totaling $794,896 for funding from an initial pool of 18 submissions:

Dr. Eunha Hoh (San Diego State), Dr. Natalie Mladenov (San Diego), Dr. Karilyn Sant (San Diego) and Dr. Chelsea Rochman (University of Toronto), "Assessing fate and toxicity of microplastics under coastal environment conditions," $395,490

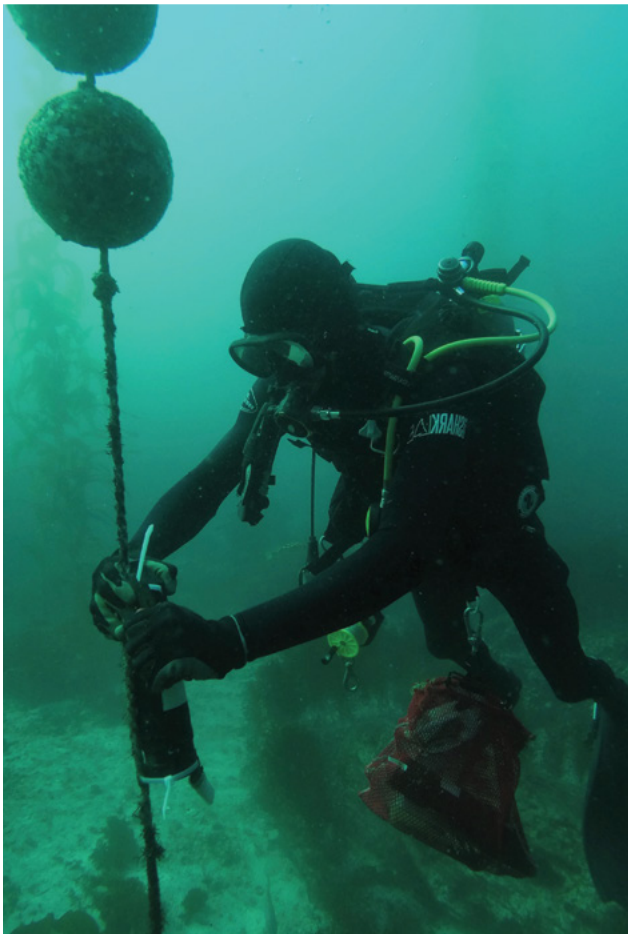
Dr. Hoh and co-principal investigators (co-PIs) are studying the role of microplastics, including car tire particles, as transfer mechanisms for contaminants to marine and estuarine organisms. Microfiber and tire particles are believed to be the most common microplastics found in California's waters.

Dr. Gerardo Dominguez (CSU San Marcos) "Micro and nanoplastic identification in aqueous samples using nanoIR," $399,406

Dr. Dominguez is advancing analytical techniques for identifying the smallest types of microplastics, called nanoplastics, to expand the understanding of overall plastic prevalence in the environment and regulators' ability to adequately address risk to both humans and wildlife. The inability to quantify and identify nanoplastics has been noted as a barrier to determining their potential negative impact on human health.

"We commend COAST for their research leadership on a global marine pollution issue: microplastics. These research efforts will inform the state and its future management actions on analytical methods and the potential impacts of these ubiquitous pollutants. Reducing the impacts of marine plastics pollution is one of the Ocean Protection Council's top priorities, and this research will fill critical knowledge gaps on microplastics."

Mark Gold, Executive Director, California Ocean Protection Council



SEA-LEVEL RISE

Sea-level rise will have profound effects on human welfare, infrastructure and the environment. According to the federal U.S. Geological Survey, 600,000 people and $150 billion in property in California are at risk of coastal flooding by 2100. COAST worked closely with the OPC, California Coastal Commission, California State Coastal Conservancy, San Francisco Bay Conservation and Development Commission, California State Parks, and California State Lands Commission to select the following three projects totaling $1.1 million from the 11 proposals received. This level of funding was made possible by $300,000 in co-funding from California Sea Grant (CASG).

Dr. Benjamin Hagedorn (Cal State Long Beach), Dr. Matt Becker (Long Beach) and Danielle Bram (CSUN), "Impact of sea-level rise on groundwater pollution vulnerability in shallow coastal aquifers," $210,755

Dr. Hagedorn and co-PIs are identifying areas where sea-level rise is causing groundwater to rise and mobilize toxic substances from contaminated sites. The team will then explore in more depth the mobilization of contaminants in one to two low-income areas of the state.

Dr. Kiki Patsch (CSU Channel Islands), Dr. Philip King (San Francisco State), Dr. Dan Reineman (Channel Islands), Dr. Nina Roberts (San Francisco) and Dr. Charles Lester (UC Santa Barbara), "Sustaining beaches andsocial equity under higher sea levels: an interdisciplinary case study of the Santa Barbara littoral cell," $497,409

Dr. Patsch and co-PIs are studying how sea-level rise will affect coastal access for underserved populations. The team will integrate this information into an existing beach sustainability database that can be used by the California Coastal Commission and other state agencies to make management decisions.

Dr. Danielle Zacherl (Cal State Fullerton), Dr. Joseph Carlin (Fullerton), Dr. Luke Miller (San Diego), Dr. Christine Whitcraft (Long Beach) and Katie Nichols (Orange County Coastkeeper), "Development of cost-effective metrics for monitoring living shorelines," $390,165

Dr. Zacherl and colleagues are assessing whether nature-based adaptation approaches can protect adjacent shorelines from erosion, which will increase as sea levels rise. Specifically, the team will study an existing project where oyster shells and eelgrass were placed on the shoreline in Upper Newport Bay, Orange County.

