

# COAST

## 2020 ANNUAL REPORT



Covering activities from July 1, 2019 - June 30, 2020

[www.calstate.edu/coast](http://www.calstate.edu/coast)



# THE CURRENT LANDSCAPE

2020 brought significant disruption and awareness to our lives. The nation is reckoning with the current, global COVID-19 pandemic and its violent, racist history. These events seem to have little to do with marine science, but science itself is woven throughout our national debates: the value of science and the degree to which it should shape public policy, the structural racism that has permeated science for centuries, the need to address disparate impacts of climate change on people of color and their communities. We're living in a new world, one that, hopefully, will be better in the future as a result of all the struggles happening now.

COAST remains a constant during these turbulent times, but we are also adapting and responding. We continue to support faculty members and students and are working with them to determine how we can help them most effectively. In some cases, that means providing extensions for ongoing research interrupted by COVID-19 that will take longer to complete than initially planned. In other cases, it means repurposing funds, especially to support students when other sources of income are no longer available. This will enable our students to remain in their degree programs and graduate, even if it takes them a little longer.

Restrictions on daily life and research due to COVID-19 will probably end within a few years. Tackling systemic racism will take significantly longer; it will take decades to dismantle what was built over centuries. Geosciences, including ocean science, and marine sciences are microcosms of the larger scientific community, which is now reflecting on its own culture and inherent inequities. COAST envisions a more inclusive community, one that embraces diversity and is better because of it. We are committed to engaging and supporting students who historically have been excluded from marine science and promoting their professional development. We will help our faculty members become more inclusive mentors and teachers. With a more diverse workforce, professoriate and environmentally literate stakeholder community, we will be better equipped to address the climate change impacts that will affect all of us without leaving the most vulnerable of us behind.

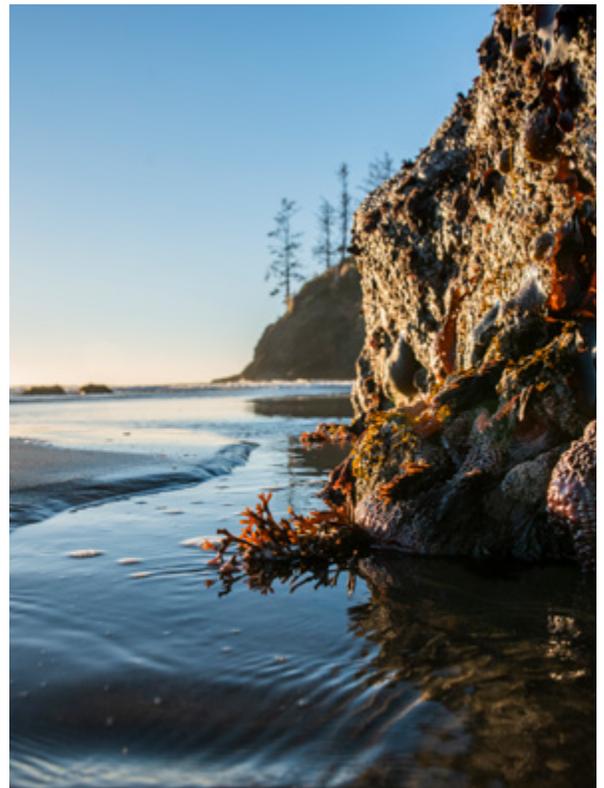
To learn more about COAST's efforts to fight structural racism and increase equity and inclusive diversity, please read our [Anti-Racism and Diversity Inclusion Statement](#) on the following pages and see our [Anti-Racism and Inclusive Diversity Resources on our website](#).

## 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.**



# COAST ANTI-RACISM AND DIVERSITY INCLUSION STATEMENT

The following statement was developed by COAST staff and the Executive Committee in June 2020. It was posted on the COAST website along with a curated selection of materials on racism, the benefits of diversity and barriers that people of color face in science. Resources on overcoming systemic racism in society, higher education and science are included also and are intended to help COAST members address structural racism in their disciplines and create a more diverse and inclusive community.

## To the COAST community and the world beyond,

We are writing to speak out against the abhorrent institutionalized racism that has dominated this country since colonial times. We condemn the taking of the Black lives that have made the recent headlines (George Floyd, Breonna Taylor, Ahmaud Arbery and others), and the many, many others that have not. We condemn the taking of lives of Black people, Indigenous peoples and people of color and the injuries and injustices that have been done going back hundreds of years and continue today. The ongoing protests across the country are a call to action: it is far past time to shine a light on our nation's racist and violent past and to dismantle the structures and policies that have led us to this moment. COAST is the organization for marine, coastal and coastal watershed-related research in the California State University (CSU). The CSU is the nation's largest, most diverse four-year public university system in the country: more than 60 percent of CSU students are students of color. As a field, marine science across the country notably lacks faculty members, practitioners and students of color. COAST, situated within the CSU, is no exception. The majority of students we support through undergraduate and graduate student research awards, travel funding and paid summer internships are White and do not reflect the diverse composition of the larger CSU student population.

A 2018 study by [Rachel Bernard and Emily Cooperdock](#) shows that over the last 40 years in the U.S., the number of doctoral degrees in atmospheric, earth and ocean sciences awarded to underrepresented racial and ethnic minorities has remained exceedingly low. In 2016, 5,138 doctorates were awarded in ocean science. Less than eight percent of the recipients were non-White or non-Asian. This is despite a substantial relative increase in racial and ethnic minorities in the overall U.S.



Why? What are we doing wrong, or not doing at all? At the CSU, we know how to create opportunities for students, but clearly opportunity alone is not enough. How can we do better? How can we create meaningful experiences, where underrepresented students feel valued, included and encouraged to pursue STEM fields, especially marine science and related disciplines?

We don't have all the answers, but we believe COAST can play a role in addressing the lack of people of color and other underrepresented groups in marine science. We envision a future in which more people of color 1) pursue and succeed in attaining degrees in marine science and related disciplines at both the undergraduate and graduate levels, 2) hold faculty positions in marine science and related disciplines and 3) enter the nonacademic workforce in marine science and other STEM-related fields, including education, industry and public policy.

The first thing we are doing is creating a [new section on our website with resources](#) to help the CSU marine science community become more equitable, inclusive and diverse. There will be multiple sections with resources specific to academia, pedagogy, STEM and marine science. But more importantly, there will be materials on the history of institutionalized, systemic and pervasive racism against Black people and other people of color in our country. We believe that we have to look backward in order to go forward: it is impossible to understand where we are today and to figure out how to create an equitable and just society without studying how we have arrived at this point in our own history.

You'll be hearing more from us on social media and our website over the coming weeks and months as we identify additional actions we will take. For us, this isn't a one-and-done statement. We are committed to a sustained, programmatic investment in real and meaningful change. We have a long way to go, and we hope you will join us.

Dr. Krista Kamer, COAST Director

#### **COAST Executive Committee members**

Dr. Joe Carlin, Cal State Fullerton

Dr. Sen Chiao, San José State

Dr. Katherine Kantardjieff, CSU San Marcos

Dr. Andrew Lawson, CSU Monterey Bay

Dr. Karina Nielsen, San Francisco State

Dr. Sean Place, Sonoma State

Dr. Benjamin Ruttenberg, Cal Poly San Luis Obispo

Dr. Christine Whitcraft, Cal State Long Beach

#### **COAST staff members**

Kimberly Jassowski, Program Support Coordinator

Jessica Mejia, Program Assistant

Amy Vierra, Policy and Communications Consultant

# ACADEMIC YEAR 2019-20 HIGHLIGHTS

In Academic Year (AY) 2019-20, COAST launched a new program that focuses exclusively on supporting California’s highest priority marine, coastal and coastal watershed-related needs for scientific information. COAST also continued to invest significantly in its existing faculty and student research programs. Together, these efforts provide substantial support for rigorous scientific research and enhanced student education throughout the CSU.

Accomplishments in AY 2019-20:

- Established the State Science Information Needs Program (SSINP), which funds scientific research needed to facilitate informed policy development and evidence-based decision making in a timely and actionable manner.
  - Released requests for proposals (RFPs) on the topics of microplastics/microfibers and sea-level rise, each totaling \$800,000.
- Provided \$373,801 to CSU faculty members and students.
  - Support for students and faculty members totaled more than half of COAST’s expenditures for 2019-20.
  - Supported 18 faculty members and 164 students across the CSU.
  - Awards were made to all 23 CSU campuses.
- Faculty members secured \$1,299,999 in external funding as a result of prior COAST support.

| REVENUE                            | AMOUNT           | PERCENT OF TOTAL |
|------------------------------------|------------------|------------------|
| Chancellor’s Office Contribution   | \$588,808        | 65.3%            |
| Campus Contributions               | \$233,750        | 25.9%            |
| Extramural Funding                 | \$45,500         | 5.1%             |
| Miscellaneous Revenue              | \$24,729         | 2.7%             |
| Balance Forward From Previous Year | \$8,304          | 0.9%             |
| <b>TOTAL</b>                       | <b>\$901,091</b> | <b>100%</b>      |

| EXPENDITURES                      | AMOUNT           | PERCENT OF TOTAL |
|-----------------------------------|------------------|------------------|
| Student Support                   | \$250,586        | 34.0%            |
| Faculty Research Incentives       | \$123,215        | 16.7%            |
| Program and Strategic Development | \$8,000          | 1.1%             |
| Outreach and Communications       | \$1,627          | 0.2%             |
| Personnel                         | \$286,154        | 38.8%            |
| Program Operations                | \$15,549         | 2.1%             |
| Administrative Fees               | \$51,611         | 7.0%             |
| <b>TOTAL</b>                      | <b>\$736,742</b> | <b>100%</b>      |



## SUPPORTING STATE NEEDS FOR SCIENTIFIC INFORMATION

COAST received a one-time \$3 million appropriation from the state in fiscal year 2019-2020. The specific purpose of the funding is to allow the CSU to assist the state with its marine, coastal and coastal watershed-related science information needs. COAST used this funding to establish the State Science Information Needs Program (SSINP), which focuses exclusively on providing the scientific information needed to fill knowledge gaps identified by state agencies and the Legislature. In addition, awards made through SSINP will provide a wealth of opportunities for the CSU, including increased faculty scholarship, student engagement and workforce development.

SSINP is unique because, unlike funding opportunities that require applicants to identify stakeholder needs for information, it engages state agencies from the very beginning to ensure that their needs are well represented in grant solicitations. COAST conducted structured interviews with state agencies with relevant jurisdiction to identify these needs. The highest priority marine, coastal, and coastal watershed-related issues for the state were determined to be:

- Sea-level rise.
- Ocean acidification and hypoxia.
- Water pollution (including marine debris and microplastics).
- Sustainable fisheries (including marine protected area management and sustainable aquaculture).

After gaining approval from the CSU Chancellor's Office to launch the program in January 2020, COAST released the first SSINP request for proposals (RFP), making \$800,000 available for research on microplastics and microfibers. These are materials less than 5 millimeters in length, including nanomaterials less than 1 micron, that are found ubiquitously throughout marine and coastal environments. They are of increasing interest because of their harmful effects on the environment, wildlife and human health and are a high priority for the California Ocean Protection Council, State Water Resources Control Board and Department of Toxic Substances Control, as well as the federal National Oceanic and Atmospheric Administration Marine Debris Program. COAST received 18 proposals and sent them out for peer-review at the end of AY 2019-20.

The second RFP making \$800,000 available for research on sea-level rise was released at the end of April 2020. Sea-level rise will have profound effects on human welfare, infrastructure and the economy. Research on the economic impact of beach loss, future coastal access in light of sea-level rise and the restoration of habitats to protect human communities is needed by the California Coastal Commission, California State Coastal Conservancy, San Francisco Bay Conservation and Development Commission and State Parks. Proposals were due in September 2020 and will be summarized in next year's Annual Report.

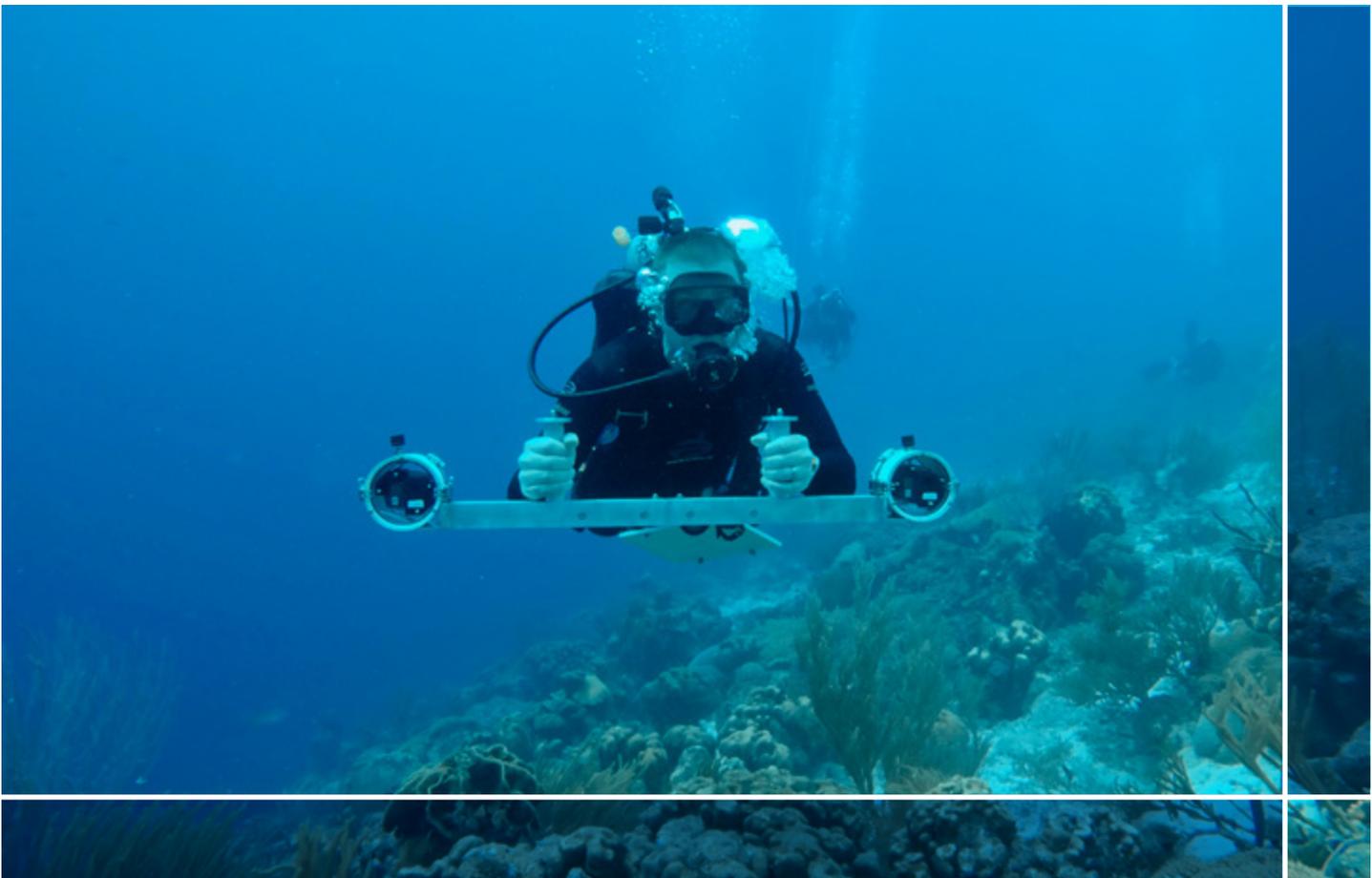
Representatives of the state agencies involved in the development of the microplastics/microfibers and sea-level rise RFPs have expressed their appreciation for SSINP. "We all greatly appreciate the desire to help fulfill the state's needs on this. Your very detail-oriented and thoughtful approach to all of it has been a real pleasure to be a part of," said Dr. Lauren Garske-Garcia, California Coastal Commission staff ecologist.

# 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 in order 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-related research and education in the CSU, 2) the number of externally funded CSU marine 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 2019-20. The number of awards made this year was lower than in previous years partly because of COVID-19.

| FACULTY AWARD PROGRAM          | NUMBER OF AWARDS | NUMBER OF FACULTY MEMBERS SUPPORTED | NUMBER OF PARTICIPATING CAMPUSES | FUNDING AMOUNT   |
|--------------------------------|------------------|-------------------------------------|----------------------------------|------------------|
| Grant Development Program      | 6                | 13                                  | 8                                | \$117,683        |
| Rapid Response Funding Program | 1                | 1                                   | 1                                | \$4,500          |
| Seminar Speaker Series Program | 2                | 4                                   | 4                                | \$1,032          |
| <b>TOTAL</b>                   | <b>9</b>         | <b>18</b>                           |                                  | <b>\$123,215</b> |



## 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-related 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. Awards range from \$5,000 to \$20,000.