CALIFORNIA SEA GRANT NEW FACULTY FUNDING PROGRAM

In April 2020, CASG released a RFP specifically for new faculty (defined as those who received their first faculty appointment no earlier than January 1, 2018). CASG requires applicants to secure a 50 percent nonfederal match, and this often prevents CSU faculty members from applying. However, because SSINP is well-aligned with CASG's mandate to fund research that benefits the economy, the environment and the citizens of California, COAST made SSINP funding available to new CSU faculty members to use as the required match for the CASG New Faculty Funding Program.

COAST provided $117,150 to CSU faculty members who secured an additional $234,298 from CASG for a total of $351,448 in new research in the CSU. The match became unexpectedly even more important in light of new workloads caused by COVID-19 (e.g., conversion to remote instruction) that developed at the same time applications were due in May 2020. Many of the new faculty members did not have the bandwidth to apply as they were still learning how to seek external funding and navigate their campuses' in-kind contributions, all the while campuses were anticipating financial constraints because of COVID-19. New faculty, many of whom are parents of small children, were dealing with stressors at home, including the closure of schools and daycare facilities. COAST is proud to have been able to contribute to the career advancement of our early faculty members.

"As with many families, it was total utter chaos … and [the match requirement] seemed like an administrative barrier to even applying because I didn't know if I could easily secure a match. The COAST offering put it over the line for me and supported me in taking on the application. Without the COAST match, I probably wouldn't have applied because I don't think I had enough energy or motivation to try to chase another sponsor."

Jennifer Marlow, J.D.,
Assistant Professor of Environmental Law,
Humboldt State University

AWARD RECIPIENTS	PROJECT TITLE	COAST FUNDING	CASG FUNDING	TOTAL FUNDING
Dr. Maya deVries Biological Sciences, San José **Dr. Michael Graham** Moss Landing Marine Laboratories (MLML), San José **Dr. Scott Hamilton** MLML, San José	Strengthening sustainability in an acidified ocean: Does the co-culture of seaweeds and shellfish improve shell integrity in farmed red abalone?	$30,000	$60,000	$90,000
Dr. Maxime Grand MLML, San José **Dr. Luke Gardener** MLML, San José	Quantifying the production rate of bromoform ($CHBr_3$) from cultured *Asparagopsis*	$29,723	$59,445	$89,168
Dr. Jose Marin Jarrin Fisheries Biology, Humboldt	Study of the biology of adult night smelt (*Spirinchus starksi*) in Humboldt County	$27,427	$54,853	$82,280
Jennifer Marlow, J.D. Environmental Science and Management, Humboldt	Frameworks for managing the known risk of sea-level rise inundation of Humboldt Bay Nuclear Power Plant's spent nuclear fuel site	$30,000	$60,000	$90,000
TOTAL		**$117,150**	**$234,298**	**$351,448**

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 marine, coastal and coastal watershed research and education in the CSU; 2) the number of externally funded CSU marine and coastal PIs; 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 2020-21. 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	7	9	7	$125,000
Rapid Response Funding Program	4	7	4	$19,920
Short Course, Workshop and Symposium Funding Program	1	3	2	$10,000
TOTAL	**12**	**19**		**$154,920**

GRANT DEVELOPMENT PROGRAM

The Grant Development Program (GDP) is designed to stimulate CSU faculty members and research associates to develop and submit full proposals to external funding agencies and organizations for marine, coastal and coastal watershed research and educational projects. Awards can be used to fund reassigned time and activities deemed necessary to maximize subsequent success in obtaining external funding, such as data collection, sample analysis and data analysis, and can include student support. The award maximum is $20,000.

COAST provided $125,000 in support to faculty members through the GDP in AY 2020-21. Awards began May 1, 2021, and are 18 months in duration, ending October 31, 2022.

AWARD RECIPIENTS	PROJECT TITLE
Dr. Elinne Becket Biological Sciences, San Marcos **Dr. Scott Kelley** Biology, San Diego	Employing quantitative profiling and compositional data analysis techniques to map the effect of rainstorm runoff in coastal microbiomes
Dr. William Cochlan Biology/Estuary & Ocean Science Center, San Francisco	Ocean acidification and light as environmental drivers of domoic acid toxicity in coastal and estuarine ecosystems of California
Dr. Maya deVries Biological Sciences, San José	Strengthening shellfish in an acidified ocean: Does co-culture with seaweeds improve shell integrity in farmed abalone and oysters?
Dr. Scott Hauswirth Geological Sciences, Northridge **Dr. Priya Ganguli** Geological Sciences, Northridge	Geochemistry and environmental impacts of oil seeps in coastal watersheds
Dr. Samantha Leigh Biology, Dominguez Hills	Microplastic ingestion by commercially important fishes
Dr. Cheryl Logan Marine Science, Monterey Bay	Mechanistic underpinnings of Galápagos coral thermal tolerance
Dr. Hassan Tavakol-Davani Civil, Construction and Environmental Engineering, San Diego	Quantifying the effectiveness of bioretention in removing microplastics

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. Projects may include investigation of unexpected or sudden events, those that have a short window of opportunity or incidents that require immediate attention. The award maximum in AY 2020-21 was $5,000.

In AY 2020-21, COAST made four Rapid Response Awards totaling $19,920. The award to Dr. Natalie Mladenov and Dr. Matthew Verbyla at San Diego resulted in the campus providing them with $500,000 more to monitor SARS-CoV-2 in wastewater from residence halls on campus.