COAST provided \$117,683 in support to faculty members through the GDP in AY 2019-20. Awards began May 1, 2020, and were initially slated to last 18 months. Because of COVID-19, all awards were granted automatic six-month no-cost extensions.

| AWARD RECIPIENTS   | PROJECT TITLE  |
|--|--|
| <p><b>Dr. Andrea Bonisoli-Alquati</b><br/>Biological Sciences, Pomona</p> <p><b>Dr. Scott Shaffer</b><br/>Biological Sciences, San José</p>                                | <p>Seabirds as sentinels of exposure to volatile organic compounds in coastal cities</p>   |
| <p><b>Dr. Joseph Carlin</b><br/>Geological Sciences, Fullerton</p> <p><b>Dr. Patty Oikawa</b><br/>Earth and Environmental Sciences, East Bay</p>                           | <p>Constraining carbon budgets and sedimentation rates in coastal wetlands</p>   |
| <p><b>Dr. Hilary McMillan</b><br/>Geography, San Diego</p> <p><b>Dr. Jasper Oshun</b><br/>Geology, Humboldt</p> <p><b>Dr. Amelia Vankeuren</b><br/>Geology, Sacramento</p> | <p>Quantifying water storage and runoff processes in coastal California watersheds through a GEOPATHS hydrological field experience for CSU undergraduates</p> |
| <p><b>Dr. Colleen Durkin</b><br/>Moss Landing Marine Laboratories, San José</p> <p><b>Dr. Kenneth Coale</b><br/>Moss Landing Marine Laboratories, San José</p>             | <p>Ecological mechanisms of carbon export in the California Current resolved by a fleet of autonomous imaging robots</p>                                       |
| <p><b>Dr. Carlie Pietsch</b><br/>Geology, San José</p> <p><b>Dr. Ryan Portner</b><br/>Geology, San José</p>  | <p>Life in the dead zone: examining the impact of caldera formation on planktonic ecology</p>  |
| <p><b>Dr. Nyssa Silbiger</b><br/>Biology, Northridge</p> <p><b>Dr. Linda Wegley Kelly</b><br/>Biology, San Diego</p>   | <p>Profiling the methylation landscape of <i>Mytilus californianus</i> genomes</p>   |

## 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. Awards range from \$2,500 to \$5,000.

In AY 2019-20, COAST made one Rapid Response Award totaling \$4,500. Four other faculty members contacted COAST in early 2020 with questions about the program and indicated their intent to apply, but ultimately none applied because of COVID-19.

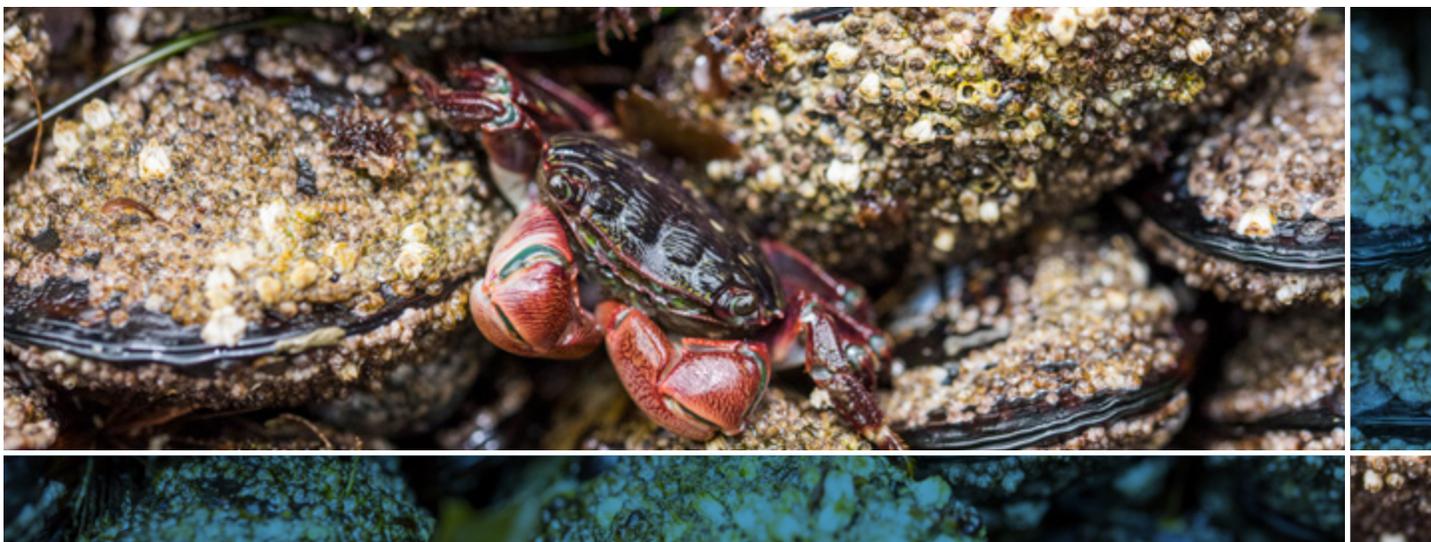
| AWARD RECIPIENTS  | PROJECT TITLE   |
|---|---|
| <b>Dr. José Marín Jarrín</b><br>Fisheries Biology, Humboldt | Feeding habits of important commercial fishes in the Galápagos Marine Reserve |

## SEMINAR SPEAKER SERIES PROGRAM

The Seminar Speaker Series Program provides funding to departments to host seminar speakers from other CSU campuses. This program is intended to increase the exchange of ideas among campuses and ultimately lead to increased collaboration across campuses. Awards are for actual expenses up to \$700 (or up to \$1,000 for travel to or from Humboldt).

In AY 2019-20, the Seminar Speaker Series Program provided two awards ranging from \$400 to \$700. Faculty members from four departments at four campuses participated. Two other awards were made for seminars scheduled for late March and early April, but these seminars were canceled because of COVID-19.

| HOST  | SPEAKER   | SEMINAR TITLE  |
|---|---|--|
| <b>Dr. Amanda Banet</b><br>Biological Sciences, Chico             | <b>Dr. Steve Blumenshine</b><br>Biology, Fresno | Applications of salmon bioenergetics: early life history stages  |
| <b>Dr. Sen Chiao</b><br>Meteorology and Climate Science, San José | <b>Dr. Antje Lauer</b><br>Biology, Bakersfield  | Increase in coccidioidomycosis incidence in coastal counties of California due to environmental change |



## EXTRAMURAL FUNDING

In AY 2019-20, faculty members secured \$1,299,999 in extramural funding as a result of prior COAST support over the last five years.

| CAMPUS       | PRINCIPAL INVESTIGATOR | DEPARTMENT          | FUNDING AGENCY  | PRIOR COAST SUPPORT                     | AMOUNT TO CSU      |
|--------------|------------------------|---------------------|---|---|--------------------|
| Northridge   | Dr. Priya Ganguli*     | Geological Sciences | Department of Defense Research and Education Program for HBCU/MSI | 2017-18 Grant Development Program       | \$600,000          |
| Pomona       | Dr. Jayson Smith**     | Biological Sciences | CA Ocean Protection Council                                       | 2017-18 Graduate Student Research Award | \$400,000          |
| San Diego    | Dr. Matthew Edwards    | Biology             | Department of Energy: ARPA-E                                      | 2014-15 Grant Development Program       | \$299,999          |
| <b>Total</b> |                        |                     |   |   | <b>\$1,299,999</b> |

\*Co-PI on Department of Defense award

\*\*Subawardee on California Ocean Protection Council award

## CONTRIBUTION TO OVERALL CSU RESEARCH AND DEVELOPMENT FUNDING

COAST inventories the external grant and contract activity of its members across the CSU annually in order to demonstrate the collective impact of faculty involvement in marine, coastal and coastal watershed-related research. AY 2018-19 expenditure data were collected for all grants and contracts for faculty members associated with COAST at each campus. Filtering the data to include only research and development (R&D) awards for marine, coastal and coastal watershed-related projects demonstrates that these activities constitute 60 percent of COAST members' external funding. Furthermore, the R&D external funding secured by COAST members in AY 2018-19 accounted for 10.2 percent of the CSU's overall R&D external funding for the year (\$265,024,000).

| AWARDS TO COAST FACULTY                               | 2018-19 NUMBER OF AWARDS | NUMBER OF INDIVIDUAL PIS | AWARD AMOUNT |
|---|--------------------------|--------------------------|--------------|
| All Awards (coastal and non-coastal, R&D and non-R&D) | 618                      | 223                      | \$45,164,297 |
| Coastal R&D Only                                      | 341                      | 148                      | \$26,924,150 |

# SUPPORTING STUDENT DEVELOPMENT

COAST is committed to increasing the diversity of marine science undergraduate and graduate student populations within the CSU, with the ultimate goal of increasing the diversity of marine science professionals nationwide. To achieve that, COAST supports CSU undergraduate and graduate students engaged in marine, coastal and coastal watershed-related 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 students 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 advances faculty research as well.

In AY 2019-20, COAST made 169 awards totaling \$250,586 to 164 individual students throughout the CSU. All 23 campuses benefited from COAST student support programs.



| STUDENT PROGRAM                                | NUMBER OF AWARDS | NUMBER OF PARTICIPATING CAMPUSES | FUNDING AMOUNT   |
|--|------------------|----------------------------------|------------------|
| Graduate Student Research Award Program        | 36               | 16                               | \$108,000        |
| Scholars-In-Training Pilot Program             | 10               | 1                                | \$11,089         |
| Student Travel Award Program                   | 34               | 13                               | \$19,193         |
| Summer Internship Program                      | 11               | 6                                | \$55,200*        |
| Undergraduate Student Research Support Program | 78               | 21                               | \$55,518         |
| General Student Support                        | -                | -                                | \$1,586          |
| <b>TOTAL</b>                                   | <b>169</b>       |                                  | <b>\$250,586</b> |

\*Includes host match

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 2019-20, 36 graduate students from 16 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.

Because of COVID-19, awardees were allowed to rebudget their awards if needed, particularly to allocate more resources for living expenses. Realizing that students' research needs may have changed or that they may have experienced loss of income due to the pandemic, this flexibility was intended to increase the likelihood of students continuing their graduate studies.

## 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-related research. Campus Representatives are responsible for implementing this program and awarding the funds on their campuses. This year, 21 campuses successfully allocated their funding and supported a total of 78 students (Appendix<sup>2</sup>). Four campuses provided matching funds totaling \$6,125 that augmented students' projects.

*“With the COAST grant, I was able to support myself during the fall semester without working as a graduate teaching assistant. This allowed me to focus directly on my research.”*

*Amber Tucker, Long Beach  
Graduate Student Research Awardee (2018-2019<sup>1</sup>)*

*“The experience gained from being a part of this research lab at Fresno State has solidified my interest and passion for biology and has given me greater confidence in completing my undergraduate studies and prepared me for the rigors of graduate school. Additionally, I am a first-generation college student and participation in undergraduate research has helped me shed the feelings of “imposter syndrome,” which I used to feel.*

*Robert Seward, Fresno  
Undergraduate Student Research Awardee*

*“I have gained a deeper appreciation for research and I know I want to apply my abilities by attending graduate school for marine ecology. I never thought I would be doing the lab or fieldwork I do now as an undergraduate researcher. [This] boosted my confidence and secured my future goals in science.*

*Gabrielle Yang, Pomona  
Undergraduate Student Research Awardee*

<sup>1</sup> 2019-20 Graduate Student Research Awardees have not turned in their final reports at the time of publication; a comment from a 2018-19 awardee is presented to demonstrate the impact of the program.

<sup>2</sup> All awardees are listed even though some were not able to work on their projects because of COVID-19. Awardees who continue in their programs during AY 2020-21 (i.e., did not graduate) will be encouraged to use any remaining award funds without having to reapply.

“*I gained insight about the balance between cultural ethics and scientific practices that I would not have received elsewhere. As a person of color, to hear affirmations that cultural considerations and inclusions enhance rather than limit scientific practices and that they can and should be integrated into scientific practices was extremely empowering.*”

*Shannon Chou, Fullerton  
Undergraduate Student Travel Awardee*

*Society for Advancement of Chicanos/  
Hispanics and Native Americans in Science 2019  
National Diversity in STEM Conference,  
Honolulu, Hawaii*

“*Participating in this internship opened my eyes to possible opportunities in marine biology and fisheries management. My expectations for myself have definitely heightened and I am more curious and driven to keep pursuing science because of this internship.*”

*Lauren Zaragoza, San Luis Obispo  
Summer Student Intern*

“*This internship has given me the confidence to continue to excel in school and life in general...the necessary tools to pursue a career in marine science.*”

*Matthew Kim, Pomona  
Summer Student Intern*

## 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 marine, coastal and coastal watershed-related 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 \$19,193 in travel support to 10 undergraduate and 24 graduate students from 13 campuses (Appendix<sup>3</sup>). Students presented their research throughout the U.S. as well as in Spain, Mexico, Canada, Portugal and Colombia. These trips occurred before mid-March, when all CSU-supported travel ceased because of COVID-19. Overall, the amount of support for student travel was lower this year because no awards were made for April–June because of COVID-19.

## SUMMER INTERNSHIP PROGRAM

Through the Summer Internship Program, CSU students work alongside 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 increased 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, 117 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 2019, 11 students, including nine undergraduates, from six campuses were placed with nine hosts (Appendix). For the first time, the NOAA National Marine Fisheries Service Sustainable Fisheries Division office in Seattle, Washington, hosted an intern. This was COAST’s first out-of-state intern. New projects included GIS-based analysis of data collected from a remotely operated vehicle (ROV) and analysis of whale entanglement data to evaluate key factors associated with this issue.

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

<sup>3</sup> Two travel awards could not be paid out because the students’ trips were canceled because of COVID-19. However, the students are included in order to recognize their achievements in receiving awards.

## SCHOLARS-IN-TRAINING PILOT PROGRAM

Through generous 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 (CSUMB), COAST launched a new program in AY 2017-18 to increase undergraduate student participation in marine, coastal and coastal watershed-related research. The goal of the Scholars-In-Training Pilot Program (SIT) is to involve students in research early on in their undergraduate careers in order to promote their retention in STEM degree programs.



SIT pairs first- and second-year CSUMB undergraduate students with Moss Landing Marine Laboratories (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 both 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: 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. A majority of the students recruited in 2018-19 were the first in their family to attend college.

A new cohort of first- and second-year students was not recruited in AY 2019-20 because of budget restrictions. Instead, support for continuing students was prioritized. These students are now conducting independent research for which their prior participation prepared them.

### AY 2019-20 Scholars-In-Training Pilot Program Participants

| UNDERGRADUATE RESEARCHER | YEAR   | PROGRAM/ MAJOR | PROJECT TITLE  | GRADUATE STUDENT MENTOR |
|--------------------------|--------|----------------|--|-------------------------|
| Carol Chen               | Third  | Marine Science | The development of a programmable flow injection method for phosphorus                 | Erick Partida           |
| Kylie Foley              | Third  | Biology        | The functional genomics of pesticide-remediating bacteria                              | Rahil Ryder             |
| Kaiku Kaholoaa           | Third  | Marine Science | Measuring resilience: transforming repeated photomosaics into coral demographic models | Caroline Rodriguez      |
| Ethan Switzer            | Second | Marine Science | Marine ecology in the time of 3D modeling  | Ryan Solymar            |
| Silvia Vasquez           | Third  | Marine Science | How does pollution affect coral zooxanthellae?   | Melissa Naugle          |

# LOOKING AHEAD

Over the next 12 months, COAST will

- Provide resources and support to faculty members and students who want to actively participate in efforts to increase diversity, equity and inclusion in marine science and related fields within the CSU.
  - Convene a panel on inclusive diversity in research, teaching and mentoring at the November 2020 Annual Meeting.
  - Provide professional, in-depth anti-bias training to faculty members.
  - Curate resources for the Anti-Racism and Inclusive Diversity Resources section of the website.
- Continue to meet the state's needs for timely scientific information to support evidence-based decision-making and policy development through SSINP.
  - Announce awards supporting microplastic and microfiber research.
  - Complete the evaluation and award process for sea-level rise proposals.
  - Release a third RFP making \$800,000 available for additional state priorities.
  - Update lawmakers and agency representatives about COAST's efforts to directly support the state of California's science needs.
- Develop its next strategic plan for 2022-2027.
- Promote the advancement of CSU marine, coastal and coastal watershed-related research and education by providing funding and opportunities to CSU faculty members and students.
- Train students to join a highly skilled, technologically sophisticated workforce and ensure the success of students from all backgrounds.
- Raise awareness of the CSU's research capacity with stakeholders and elected officials.
  - Serve as a primary resource for informed decision-making in government, industry and local communities.
  - Communicate the activities, successes and impacts of COAST to stakeholders and the public.
- Position COAST and its members to leverage state and federal funding opportunities and secure additional resources to support program activities.