AWARD RECIPIENTS	PROJECT TITLE
Dr. Natalie Mladenov Civil, Construction and Environmental Engineering, San Diego **Dr. Matthew Verbyla** Civil, Construction and Environmental Engineering, San Diego	Persistence of SARS-coronavirus-2 in natural waters
Dr. Kiki Patsch Environmental Science & Resource Management, Channel Islands **Dr. Sean Anderson** Environmental Science & Resource Management, Channel Islands	Summer sandy beach monitoring: the effects of shelter-in-place on Southern California beaches
Dr. Doug Smith Applied Environmental Sciences, Monterey Bay	Fire impacts on steelhead spawning gravel in the Carmel River
Dr. Ryan Walter Physics, San Luis Obispo **Dr. Andrew Fricker** Social Sciences, San Luis Obispo	Drone-based monitoring of a potential eelgrass recovery following an estuary-wide collapse in a major California estuary

SHORT COURSE, WORKSHOP AND SYMPOSIA FUNDING PROGRAM

In AY 2020-21, COAST made one Short Course, Workshop and Symposia Funding Program award for $10,000 to Dr. Cheryl Logan at CSU Monterey Bay ($9,190) and Dr. Kerry Nickols and Dr. Nyssa Silbiger at Northridge ($810). They convened a workshop on "open science," where all research components (including data, physical samples, code/software and publications) are open and accessible to the public. This is a recent movement geared toward increasing the reliability and reproducibility of research, the speed of doing science and chances of publication. In addition to Monterey Bay and Northridge, faculty members and students from Cal Poly Pomona, San Francisco and Cal Poly San Luis Obispo participated.

[2] SFSU data not included.

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 marine, coastal and coastal watershed research. AY 2019-20 expenditure data were collected for all grants and contracts for faculty members associated with COAST at each campus[2]. Filtering the data to include only external research and development (R&D) awards for marine, coastal and coastal watershed projects demonstrates that these activities constituted 48 percent of COAST members' externally funded expenditures. Furthermore, externally funded R&D expenditures by COAST members in AY 2019-20 accounted for 10.3 percent of the CSU's overall externally funded R&D expenditures for the year ($251,230,000).

AWARDS TO COAST FACULTY	2019-20		
	NUMBER OF AWARDS	NUMBER OF INDIVIDUAL PIS	EXPENDITURES
All awards (coastal and noncoastal, R&D and non-R&D)	596	249	$54,007,993
Coastal R&D only	317	146	$25,894,978

SUPPORTING STUDENT DEVELOPMENT

COAST is committed to increasing access to and participation and inclusion in marine science undergraduate and graduate programs for a diverse array of students. To achieve that goal, COAST supports CSU undergraduate and graduate students engaged in marine, coastal and coastal watershed research with CSU faculty members through research awards, travel grants and internships. COAST support often 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 to remain enrolled, persist in STEM majors and programs and attain their degrees more quickly. Because each student works with a CSU faculty mentor, support for students ultimately benefits faculty members because it advances their research.

In AY 2020-21, COAST made 133 awards totaling $237,132 to 129 individual students at 21 campuses throughout the system.

STUDENT PROGRAM	NUMBER OF AWARDS	NUMBER OF PARTICIPATING CAMPUSES	FUNDING AMOUNT
Graduate Student Research Award Program	35	13	$105,000
Scholars-in-Training Pilot Program	4	1	$12,000
Student Travel Award Program	14	8	$1,600
Summer Internship Program	11	8	$68,861
Undergraduate Student Research Support Program	69	19	$49,671
TOTAL	**133**		**$237,132**

The goals of the COAST student programs are to 1) stimulate student interest in marine-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. Three of the programs (Undergraduate Student Research Support, Summer Internships and Scholars-in-Training) utilize the high impact practices (HIPs) of undergraduate research and internships to promote STEM major retention and student success.

GRADUATE STUDENT RESEARCH AWARD PROGRAM

In AY 2020-21, the Graduate Student Research Award Program supported 35 graduate students from 13 campuses (Appendix). Applicants are able to request that 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.

UNDERGRADUATE STUDENT RESEARCH SUPPORT PROGRAM

The Undergraduate Research Support Program provides $2,500 to each campus to support undergraduate students involved in marine, coastal and coastal watershed research. Campus representatives are responsible for implementing this program and awarding the funds on their respective campuses. This year, 19 campuses successfully allocated their funding and supported 69 students (Appendix). Five campuses provided matching funds totaling $7,355 that augmented students' projects.

STUDENT TRAVEL AWARD PROGRAM

The Student Travel Award Program supports continuing CSU undergraduate and graduate students attending and presenting the results of their original marine, coastal and coastal watershed 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 $1,600 in travel support to two undergraduate and 12 graduate students from six campuses (Appendix). Because of COVID-19 travel restrictions, COAST provided funding to cover registration fees for virtual meetings.

Receiving the COAST Graduate Research Award mostly made me feel part of a marine science field that is lacking in diversity. … I don't question my place in it anymore from an academic standpoint. … Winning this award last year was validating, and I feel comfortable exploring marine science-related questions."

–Daniel Olivares-Zambrano, Cal State LA Graduate Student Research awardee (2019-2020[3])

My first year was extremely difficult for me as I transitioned into college and made me question my ability to continue my education. However, … I am so grateful for having been given this research opportunity because I now feel even more motivated to finish my education and look forward to all the new things and skills I can learn from this whole research experience."

–Kevin Mosqueda, CSU Dominguez Hills Undergraduate Student Research Support Program awardee

[3] 2020-21 Graduate Student Research awardees have not turned in their final reports yet; a quote from a 2019-20 awardee is presented to demonstrate the impact of the program.

"This award made it possible for me (a first-generation college student, returning student and parent to a toddler) to attend this virtual conference during this difficult year. Society for Advancement of Chicanos/ Hispanics and Native Americans in Science is a particularly inspiring conference, and I was able to attend several workshops and seminars that helped me renew my determination to finish my M.S. degree and continue in a STEM field."

–Ariel Heyman, Fullerton
Student Travel Program awardee

"I struggle with 'imposter syndrome' at times, so throughout my experiences, I wondered whether I really deserved to be there; however, … this internship has led me to believe that I can excel in my field, and that I have the skills to do so."

–Katie Blessing, Long Beach
Summer student intern

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, 129 interns have been placed with state and federal agencies, nonprofits and private companies. Many COAST interns have been hired by their hosts following their internships, demonstrating that the program is a valuable pipeline for both employers and CSU students.

In summer 2020, 11 students, including nine undergraduates, from eight campuses were placed with eight different hosts (Appendix). Due to COVID-19, all internships were conducted remotely. New projects included coding to streamline post-processing of remotely-operated vehicle (ROV) data and analysis of an experimental commercial box crab fishery.

In summer 2021, 11 students, including eight undergraduates, from eight campuses were placed with seven different hosts (Appendix). Due to 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.

SCHOLARS-IN-TRAINING PILOT PROGRAM

Through funding from the U.S. Department of Education Hispanic-Serving Institutions—Science, Technology, Engineering or Mathematics (HSI STEM) and Articulation Programs as part of a 2016 award to Monterey Bay, COAST launched a new program in AY 2017-18 to increase undergraduate student participation in marine, coastal and coastal watershed research. The goal of the Scholars-in-Training Pilot Program (SIT) is to involve students in research early on in their undergraduate careers to promote retention in STEM degree programs.

SIT pairs first- and second-year Monterey Bay undergraduate students with MLML graduate student mentors during the academic year. These undergraduate students assist the graduate students with their thesis research and thereby gain valuable hands-on experience during a critical time in their educational pathway. This prepares them to form their own scientific questions and conduct independent research during their third and fourth years of college. Financial support is provided to undergraduate students and graduate student mentors to facilitate participation by historically underrepresented minority, first-generation and low-income students.

In 2018-19, the second year of the program, a new criterion for eligibility was instituted: In order to participate, students had to have no prior research experience. The purpose of this was to attract and select students who could potentially benefit the most from the program, rather than students who had already been involved in research. Most students recruited in 2018-19 were the first in their families to attend college.

Because of budget limitations, new cohorts of undergraduate students were not recruited in AY 2019-20 or 2020-21. Instead, support for continuing students was prioritized. These four students who were supported in AY 2020-21 are now conducting their own independent research, for which their prior participation in the program prepared them. They were each awarded $3,000 to purchase materials and supplies for their research projects.

AY 2020-21 SCHOLARS-IN-TRAINING PILOT PROGRAM PARTICIPANTS				
UNDERGRADUATE RESEARCHER	YEAR	PROGRAM/ MAJOR	PROJECT TITLE	GRADUATE MENTOR
Kylie Foley	Fourth	Biology	Bacterial growth of pesticide-remediating strains	Dr. Nathaniel Jue
Kaiku Kaholoaa	Fourth	Marine Science	Measuring resilience: transforming repeated photomosaics into coral demographic models	Dr. Cheryl Logan
Ethan Switzer	Third	Marine Science	Parallel laser measurement system for ROV-based 3-D photogrammetry of maritime heritage sites for the Monterey Bay National Marine Sanctuary	Dr. Steve Moore
Silvia Vasquez	Fourth	Marine Science	Coral-symbiont fidelity in American Samoa	Dr. Cheryl Logan

LOOKING AHEAD

Over the next 12 months, COAST will

- Launch a new program to provide funding to students to help defray expenses associated with field experience participation.
- Provide resources, training and support to faculty members and students who want to actively participate in efforts to increase EDI in marine science and related fields within the CSU.
  - Provide professional training on implicit bias and microaggressions, active bystander intervention and codes of conduct.
  - Host webinars by leaders actively working to increase EDI in STEM and disciplines most relevant to COAST.
  - Curate resources for the Anti-Racism and Diversity Resources section of our website.
- Continue to meet the state's needs for timely scientific information to support evidence-based decision-making and policy development through SSINP.
  - Release a third solicitation for proposals to inform ocean and coastal compensatory mitigation and associated restoration. Awards will be announced in spring 2022.
  - Convene meetings and briefings with state agencies, lawmakers and legislative committee staff to update them on the findings of the SSINP-supported projects.
- Develop the next strategic plan for 2022 through 2027.
- Pursue extramural funding to increase marine and coastal research and educational activities for undergraduate and graduate students.

APPENDIX

STUDENT AWARDS AND SUPPORT

GRADUATE STUDENT RESEARCH AWARDS

Each award is $3,000.