# APPENDIX

## STUDENT AWARDS AND SUPPORT

## GRADUATE STUDENT RESEARCH AWARDS

Each award is \$3,000.

| CAMPUS            | STUDENT                  | DEPARTMENT/<br>DEGREE<br>PROGRAM | ADVISER               | PROJECT TITLE   |
|-------------------|--------------------------|----------------------------------|-----------------------|---|
| <b>East Bay</b>   | Julie Shahan             | Environmental Geosciences        | Dr. Patty Oikawa      | Quantifying the atmospheric and hydrologic carbon fluxes in a restored tidal saltwater marsh and understanding the drivers of the carbon exchange   |
| <b>Fresno</b>     | Miguel Estrada Caballero | Biology                          | Dr. Brian Tsukimura   | Factors affecting gonad generation in juvenile porcelain crabs ( <i>Petrolisthes cinctipes</i> )  |
| <b>Fullerton</b>  | Mason Emery              | Biological Science               | Dr. Danielle Zacherl  | Not so shellfish after all: how native oysters ( <i>Ostrea lurida</i> ) may aid eelgrass ( <i>Zostera marina</i> ) restoration by nitrogen filtration                                     |
|                   | Valerie Goodwin          | Biological Science               | Dr. Danielle Zacherl  | Factors affecting the ability of Olympia oysters to stabilize shorelines in a living shorelines project   |
|                   | Meaghan Swintek          | Biological Science               | Dr. Ryan Walter       | Population genetic structure and connectivity of the Arctic's largest marine predator: the Greenland shark ( <i>Somniosus microcephalus</i> )   |
| <b>Humboldt</b>   | Joshua Cahill            | Natural Resources                | Dr. Darren Ward       | Salmon habitat in an agricultural landscape   |
|                   | Kevin Landaw             | Biology                          | Dr. Frank Shaughnessy | A more complete understanding of eelgrass wasting disease phenology and environmental triggers  |
|                   | Emma Levy                | Biology                          | Dr. Dawn Goley        | Assessment of an emerging northern elephant seal colony in the King Range National Conservation Area, Northern California   |
|                   | Jasmine Shen             | Natural Resources                | Dr. Alison O'Dowd     | Pulse flow releases and inundation of marginal habitat: responses of drift and benthic macroinvertebrate forage concentration downstream of Lewiston Dam on the Trinity River, California |
| <b>Long Beach</b> | James Chhor              | Biology                          | Dr. Darren Johnson    | Effects of microplastic exposure on early life development and growth of California grunion ( <i>Leuresthes tenuis</i> )  |
|                   | Peter Nilsson            | Biology                          | Dr. Bruno Pernet      | Effects of naturally occurring inedible particles on the feeding and time to metamorphic competence of echinoderm larvae  |
|                   | Patrick Rex              | Biology                          | Dr. Chris Lowe        | The use of UAVs to quantify marine recreation and juvenile white shark interactions in Southern California  |

| CAMPUS              | STUDENT                  | DEPARTMENT/<br>DEGREE<br>PROGRAM | ADVISER              | PROJECT TITLE   |
|---------------------|--------------------------|----------------------------------|----------------------|---|
| <b>Long Beach</b>   | Alyssa Syverud           | Biology                          | Dr. Douglas Pace     | Assessing the role of digestive enzyme expression and activity in phenotypic plasticity of larvae of the pacific sand dollar ( <i>Dendraster excentricus</i> )  |
| <b>Los Angeles</b>  | Daniel Olivares-Zambrano | Biology                          | Dr. Andres Aguilar   | Finding the right home: depth as a driver of adaptive evolution in the genus <i>Sebastes</i>  |
|                     | Paige Weiss              | Biology                          | Dr. Pat Krug         | Disruption in the nursery: chemical defense of Californian sea slugs alters estuarine food webs   |
| <b>Monterey Bay</b> | Juliana Cornett          | Marine Science (MLML)            | Dr. Cheryl Logan     | How hypoxia affects the physiology of juvenile flatfish, English sole ( <i>Parophrys vetulus</i> ), and the ability of estuaries to function as nursery habitat |
|                     | Gammon Koval             | Marine Science (MLML)            | Dr. Scott Hamilton   | Temporal variability of surf zone communities in Monterey Bay marine protected areas  |
|                     | Melissa Naugle           | Marine Science (MLML)            | Dr. Cheryl Logan     | How does pollution affect coral thermal toughness?  |
| <b>Northridge</b>   | Jennifer Fields          | Biology                          | Dr. Nyssa Silbiger   | Effect of foundation species removal on ecosystem function within rocky intertidal  |
| <b>Pomona</b>       | Emmons McKinney          | Geology                          | Dr. Jeff Marshall    | Seismic cycle deformation record using marine terraces on two-time scales at Cape Kidnappers, New Zealand   |
|                     | Emmons McKinney          | Geology                          | Dr. Jeff Marshall    | Seismic cycle deformation record using marine terraces on two-time scales at Cape Kidnappers, New Zealand   |
|                     | Sandra Muro              | Biological Sciences              | Dr. Ángel Valdés     | Phylogeography and cryptic speciation in <i>Julia</i> (Heterobranchia, Sacoglossa)  |
|                     | James Sturges            | Biological Sciences              | Dr. Jeremy Claisse   | Assessing size class-specific fish assemblages on the Palos Verdes Reef Restoration Project   |
| <b>Sacramento</b>   | Emalee Ousley            | Biological Science               | Dr. Lani Gleason     | Investigating the relationship between the gut microbiome and host thermal tolerance in the economically important red abalone ( <i>Haliotis rufescens</i> )    |
| <b>San Diego</b>    | Sophia Barron            | Civil Engineering                | Dr. Alicia Kinoshita | Surface water quality in coastal watersheds following the Woolsey Fire in California  |
|                     | Erica Pollard            | Biology                          | Dr. Kevin Hovel      | Assessing variation in the dietary niche of the California spiny lobster ( <i>Panulirus interruptus</i> )   |

| CAMPUS          | STUDENT               | DEPARTMENT/<br>DEGREE<br>PROGRAM                     | ADVISER               | PROJECT TITLE   |
|-----------------|-----------------------|--|-----------------------|---|
| San Francisco   | Geana Ayala           | Interdisciplinary<br>Marine and Estuarine<br>Science | Dr. Katharyn Boyer    | Epifaunal community recovery in San Francisco Estuary eelgrass ( <i>Zostera marina</i> ) beds following a low salinity period   |
|                 | Christian Tettelbach  | Interdisciplinary<br>Marine and Estuarine<br>Science | Dr. Katharyn Boyer    | Effects of climate change on the herbivory of eelgrass ( <i>Zostera marina</i> ) by an invasive grazer in San Francisco Bay   |
|                 | Catherine Thow        | Interdisciplinary<br>Marine and Estuarine<br>Science | Dr. Frances Wilkerson | Phytoplankton productivity in tidal marshes food web ecology in the northern San Francisco Estuary  |
| San José        | Ronan Beltracchi      | Geology  | Dr. Carlie Pietsch    | Ecological changes in the shallow benthic invertebrate community after end-cretaceous mass extinction   |
|                 | Lauren Cooley         | Marine Science<br>(MLML)                             | Dr. Birgitte McDonald | The physiological effects of scientific handling on northern elephant seals: an integrated approach   |
|                 | Katherine Douglas     | Biological Sciences                                  | Dr. Scott Shaffer     | Year-round foraging patterns in western gulls ( <i>Larus occidentalis</i> ) from Southeast Farallon Island  |
| San Luis Obispo | Kyra Anderson         | Biological Sciences                                  | Dr. Kristin Hardy     | Phenotypic plasticity of metabolic traits in the common acorn barnacle ( <i>Balanus glandula</i> ) across their vertical distribution in the intertidal zone                  |
|                 | Robert (Frank) Fabela | Biological Sciences                                  | Dr. Lars Tomanek      | Understanding the role of Sirtuin-5 in linking the oxidative stress response and food availability  |
|                 | Katherine Riordan     | Biological Sciences                                  | Dr. Heather Liwanag   | Are sea otter pups more vulnerable to the effects of oiling than adults?  |
| San Marcos      | Kelsey Woldt          | Biological Sciences                                  | Dr. Diego Sustaita    | Comparative morphology and climbing performance of the salt marsh harvest mouse, western harvest mouse and house mouse  |
| Sonoma          | Allison Northey       | Biology  | Dr. Daniel Crocker    | Investigating metabolic responses to adrenocorticotrophic hormone (ACTH) during the molting period in adult female northern elephant seals ( <i>Mirounga angustirostris</i> ) |