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE
Bakersfield	Amy Fetters	Biology	Dr. Rae McNeish	Anthropogenic litter, microplastics, debris dams, intermittent river, freshwater, bridges
Fullerton	Chelsea Bowers	Biological Sciences	Dr. E. Misty Paig-Tran	Ingestion and assimilation of microplastics in Pacific sardines, *Sardinops sagax*, within the Southern California Bight
	Tyler Frantz	Biological Sciences	Dr. Danielle Zacherl	Seasonal impacts on native and nonnative settlement and succession on artificial reefs
	Brandon Quintana	Biological Sciences	Dr. Danielle Zacherl	Effects of eelgrass density on filter feeder biomass and condition index in a multihabitat living shoreline
Humboldt	Tyler Caseltine	Environmental Resources Engineering	Dr. Margaret Lang	Comparison of two-dimensional hydraulic models for habitat evaluation
Long Beach	Wenda Ly	Biological Sciences	Dr. Douglas Pace	Morphological plasticity in Pacific sand dollar larvae, *Dendraster excentricus*: physiological consequences of arm length variation
	Yamilla N. Samara Chacon	Biological Sciences	Dr. Chris Lowe	Trophic position and diet of juvenile white sharks (*Carcharodon carcharias*) in Southern California
	Shannon Tarby	Biological Sciences	Dr. Erika Holland	Assessing the effects of weathered microplastics and sorbate on larval zebrafish (*Danio rerio*)
Monterey Bay	Kinsey Matthews	Marine Science (MLML)	Dr. Rick Starr	Habitat associations and species distribution models of deep-water fishes off Central and Southern California
Northridge	Roland Lacap	Biology	Dr. Maria Elena de Bellard	Can sharks feel pain? A molecular approach to elasmobranch nociception
Sacramento	Christine Hughes	Geology	Dr. Amy Wagner	California coast paleoceanography: constructing a foundational high-resolution Holocene climate record
San Diego	Jessica Griffin	Biology	Dr. Kevin Hovel	The importance of environmental context for mediating bivalve effects on eelgrass growth
	Karl Koehler	Biology	Dr. Kevin Hovel	A functional trait approach to understanding the effects of eelgrass (*Zostera marina*) habitat structure on the composition of epifaunal communities
	Vanessa Van Deusen	Biology	Dr. Kevin Hovel	The effect of temperature increase on California spiny lobster predation and metabolism

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE
San Francisco	D'Andre Alejandro	Interdisciplinary Marine and Estuarine Science	Dr. Ellen Hines	The occurrence of microplastic ingestion in prey fish species from the Farallon Islands
	Jeremiah Ets-Hokin	Biology	Dr. Jonathon Stillman	Quantifying the combinatorial effects of flow and pH on the resilience of coralline algae to urchin herbivory
	Mehak Jain	Interdisciplinary Marine and Estuarine Science	Dr. Karina Nielsen	The effect of coastal acidification on the development and behavior of *Metacarcinus magister* megalopae in the San Francisco Estuary
	Corryn Knapp	Interdisciplinary Marine and Estuarine Science	Dr. Andrew Chang	Effect of habitat complexity and predation on intertidal communities: implications for eco-engineering in San Francisco Bay
	Rebekah Lane	Interdisciplinary Marine and Estuarine Science	Dr. Ellen Hines	Whales in a highly urbanized estuary: evaluating risk of vessel strike to humpback whales in San Francisco Bay
	Allie (Alexandra) Margulies	Interdisciplinary Marine and Estuarine Science	Dr. Andrew Chang	A decade of extreme climatic events affecting spatiotemporal dynamics of a native foundation species in San Francisco Bay: How can this inform restoration?
	Lindsey Metz	Interdisciplinary Marine and Estuarine Science	Dr. William Cochlan	The effects of temperature and acidity on the diversity of epifaunal bacteria associated with the toxigenic diatom *Pseudo-nitzschia* multiseries
	Taylor Pantiga	Interdisciplinary Marine and Estuarine Science	Dr. Sarah Cohen	Incidence of eelgrass (*Zostera marina*) infection by *Labyrinthula zosterae* in the San Francisco Bay and Drakes Estero
	Stephen Randall	Interdisciplinary Marine and Estuarine Science	Dr. Frances Wilkerson	The response of phytoplankton nitrate uptake kinetics to decreased ammonium supply resulting from an upgrade of a major wastewater treatment plant
	Amy Wong	Interdisciplinary Marine and Estuarine Science	Dr. Wim Kimmerer	Using high-throughput sequencing to determine the prey composition within the diets of the copepods *Eurytemora carolleeae* and *Psudiodiaptomus forbesi* in the San Francisco Estuary
San José	Danielle Devincenzi	Biological Sciences	Dr. Scott Shaffer	The influence of individual western gull (*Larus occidentalis*) boldness on nest site quality and reproductive success at Southeast Farallon Island
	Frederick Ede	Geology	Dr. Ryan Portner	Geological assessment of coastal erosion hazard severity and distribution on the Central Oregon Coast
	Sarah Hecocks	Biological Sciences	Dr. Scott Shaffer	Demographic consequences of environmentally induced foraging flexibility in common murres breeding at Southeast Farallon Island, California

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE
San Luis Obispo	Jackson Hoeke	Marine Science (MLML)	Dr. Amanda Kahn	Quantifying the role of the introduced sponge *Hymeniacidon perlevis* (*Porifera: Demospongiae)* in the Elkhorn Slough
	Daphne Shen	Marine Science (MLML)	Dr. Birgitte McDonald	Fine-scale behavioral response of the northern elephant seal (*Mirounga angustirostris*) when exposed to an acoustic stressor
	Marissa Bills	Biological Sciences	Dr. Benjamin Ruttenberg	Investigating the aquaculture potential of California's native Pismo clam (*Tivela stultorum*)
	Megan Dotterweich	Biological Sciences	Dr. Kristin Hardy	Effects of intertidal position on anaerobic metabolism and hypoxia tolerance of the common acorn barnacle, *Balanus glandula*
	Erin Johnston	Biological Sciences	Dr. Benjamin Ruttenberg	Impacts of marine heat waves on nearshore groundfishes in Central California
San Marcos	Ciara Sanders	Biological Sciences	Dr. Elinne Becket	The effect of climate change on horizontal gene transfer in coastal microbiomes
Sonoma	Barbara Halaska	Biology	Dr. Daniel Crocker	A multifaceted examination of blubber to infer the nutritional status of the Eastern Pacific gray whale
	Kiona Parker	Biology	Dr. Sean Place	Ramifications of multiple stressors on the metabolic capacity and digestive functions of the copper rockfish

UNDERGRADUATE STUDENT 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	Julian Jordan	Biology	Dr. Antje Lauer	Searching for *Coccidioides* on the Channel Islands, California	$2,911
	Kaitlin Macaranas	Biology	Dr. Rae McNeish	Landscape features impact atmospheric deposition of microplastics and nutrients	$2,911
Chico	Andrea Villegas-Fregoso	Environmental Science	Dr. Sandrine Matiasek	Continuous monitoring of water quality in Big Chico Creek	$2,489
Dominguez Hills	Kelsie Kaufman	Biology	Dr. Samantha Leigh	Pervasiveness of microplastics in the Southern California Bight	$1,250
	Kevin Mosqueda	Microbiology	Dr. Samantha Leigh	Microplastic pervasiveness in Southern California marine ecosystems	$1,250
East Bay*	Sharn Basi	Health Sciences	Dr. Patty Oikawa	Carbon cycling in tidal wetlands at the Eden Landing Ecological Reserve	$417
	Sarah Fukishima	Biological Sciences	Dr. Patty Oikawa	Quantifying spatial and temporal patterns of coral bleaching	$417
	Tiffany Hopkins	Environmental Sciences	Dr. Patty Oikawa	Effects of compost application on soil carbon dioxide, methane and evapotranspiration on Concord, California, grazed grassland	$417
	Jackelyn Marroquin	Health Sciences	Dr. Patty Oikawa	Methane synthesis	$417
	Marcus Powell-Ford	Biological Sciences	Dr. James Murray	Effects of *Tritonia* toxin on helminths	$417 *($800)*
	Raquel Sandoval	Biological Sciences	Dr. James Murray	Magnets change *Tritonia* navigation	$417

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
Fullerton	Kathryn Eckholdt	Biological Sciences	Dr. Danielle Zacherl	Talking trash: Will a trash interceptor in Newport Bay, California, intercept wrack subsidies, too?	$450
	Nicolina Jurkiewicz	Biological Sciences	Dr. Danielle Zacherl	Tidal influence on mudflat foraging locations of shorebirds in restored and unrestored habitats	$444
	Jada Smith	Biological Sciences	Dr. Jennifer Burnaford	Exploring the mechanisms behind patterns of epiphyte infection for the seaweed *Pelvetiopsis californica* under conditions of sea-level rise	$900
	Julia Teeple	Biological Sciences	Dr. E. Misty Paig-Tran	Tiny teeth in mega filter-feeders—vestigial or functional?	$326
	Veng Hout Ty	Biochemistry	Dr. Stevan Pecic	In vitro selection of DNA aptamers for the detection of the agricultural insecticide imidacloprid	$400
	Angela Xia	Biological Sciences	Dr. Amybeth Cohen	Traditional mating of wild type *Chlamydomonas reinhardtii* to improve protein-lipid content for use as an aquaculture food source	$825
Humboldt	Alex Bairstow	Biology	Dr. Sean Craig	Copper tolerance in an invasive bryozoan cryptic species complex	$500
	Peter Bright	Chemistry	Dr. Matthew Hurst	Copper in the Smith River plain	$500
	Marzia Fattori	Biology	Dr. Rick Zechman	Establishing a bull kelp nursery at Telonicher Marine Laboratory	$500
	Noah Jenkins	Fisheries Biology	Dr. Rafael Cuevas Uribe	Effects of probiotic diet on white sturgeon growth and microbiome	$500

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
Long Beach	Haylee Kramer	Marine Biology	Dr. Chris Lowe	Training AI in the recognition of desired objects using drone footage	$750
	Mariah Meyer	Marine Biology	Dr. Chris Lowe	Effect of water turbidity on white shark prey detection monitored by AUV video	$250
	Erin Pierce	Marine Biology	Dr. Chris Lowe	How does size affect human and juvenile white shark interactions along the Southern California coast?	$250
	David Reoyo	Biology	Dr. Douglas Pace	Determining the metabolic cost of growth in larval stages of the deep-water sea urchin, *Stronglyocentotus fragilis*	$1,250
Los Angeles	Celeene Gomez	Biology	Dr. Andres Aguilar	Extracting mitogenome sequences from rockfish genome data	$500
	Mayra Lopez	Biology	Dr. Patrick Krug	Population genetic analysis of the sea slug *Elysia pusilla*, a Pacific gastropod with unprecedented phylogeographic structure	$1,460
	Rania Mamo	Biology	Dr. Andres Aguilar	Phylogenomics of eelpouts (*Zoarcidae*) using whole mitochondrial sequences	$500
Maritime*	Sophie Scopazzi	Marine Transportation	Dr. Alejandro Cifuentes-Lorenzen	Multipurpose discus buoy, for use in measuring narrow or shallow estuarine ecosystems (along with future students/ faculty projects)	$1,450
	Dominic Terrusa	Oceanography	Dr. Kaylan Randolph	Planning, construction and deployment of an oceanographic buoy for monitoring physical forces and water quality near an eelgrass bed in the San Francisco Bay estuary	$1,050 *($55)*
	Aurora Thomas	Global Studies and Maritime Affairs	Dr. Alejandro Cifuentes-Lorenzen	Atmospheric measurements from an oceanographic buoy for monitoring atmospheric forcing near an eelgrass bed in the San Francisco Bay estuary	$0 *($1,000)*