## UNDERGRADUATE RESEARCH SUPPORT PROGRAM AWARDS

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

| CAMPUS             | STUDENT           | DEPARTMENT/<br>DEGREE<br>PROGRAM | ADVISER          | PROJECT TITLE   | AMOUNT<br>(CAMPUS<br>MATCH) |
|--------------------|-------------------|----------------------------------|------------------|---|-----------------------------|
| <b>Bakersfield</b> | Stephanie Abarca  | Human Biological Sciences        | Dr. Antje Lauer  | Are western gulls ( <i>Larus occidentalis</i> ) in California spreading keratinophilic pathogens, including <i>Coccidioides</i> spp., between habitats? | \$1,052                     |
|                    | Joshua Annis      | Computer Science                 | Dr. Chengwei Lei | Elephant seal migration tendencies  | \$199                       |
|                    | Drake Floyd       | Computer Science                 | Dr. Chengwei Lei | Elephant seal migration tendencies  | \$199                       |
|                    | Sean Fontes       | Computer Science                 | Dr. Chengwei Lei | Elephant seal migration tendencies  | \$199                       |
|                    | Jocelyn Lopez     | Human Biological Sciences        | Dr. Antje Lauer  | Searching for <i>Coccidioides</i> on the Channel Islands, California, methods to be employed  | \$1,052                     |
|                    | Kaitlin Macaranas | Biology                          | Dr. Rae McNeish  | Seasonal deposition of atmospheric microplastics and nutrients  | \$2,103                     |
|                    | Miguel Navarrete  | Computer Science                 | Dr. Chengwei Lei | Elephant seal migration tendencies  | \$199                       |



| CAMPUS                 | STUDENT                | DEPARTMENT/<br>DEGREE PROGRAM                 | ADVISER                               | PROJECT TITLE  | AMOUNT<br>(CAMPUS MATCH) |
|------------------------|------------------------|---|---------------------------------------|--|--------------------------|
| <b>Channel Islands</b> | Aren Antounian         | Anthropology                                  | Dr. Jamie Matera                      | Understanding the economical and nutritional effects of Southern California marine protected areas on recreational fishers of Ventura County | \$503                    |
|                        | Jennifer Bays          | Environmental Science and Resource Management | Dr. Emily Fairfax                     | I see CI: Santa Rosa Island virtual reality tours  | \$457                    |
|                        | Alyssa Connaughton     | Environmental Science and Resource Management | Dr. Emily Fairfax                     | I see CI: Santa Rosa Island virtual reality tours  | \$457                    |
|                        | Leonel Martinez Vallin | Environmental Science and Resource Management | Dr. Clare Steele and Dr. Dan Reineman | Risk and impacts of sea-level rise on the Port of Hueneme  | \$624                    |
|                        | Jennifer Shirhall      | Environmental Science and Resource Management | Dr. Emily Fairfax                     | I see CI: Santa Rosa Island virtual reality tours  | \$458                    |
| <b>Chico</b>           | Will Dowell            | Biological Sciences                           | Dr. David Stachura                    | Examining the effect of chemicals generated by the Camp Fire on the immune system of fishes  | \$625                    |
|                        | Aleeza Namit           | Biological Sciences                           | Dr. David Stachura                    | Examining the effect of chemicals generated by the Camp Fire on the immune system of fishes  | \$625                    |
|                        | Cora Piper             | Biological Sciences                           | Dr. Cawa Tran                         | Asexual reproduction of the sea anemone <i>Aiptasia</i> under artificial moonlight   | \$1,200                  |
| <b>Dominguez Hills</b> | Nicholas Anaya-Licea   | Biology                                       | Dr. Charlene McCord                   | How are hagfish morphologically adapted to burrowing?  | \$2,500                  |
| <b>East Bay*</b>       | Hamed Jalala           | Biological Sciences                           | Dr. James Murray                      | Investigation into magnetic orientation and turning neurons in the sea slug <i>Tritonia tetraquetra</i>                                      | \$2,500<br>(\$1,500)     |

| CAMPUS           | STUDENT         | DEPARTMENT/<br>DEGREE<br>PROGRAM | ADVISER                 | PROJECT TITLE  | AMOUNT<br>(CAMPUS<br>MATCH) |
|------------------|-----------------|----------------------------------|-------------------------|--|-----------------------------|
| <b>Fresno</b>    | Kiana Cabasa    | Biology                          | Dr. David Lent          | Development of histological procedure for cross species comparison of the lateral pallium in Muraenidae  | \$1,250                     |
|                  | Robert Seward   | Biology                          | Dr. Joshua Reece        | Variation in beach width in Morro Bay as a function of sea-level rise  | \$1,250                     |
| <b>Fullerton</b> | Katya Beener    | Geology                          | Dr. Joseph Carlin       | Documenting changes in terrestrial sediment sources to Monterey Bay over decadal and centennial time scales  | \$750                       |
|                  | Nicholas Markle | Biological Science               | Dr. Ryan Walter         | Nanopore sequencing of giant sea bass mitochondrial DNA genome using minion and long-range PCR   | \$680                       |
|                  | Nathalie Munoz  | Biological Science               | Dr. Ryan Walter         | Phylogenetic analysis of the California and Gulf grunion using complete mitochondrial genomes  | \$682                       |
|                  | Madison Panzino | Biological Science               | Dr. Kristy Forsgren     | Sexual dimorphism of male surfperch anal fins  | \$936                       |
| <b>Humboldt*</b> | Evan Baron      | Fisheries                        | Dr. Rafael Cuevas Uribe | Supplementing soybean meal and effluent bioremediation by the polychaete worm <i>Alitta brandti</i>  | \$466                       |
|                  | Cody Baughn     | Fisheries                        | Dr. Rafael Cuevas Uribe | Production of sablefish and seaweed in an integrated multitrophic aquaculture system   | \$500                       |
|                  | Sally Gammie    | Biology                          | Dr. Brian Tissot        | How temperature, light and nutrition affect symbiotic zooxanthellae in <i>Anthopleura artemisia</i>  | \$460                       |
|                  | Daniel Raemer   | Biological Sciences              | Dr. Brian Tissot        | Effect of flow rate on microplastic ingestion by <i>Mytilus edulis</i>   | \$460                       |
|                  | Michael Tovar   | Fisheries                        | Dr. Rafael Cuevas Uribe | Seahorse spawning  | \$500                       |
|                  | Taylor Zenobia  | Fisheries                        | Dr. José Marín Jarrín   | The integrated culture of rockweed ( <i>Mastocarpus jordinii</i> ) in a recirculating land-based system with red abalone ( <i>Haliotis rufescens</i> ) | \$0<br>(\$500)              |

| CAMPUS            | STUDENT            | DEPARTMENT/<br>DEGREE<br>PROGRAM | ADVISER              | PROJECT TITLE   | AMOUNT<br>(CAMPUS<br>MATCH) |
|-------------------|--------------------|----------------------------------|----------------------|---|-----------------------------|
| <b>Long Beach</b> | Jhen Cabasal       | Marine Biology                   | Dr. Dessie Underwood | Microplastics in diatoms along an urban estuary   | \$1,250                     |
|                   | Jennifer Dreschler | Marine Biology                   | Dr. Bruno Pernet     | DNA barcoding of echinoderm larvae in Southern California   | \$1,250                     |
| <b>Maritime*</b>  | Tiernan Fackler    | Marine Engineering Technology    | Dr. Kaylan Randolph  | Designing and prototyping accessory optical imagery device for aid in data collection   | \$625<br>(\$275)            |
|                   | Jacob Flores       | Mechanical Engineering           | Dr. William Tsai     | Low-cost imaging instrument for harmful algal bloom detection   | \$625<br>(\$175)            |
|                   | Kyle Hebert        | Marine Transportation            | Dr. Jennifer Murphy  | The relationship between ammonium concentrations and tidal current fluctuations through the Carquinez Strait  | \$625<br>(\$500)            |
|                   | Mitchell Peevler   | Mechanical Engineering           | Dr. Tomas Oppenheim  | High-resolution wave-following spatial buoy array to collect small turbulence-scale boundary layer wave dynamics statistics in San Francisco Bay Estuary for validation of physical oceanography numerical models | \$625<br>(\$1,175)          |



| CAMPUS              | STUDENT           | DEPARTMENT/<br>DEGREE<br>PROGRAM | ADVISER                     | PROJECT TITLE  | AMOUNT<br>(CAMPUS<br>MATCH) |
|---------------------|-------------------|----------------------------------|-----------------------------|--|-----------------------------|
| <b>Monterey Bay</b> | Mariah Daniel     | Marine Science                   | Dr. Alison Haupt            | Applying stomach content and stable isotope analysis to determine diet and trophic ecology of <i>Hydrolagus colliei</i> along the U.S. West Coast border | \$422                       |
|                     | Samantha Miller   | Biology                          | Dr. Nathaniel Jue           | Functional genomics of pyrethroid-remediating bacteria   | \$500                       |
|                     | Maggie Seida      | Marine Science                   | Dr. Steve Moore             | An evaluation of scaling and composition techniques of ROV collected video data applied in 3D photogrammetry via Structure-from-Motion                   | \$485                       |
|                     | Ethan Switzer     | Marine Science                   | Dr. Steve Moore             | An evaluation of scaling and composition techniques of ROV collected video data applied in 3D photogrammetry via Structure-from-Motion                   | \$485                       |
|                     | Emily Tate        | Marine Science                   | Dr. Steve Moore             | Effects of sand grain size on the abundance and distribution of market squid egg mops  | \$105                       |
|                     | Katherine Tinsman | Marine Science                   | Dr. Steve Moore             | Effects of sand grain size on the abundance and distribution of market squid egg mops  | \$105                       |
|                     | Silvia Vasquez    | Marine Science                   | Dr. Cheryl Logan            | Climate change effects on coral reefs  | \$453                       |
| <b>Pomona</b>       | Raul Flamenco     | Biology                          | Dr. Andrea Bonisoli-Alquati | Effects of contaminant cocktail on California least tern egg quality   | \$500                       |
|                     | Matthew Kim       | Biology                          | Dr. Ángel Valdés            | Molecular and morphological investigation of <i>Aldisa</i> from New Caledonia, with potential descriptions of new species                                | \$610                       |
|                     | Kairi Tanaka      | Biology                          | Dr. Ángel Valdés            | A phylogenetic analysis of Bullinidae and the possibility of a new species   | \$610                       |
|                     | Gabrielle Yang    | Biology                          | Dr. Jeremy Claisse          | Quantifying adult yellow tang ( <i>Zebbrasoma flavescens</i> ) abundance inside and outside protected areas in Hawaii                                    | \$780                       |