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
Monterey Bay	Vanessa Garcia	Biology	Dr. Nathaniel Jue	Investigating the seascape genetics of *Mytilus californianus* using a coalescent sampler	$500
	Kaiku Kaholoaa	Biology	Dr. Cheryl Logan	Comparing species-specific vital rates in Hawaiian corals *Porites ligulata* and *P. lichen*	$500
	Silvia Vasquez	Biology	Dr. Cheryl Logan	Coral thermotolerance	$500
	Gretchen Wichman	Environmental Science, Technology and Policy	Dr. John Olson	The influence of salinity on leaf breakdown rates in tidal streams	$300
Northridge	Emily Rukstales	Marine Biology	Dr. Kerry Nichols	Microplastic accumulation in tidepools	$1,000
Pomona	Samantha Hooverson	Biology	Dr. Jayson Smith	Analyzing data regarding human visitation on rocky intertidal zones located in Laguna Beach	$500
	Whitney Jones	Biology	Dr. Jeremy Claisse	Analysis of fish life stages (body size) on oil and gas platform depths	$500
	Michael Joyce	Biology	Dr. Jeremy Claisse	Methods for studying *Hypsypops rubicundus* eggs and larvae in relation to ecological factors	$500
	Skylar Windnagle	Environmental Biology	Dr. Jayson Smith	Documenting a range shift for the brown seaweed *Colpomenia tuberculata* in Southern California	$500
Sacramento	Haley Courser	Geology	Dr. Amy Wagner	Cold water corals as recorders of intruding circumpolar deep water along the Antarctic Margin	$500
	Amanda Croteau	Earth Science	Dr. Amy Wagner	Consequences of rising sea level on the carbon cycle of coastal ecosystems	$500
	Gloria Edejer	Biology	Dr. Lani Gleason	Southern California *Tegula* thermal tolerance species comparison	$500

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
Sacramento	Cassandra Rodriguez	Biology	Dr. Timothy Davidson	A meta-analysis on the effects of nutria as a globally invasive species to inform wildlife management of impacts to native species and ecosystems	$500
	Bear Waymire	Biology	Dr. Ronald Coleman	Survey of breeding locations of intertidal fish	$500
San Bernardino	Justin Matthew Baisa	Biology	Dr. Joseph Heras	Evolutionary analysis of hemoglobin genes across multiple species of rockfishes (genus: *Sebastes*)	$2,500
San Francisco	Breana Goldman	Biology	Dr. Karen Crow	Egg production of bluebanded gobies in artificial reef environments	$1,170
	Chris Seng	Biology	Dr. Karen Crow	Risky business: the effect of predation on goby feeding behavior	$1,170
	Jahnavi Shaw	Biology	Dr. Karen Crow	Scrambled eggs: effects of tank enrichment on zebrafish fecundity	$180
San José	Nhi Ly	Biological Sciences	Dr. Maya deVries	The effects of pH on the shell thickness of marine bivalves	$300
	Alondra Sahagun-Cabrera	Geology	Dr. Ryan Portner	Grain-size analysis of key volcanic ash marker bed from Axial Seamount, Juan de Fuca mid-ocean ridge	$1,100
	Daisy Zuno	Biological Sciences	Dr. Maya deVries	A comparative study of jaw length and microstructures in the purple sea urchin, *Strongylocentrotus purpuratus*	$1,100
San Luis Obispo*	Ashley Adams	Marine Sciences	Dr. Nikki Adams	Developing a long-term microplastics monitoring program in the Morro Bay Estuary	$250 *($2,750)*
	Avery Ancell	Biological Sciences	Dr. Heather Liwanag	Human disturbance and haul out of harbor seals at Avila Beach	$250

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
San Luis Obispo*	Sarah Bartoloni	Chemistry	Dr. Emily Bockmon	Spatial distribution of seawater carbonate chemistry and hydrodynamic controls in a low-inflow estuary	$60
	Megan Beymer	Biological Sciences	Dr. Crow White	Virtual reality lesson plan for dive beneath the surface K-12 marine science education project	$250
	Chrissilda Brown	Chemistry	Dr. Kevin Johnson	Assessing the impact of hypoxia and low pH conditions on the survival of Pacific oyster larvae	$75
	Elise Fiskum	Marine Sciences	Dr. Heather Liwanag	Comparing ground surveys and aerial surveys for estimating the northern elephant seal population at Piedras Blancas	$250
	Alice Lin	Chemistry	Dr. Shanju Zhang	Amyloid intercalated graphene oxide membranes for coastal water treatment	$250
	Eliana Maietta	Marine Sciences	Dr. Benjamin Ruttenberg	Comparing shell aging methodologies and sampler bias to analyze the growth rate of the Pismo clam (*Tivela stultorum*)	$250
	Mallory Merten	Marine Sciences	Dr. Nikki Adams	Comparing the methods of counterstaining dyes in the identification of microplastics	$250 *($2,750)*
	Ryan Pierson	Biological Sciences	Dr. Nikki Adams	Effects of titanium dioxide-based sunscreen on sea urchin egg fertilization	$250
	Emma Saenger	Marine Sciences	Dr. Heather Liwanag	The effect of male northern elephant seal behavior on harem structure at the Piedras Blancas rookery	$275

CAMPUS	STUDENT	DEPARTMENT/ DEGREE PROGRAM	ADVISOR	PROJECT TITLE	AMOUNT (CAMPUS MATCH)
San Marcos	Mackenzie Pylant	Biological Sciences	Dr. Elinne Becket	Taxonomic and antibiotic resistance changes to coastal microbiomes in response to rainstorm runoff	$1,250
	Davis Reis	Environmental Studies	Dr. Christina Simokat	Escondido Creek Conservancy: fire literature review	$700
Sonoma	Maria Amador	Biology	Dr. Brent Hughes	Resilience of Northern California kelp forests	$1,124
	Jack Gable	Biology	Dr. Daniel Crocker	Foraging behavior and stress hormones in northern elephant seals	$1,000
	Marisa Guzman Peralta	Biology	Dr. Brent Hughes	Nursery function of leopard sharks in Drakes Estero	$1,124
	Allysha Meza	Biology	Dr. Richard Whitkus	Resilience of Northern California kelp forests	$1,124

STUDENT TRAVEL AWARDS

*Undergraduate student

CAMPUS	STUDENT	FACULTY MENTOR	CONFERENCE	CONFERENCE LOCATION	AMOUNT
Fullerton	Alisa Hernandez*	Dr. Jennifer Burnaford	Society for Advancement of Chicanos/Hispanics and Native Americans in Science 2020 National Diversity in STEM Conference	Remote	$205
	Georget Oraha	Dr. Jennifer Burnaford	Society for Advancement of Chicanos/Hispanics and Native Americans in Science 2020 National Diversity in STEM Conference	Remote	$165
	Jada Smith*	Dr. Jennifer Burnaford	Society for Advancement of Chicanos/Hispanics and Native Americans in Science 2020 National Diversity in STEM Conference	Remote	$132
	Ariel Heyman	Dr. Jennifer Burnaford	Society for Advancement of Chicanos/Hispanics and Native Americans in Science 2020 National Diversity in STEM Conference	Remote	$165
	Angelina Zuelow	Dr. Jennifer Burnaford	Society for Advancement of Chicanos/Hispanics and Native Americans in Science 2020 National Diversity in STEM Conference	Remote	$165
Humboldt	Jasmine Williamshen	Dr. Alison O'Dowd	Salmonid Restoration Federation Annual Conference	Remote	$85
Los Angeles	Tommy Kam	Dr. Shun Kwan	Canadian Geotechnical Society Annual Conference	Remote	$73
	Paige Weiss	Dr. Patrick Krug	Western Society of Naturalists Annual Meeting	Remote	$20

CAMPUS	STUDENT	FACULTY MENTOR	CONFERENCE	CONFERENCE LOCATION	AMOUNT
Monterey Bay	Kathleen Cieri	Dr. Rick Starr	American Fisheries Society and The Wildlife Society 2020 Joint Conference	Remote	$175
	Kinsey Matthews	Dr. Rick Starr	American Fisheries Society and The Wildlife Society 2020 Joint Conference	Remote	$125
	Jackie Mohay	Dr. Rick Starr	American Fisheries Society and The Wildlife Society 2020 Joint Conference	Remote	$125
San José	Bonnie Brown	Dr. Rick Starr	American Fisheries Society and The Wildlife Society 2020 Joint Conference	Remote	$125
Sonoma	Jazmyne Gill	Dr. Mackenzie Zippay	Western Society of Naturalists Annual Meeting	Remote	$20
	Shelby Hotz	Dr. Mackenzie Zippay	Western Society of Naturalists Annual Meeting	Remote	$20

SUMMER 2020 INTERNSHIP PROGRAM

*Undergraduate student

HOST ORGANIZATION	INTERNSHIP *ALL REMOTE*	CSU STUDENT *HOME CAMPUS*
California Department of Fish and Wildlife Marine Region	Southern California Marine Invertebrate Fisheries Management	Matthew Kim* *Pomona*
	Northern California Marine Invertebrate Fisheries Management	Ariel Gasca* *San José*
		Emily Haydis* *Monterey Bay*
	Emerging Box Crab Fishery	Sterling Butler* *Channel Islands*
California Ocean Science Trust	Science-Policy	Demetra Panos *Northridge*
California State Lands Commission Marine Invasive Species Program	Marine Invasive Species	Kao Ger (Rose) Her* *Sacramento*
Channel Islands National Marine Sanctuary	Ocean Exploration	Nathan Shapiro* *Channel Islands*
Marine Applied Research and Exploration	Marine Computer Programming	Isaac Travers* *San Diego*
NOAA National Marine Fisheries Service Protected Resources Division	Abalone Conservation	Katie Blessing* *Long Beach*
NOAA National Marine Fisheries Service Sustainable Fisheries Division	Dolphin-Safe Tuna Tracking	Jennifer Arias* *Long Beach*
Tijuana River National Estuarine Research Reserve	Bioindicator Trends and Analysis	Alexandra Fox *San Diego*

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

The California State University
COUNCIL ON OCEAN AFFAIRS, SCIENCE & TECHNOLOGY

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