| CAMPUS                | STUDENT            | DEPARTMENT/<br>DEGREE<br>PROGRAM | ADVISER                | PROJECT TITLE   | AMOUNT<br>(CAMPUS<br>MATCH) |
|-----------------------|--------------------|----------------------------------|------------------------|---|-----------------------------|
| <b>Sacramento</b>     | Chelsea Brown      | Biological Science               | Dr. Lani Gleason       | Southern California <i>Tegula</i> thermal tolerance species comparison                                      | \$625                       |
|                       | Haley Courser      | Geology                          | Dr. Amy Wagner         | Cold water corals as recorders of intruding Circumpolar Deep Water along the Antarctic Margin               | \$625                       |
|                       | Gloria Edejer      | Biological Science               | Dr. Lani Gleason       | Southern California <i>Tegula</i> thermal tolerance species comparison                                      | \$625                       |
|                       | Ethan Roberts      | Biological Science               | Dr. Timothy Davidson   | Do wood burrows formed by an invasive isopod ameliorate desiccation stress in intertidal invertebrates?     | \$625                       |
| <b>San Bernardino</b> | Alison Conner      | Biology and Kinesiology          | Dr. Tomasz Owerkowicz  | Effect of calcium carbonate supplementation on lactate buffering and bone quality in the American alligator | \$2,420                     |
| <b>San Diego</b>      | Emily Bews         | Environmental Science            | Dr. Matthew Edwards    | The potential of <i>Ulva lactuca</i> in bioremediation under varying salinities                             | \$800                       |
|                       | Dillon Dolinar     | Biology                          | Dr. Matthew Edwards    | Respiration of purple urchins ( <i>Strongylocentrotus purpuratus</i> ) in kelp forests and urchin barrens   | \$470                       |
|                       | Emma Kerr          | Biology                          | Dr. Elizabeth Dinsdale | Skin microbiome of the round stingray ( <i>Urobatis halleri</i> ) in Southern California                    | \$995                       |
|                       | Alaina-Licea Perun | Biology                          | Dr. Kevin Hovel        | Prey selection of California spiny lobsters   | \$430                       |



| CAMPUS                  | STUDENT                   | DEPARTMENT/<br>DEGREE PROGRAM | ADVISER             | PROJECT TITLE  | AMOUNT<br>(CAMPUS MATCH) |
|-------------------------|---------------------------|-------------------------------|---------------------|--|--------------------------|
| <b>San Francisco</b>    | Mariel Avila              | Biology                       | Dr. Karen Crow      | Variation in anal fin morphology in surfperches within and between species   | \$750                    |
|                         | Natalie Avila             | Biology                       | Dr. Sarah Cohen     | Characterizing the population structure of the invasive species <i>Watersipora subtorquata</i> in rocky intertidal communities   | \$644                    |
|                         | Riley Jones               | Biology                       | Dr. Karen Crow      | The evolution of variation in vertebrate paired appendages   | \$380                    |
|                         | Noelle Kaslly             | Biology                       | Dr. Karen Crow      | The role of HOXA11 and HOXA13 expression in the development of a novel gut feature in the Catalina goby ( <i>Lythrypnus dalli</i> )  | \$750                    |
|                         | Ernestina Ramirez         | Biology                       | Dr. Sarah Cohen     | <i>Leptasterias spp.</i> : treatments to slow sea star wasting disease   | \$500                    |
| <b>San José</b>         | Valerie Gracia            | Biological Sciences           | Dr. Maya deVries    | The effects of pH on clams of the San Francisco Bay Delta Watershed  | \$1,500                  |
| <b>San Luis Obispo*</b> | Kasey Cordova             | Biological Sciences           | Dr. Sean Lema       | Opposing influences of fasting stress and insulin-like growth factor-1 (IGF1) on skeletal muscle gene pathways for IGF-signaling and myofibrillar protein degradation in gopher rockfish | \$368                    |
|                         | Alicia Ellingson          | Biological Sciences           | Dr. Dean Wendt      | Assessing standardized gear types on the catch on nearshore groundfish   | \$500<br>(\$1,000)       |
|                         | Alyse Handley             | Marine Science                | Dr. Kristin Hardy   | Assessing lactate dehydrogenase levels in response to hypoxic conditions in <i>Balanus glandular</i> across their vertical distribution  | \$498<br>(\$1,000)       |
|                         | Kaitlyn (Ellie) Kaiser    | Biological Sciences           | Dr. Heather Liwanag | Northern elephant seal harems  | \$275                    |
|                         | Daniel Sandborn           | Chemistry                     | Dr. Emily Bockmon   | Improvement of ocean pH measurements with purified spectrophotometric dye  | \$500                    |
|                         | Gabrielle Santos-Elizondo | Biological Sciences           | Dr. Heather Liwanag | A study in elephant seal demographics: drone-driven aerial surveys of the Piedras Blancas northern elephant seals  | \$350                    |

| CAMPUS            | STUDENT                | DEPARTMENT/<br>DEGREE PROGRAM | ADVISER              | PROJECT TITLE   | AMOUNT<br>(CAMPUS MATCH) |
|-------------------|------------------------|-------------------------------|----------------------|---|--------------------------|
| <b>San Marcos</b> | Madison Conte          | Biological Sciences           | Dr. John Eme         | Oxygen consumption rate of Southern California notchbrow blenny ( <i>Hypsoblennius gilberti</i> )   | \$500                    |
|                   | Gabrielle Diaz         | Biological Sciences           | Dr. Casey Mueller    | Investigation of development rates of four <i>Tigriopus californicus</i> populations in response to different temperatures                | \$500                    |
|                   | Keomony Diep           | Biological Sciences           | Dr. Darcy Taniguchi  | Using machine learning to classify and estimate relative abundances of heterotrophic protists   | \$550                    |
|                   | Thi Huynh              | Biotechnology                 | Dr. Betsy Read       | Red light–blue light: alkenone production in <i>Isochrysis galbana</i> is enhanced by red light, while growth is optimal under blue light | \$500                    |
|                   | Anahita Rahimi         | Biological Sciences           | Dr. Elinne Becket    | Analyzing the effects of rainstorm runoff on the Southern California coastal antibiotic resistome   | \$500                    |
|                   | Dennis Zanesco         | Biological Sciences           | Dr. Elinne Becket    | Development of a coastal microbial mock community standard to standardize coastal metagenomics workflows                                  | \$500                    |
| <b>Sonoma</b>     | Kylie Borello          | Biology                       | Dr. Mackenzie Zippay | Understanding the physiological response of bull kelp under warming conditions  | \$1,250                  |
|                   | Natasha Higuera        | Biology                       | Dr. Brent Hughes     | Adding resilience to kelp forests through the development of heat-tolerant varieties for restoration                                      | \$1,250                  |
| <b>Stanislaus</b> | Melina Cruz            | Biological Sciences           | Dr. Ritin Bhaduri    | Extraction and detection of microplastics from water, sediment and biota (mole crabs) from Del Monte Beach, Monterey                      | \$800                    |
|                   | Devyn Lewis            | Biological Sciences           | Dr. Ritin Bhaduri    | Extraction and detection of microplastics from water, sediment and biota (mole crabs) from Del Monte Beach, Monterey                      | \$800                    |
|                   | Dylan McAlister-Becker | Biological Sciences           | Dr. Ritin Bhaduri    | Extraction and detection of microplastics from water, sediment and biota (mole crabs) from Del Monte Beach, Monterey                      | \$800                    |

## STUDENT TRAVEL AWARDS

\*Undergraduate student

| CAMPUS                 | STUDENT            | FACULTY MENTOR         | CONFERENCE   | CONFERENCE LOCATION  | AMOUNT |
|------------------------|--------------------|------------------------|--|----------------------|--------|
| <b>Channel Islands</b> | Alissa Goldberg*   | Dr. Cynthia Hartley    | National Audubon Society Conference  | Milwaukee, Wisconsin | \$898  |
| <b>Chico</b>           | Harpreet Batther   | Dr. Russell Shapiro    | Western Society of Naturalists Annual Meeting  | Ensenada, Mexico     | \$750  |
|                        | Karissa Cunningham | Dr. Amanda Banet       | American Fisheries Society and The Wildlife Society 2019 Joint Conference  | Reno, Nevada         | \$956  |
| <b>Fullerton</b>       | Shannon Chou*      | Dr. Jennifer Burnaford | Society for Advancement of Chicanos/Hispanics and Native Americans in Science 2019 National Diversity in STEM Conference | Honolulu, Hawaii     | \$494  |
|                        | Ariel Heyman       | Dr. Jennifer Burnaford | Society for Advancement of Chicanos/Hispanics and Native Americans in Science 2019 National Diversity in STEM Conference | Honolulu, Hawaii     | \$500  |
|                        | Holly Suther*      | Dr. Kristy Forsgren    | Society for Advancement of Chicanos/Hispanics and Native Americans in Science 2019 National Diversity in STEM Conference | Honolulu, Hawaii     | \$494  |



| CAMPUS          | STUDENT            | FACULTY MENTOR        | CONFERENCE  | CONFERENCE LOCATION   | AMOUNT  |
|-----------------|--------------------|-----------------------|---|-----------------------|---------|
| <b>Humboldt</b> | Courtney Dressler* | Dr. Christine Cass    | Ocean Sciences Meeting  | San Diego, California | \$500   |
|                 | Rebecca Floyd*     | Dr. Tamara Barriquand | Ocean Sciences Meeting  | San Diego, California | \$500   |
|                 | Robert Freiberger* | Dr. Claire Till       | Ocean Sciences Meeting  | San Diego, California | \$500   |
|                 | Maxwell Grezlik    | Dr. Andre Buchheister | American Fisheries Society and The Wildlife Society 2019 Joint Conference | Reno, Nevada          | \$500   |
|                 | Madison Halloran   | Dr. Darren Ward       | American Fisheries Society and The Wildlife Society 2019 Joint Conference | Reno, Nevada          | \$743   |
|                 | Emerson Kanawi     | Dr. Mark Henderson    | American Fisheries Society and The Wildlife Society 2019 Joint Conference | Reno, Nevada          | \$436   |
|                 | Nissa Kreidler     | Dr. Andre Buchheister | The Seventh International Symposium on Deep-Sea Corals                    | Cartagena, Colombia   | \$1,000 |
|                 | Max Ramos          | Dr. Darren Ward       | American Fisheries Society and The Wildlife Society 2019 Joint Conference | Reno, Nevada          | \$500   |



| CAMPUS              | STUDENT            | FACULTY MENTOR      | CONFERENCE   | CONFERENCE LOCATION       | AMOUNT  |
|---------------------|--------------------|---------------------|--|---------------------------|---------|
| <b>Long Beach</b>   | Amanda Russell     | Dr. Erika Holland   | SETAC North America 40th Annual Meeting                | Toronto, Canada           | \$1,000 |
| <b>Monterey Bay</b> | Sophie Bernstein   | Dr. Scott Hamilton  | Ocean Sciences Meeting                                 | San Diego, California     | \$500   |
|                     | Amanda Heidt       | Dr. Jonathan Geller | The Seventh International Symposium on Deep-Sea Corals | Cartagena, Colombia       | \$1,000 |
|                     | Amber Reichert     | Dr. Scott Hamilton  | Joint Meeting of Ichthyologists and Herpetologists     | Snowbird, Utah            | \$500   |
| <b>Northridge</b>   | Emily Ladin        | Dr. Larry Allen     | Joint Meeting of Ichthyologists and Herpetologists     | Snowbird, Utah            | \$500   |
|                     | Benjamin Chuback   | Dr. Mark Steele     | Joint Meeting of Ichthyologists and Herpetologists     | Snowbird, Utah            | \$500   |
| <b>Pomona</b>       | Jacob Eagleton     | Dr. Jeremy Claisse  | Western Society of Naturalists Annual Meeting          | Ensenada, Mexico          | \$454   |
|                     | Kendall Feliciano  | Dr. Ángel Valdés    | Western Society of Naturalists Annual Meeting          | Ensenada, Mexico          | \$470   |
|                     | Austin Pyles       | Dr. Jeremy Claisse  | Western Society of Naturalists Annual Meeting          | Ensenada, Mexico          | \$500   |
| <b>Sacramento</b>   | Haley Courser*     | Dr. Amy Wagner      | Ocean Sciences Meeting                                 | San Diego, California     | \$497   |
|                     | Alexandra Gama*    | Dr. Amy Wagner      | Ocean Sciences Meeting                                 | San Diego, California     | \$500   |
|                     | Nicholas Waring    | Dr. Amy Wagner      | Ocean Sciences Meeting                                 | San Diego, California     | \$498   |
| <b>San Diego</b>    | Scott Gabara       | Dr. Matthew Edwards | American Geophysical Union Fall Meeting 2019           | San Francisco, California | \$750   |
| <b>San José</b>     | Anna Thomasdotter* | Dr. Scott Shaffer   | Western Society of Naturalists Annual Meeting          | Ensenada, Mexico          | \$452   |

| CAMPUS                 | STUDENT               | FACULTY MENTOR          | CONFERENCE   | CONFERENCE LOCATION   | AMOUNT  |
|------------------------|-----------------------|-------------------------|--|-----------------------|---------|
| <b>San Luis Obispo</b> | Cameron Cooper        | Dr. Heather Liwanag     | World Marine Mammal Conference                           | Barcelona, Spain      | \$300   |
|                        | Alexandria Marquardt* | Dr. Benjamin Ruttenberg | 112th National Shellfisheries Association Annual Meeting | Baltimore, Maryland   | \$1,000 |
|                        | Addie Norgaard*       | Dr. Emily Bockmon       | Ocean Sciences Meeting                                   | San Diego, California | \$500   |
| <b>Sonoma</b>          | Matt Draluck*         | Dr. Mackenzie Zippay    | 112th National Shellfisheries Association Annual Meeting | Baltimore, Maryland   | \$1,000 |
|                        | Joseph Jackson        | Dr. Brent Hughes        | Western Society of Naturalists Annual Meeting            | Ensenada, Mexico      | \$750   |
|                        | Jessica Saavedra      | Dr. Brent Hughes        | Western Society of Naturalists Annual Meeting            | Ensenada, Mexico      | \$750   |

\*Conference canceled because of COVID-19



## SUMMER 2019 INTERNSHIP PROGRAM

\*Undergraduate student

| HOST ORGANIZATION  | INTERNSHIP<br><i>LOCATION</i>   | CSU STUDENT<br><i>HOME CAMPUS</i>            |
|--|---|--|
| California Department of Fish and Wildlife Marine Region                 | California Spiny Lobster Fisheries Management<br><i>San Diego</i>                 | Lauren Zaragoza*<br><i>San Luis Obispo</i>   |
|  | Northern California Marine Invertebrate Fisheries Management<br><i>Bodega Bay</i> | Jenna Hatfield*<br><i>San Luis Obispo</i>    |
|  |   | Kylie Kuwada*<br><i>San Luis Obispo</i>      |
| California Ocean Science Trust   | Climate Change and Ocean Acidification<br><i>Oakland</i>                          | Bryn Power*<br><i>San Luis Obispo</i>        |
| California State Lands Commission<br>Marine Invasive Species Program     | Southern California Vessel Biofouling Management<br><i>Long Beach</i>             | Julisa Portugal<br><i>Los Angeles</i>        |
| Channel Islands National Marine Sanctuary                                | Ocean Exploration<br><i>Santa Barbara</i>   | Cassandra Rogers*<br><i>Channel Islands</i>  |
| Marine Applied Research & Exploration                                    | Marine GIS Analyst<br><i>Eureka</i>   | Nissa Kreidler<br><i>Humboldt</i>            |
|  | Marine Engineering<br><i>Richmond</i>   | Christopher Ewert*<br><i>San Luis Obispo</i> |
| NOAA National Marine Fisheries Service<br>Protected Resources Division   | Abalone Conservation<br><i>Long Beach</i>   | Anna Thomasdotter*<br><i>San José</i>        |
| NOAA National Marine Fisheries Service<br>Sustainable Fisheries Division | Whale Entanglement<br><i>Seattle</i>  | Sydney Wewerka*<br><i>San Luis Obispo</i>    |
| Tijuana River National Estuarine<br>Research Reserve                     | Bioindicator Trends and Analysis<br><i>Imperial Beach</i>                         | Ethan Roberts*<br><i>Sacramento</i>          |

## SUMMER 2020 INTERNSHIP PROGRAM

\*Undergraduate student

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





