

# SBC LTER Award 1232779

## Annual Project Report Year 4

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PD/PI Name:

- Daniel C Reed, Principal Investigator
- Sally J Holbrook, Co-Principal Investigator
- John M Melack, Co-Principal Investigator
- Robert J Miller, Co-Principal Investigator
- David A Siegel, Co-Principal Investigator

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University of California-Santa Barbara

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Submitting Official (if other than PD/PI):

- Daniel C Reed
- Principal Investigator

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Signature of Submitting Official (signature shall be submitted in accordance with agency specific instructions)  
Daniel C Reed

### Accomplishments

#### What are the major goals of the project?

The Santa Barbara Coastal LTER (SBC) seeks to develop a predictive understanding of how land and ocean processes alter the biological structure and ecological functions of giant kelp forests under varying conditions of disturbance and climate. The amounts of inorganic nutrients, organic matter, and sediments exchanged between kelp forests and the land and sea that adjoin them vary in response to changes in climate, ocean conditions and land use. Variation in the supply of these materials interacts with natural and human-caused disturbances to influence the abundance and species composition of kelp forest inhabitants, their ecological functions and the ecosystem services that they provide. Thus a general goal of SBC is to understand how coastal ecosystems at the land-sea margin are linked through the exchange of materials. Giant kelp forests are highlighted in our research because they are prominent coastal ecosystems in California and other temperate regions of the world. Site-based research focuses around the following three inter-related themes: (1) Biotic and abiotic drivers of kelp forest structure and function, (2) Material exchange at the land-ocean margin, and (3) Movement and fluxes of inorganic and organic matter in the coastal ocean.

The major objectives of each of our three research themes are:

Theme 1: To determine how variations in climate, wave disturbance and fishing influence the structure and dynamics of kelp forest communities and the patterns and fate of net primary production by giant kelp.

Theme 2: To determine how the input of dissolved and particulate nutrients from watersheds and coastal margins to nearshore waters vary as a function of land use, disturbance by fire, coastal erosion and storms.

Theme 3: To determine how oceanographic processes influence: (a) the dilution and dispersal of freshwater runoff plumes, (b) nitrogen recycling, consumer excretion, efflux from benthic sediments within and adjacent to kelp forests, and the utilization of recycled N by giant kelp, and (c) the fate of net primary production by phytoplankton which are an important food source to a diverse array of kelp forest consumers.

## **What was accomplished under these goals (you must provide information for at least one of the 4 categories below)?**

### Major Activities:

We continued collecting data for a core group of long-term integrated measurements in the ocean and on land with the goal of quantifying climate, disturbance, and inorganic and organic subsidies to and from giant kelp forests and their effects on kelp forest community structure, productivity and dynamics. Other major activities for each research theme follow below.

#### *Theme 1a. Effects of wave disturbance and climate variation on kelp forest structure and function:*

We continued to maintain and evaluate our long-term kelp removal experiment designed to investigate the consequences of increased wave disturbance on kelp forest communities. Our long-term kelp forest community data were analyzed to examine ecological responses to unprecedented ocean warming and to test key ecological theories pertaining to processes governing species diversity and stability. We finished developing a time-series of biomass for 84 species of kelp forest invertebrates derived from species specific relationships between shell free dry mass and % cover or density applied to long-term data of invertebrate abundance. We continued processing Landsat satellite imagery to estimate kelp biomass throughout California and Baja California, Mexico and developed calibrations between Landsat 7 and Landsat 8 to facilitate our ongoing research on the regional determinants of kelp biomass, metapopulation dynamics, and genetic structure.

#### *Theme 1b. Determining the fate of kelp NPP:*

We refined our time series of giant kelp NPP by incorporating losses of particulate and dissolved organic matter from tissue erosion and exudation into our estimates. We used in situ measurements of kelp blade life span at different depths and locations in the forest to test whether leaf life span theory developed for higher plants also applies to macroalgae. Monthly measurements of photosynthetic pigments and biomass of giant kelp at five sites spanning 900 km of coast from Santa Cruz to San Diego CA were used to evaluate the relative importance of nutrients and light in accounting for its variation in physiological condition and NPP.

#### *Theme 1c. Effects of fishing on kelp forest structure and function:*

Quarterly sampling of community structure and NPP in experimental plots was completed at two reefs protected from fishing and three reefs unprotected from fishing. Densities of the extensively fished spiny lobster were assessed at these reefs and lobster fishing effort was measured twice per month during the fishing season. Survey data were analyzed to evaluate whether protected areas offered greater biotic resistance to invasion by a rapidly spreading non-indigenous seaweed.

#### *Theme 2A Export of nutrients from watersheds*

Activities related to watershed hydrology included updating and expanding the rain gauge network, investigating interpolation approaches to spatially distribute rainfall, and examining the relationships between climate variability and rainfall events. Stream discharge files were updated and combined with hydrochemical data collected at 21 sites during water years 2002-2015 to calculate fluxes of  $\text{NO}_3$ ,  $\text{NH}_4$ , DON,  $\text{PO}_4$  and TSS and characterize their spatio-temporal variability, and to determine the roles of storms, fire, and land uses in the patterns. Analysis of the spatial distribution of rainfall was extended to include the period from 1970 to 2015 and used to examine correlations with indices of climate variability including the occurrence of atmospheric rivers, Madden-Julian Oscillations and ENSO events of differing intensity.

#### *Theme 2b. Trajectories of landscape changes in coastal watersheds:*

Multiple Endmember Spectral Mixture Analysis (MESMA) was applied to hyperspectral imagery obtained from AVIRIS overflights to create a time series of plant species distributions. This time series was used to determine trajectories in the recovery of vegetative cover to fire and how fire, urbanization and agriculture alter the landscape to modify material input to the coastal ocean. Results were incorporated into an analysis of hydrological and hydrochemical responses to fires. We finalized results and published two papers on tectonic subsidence and sea level rise in coastal estuaries.

*Theme 2c. Exchanges of nutrients on beaches*

We continued monthly surveys of macrophyte wrack biomass, and the abundances of birds, people and dogs on six beaches adjacent to kelp forests along with bimonthly surveys of wrack consumer populations at two of these beaches to evaluate seasonal and recovery dynamics of these populations from episodic and seasonal erosion and loss of habitat. We are monitoring the recovery of consumer populations following the impacts caused by the oil spill at one of our sites. We experimentally quantified species-specific rates of wrack shredding and consumption by beach consumers to investigate the effects of consumer diversity on wrack processing.

*Theme 3a. Dilution and dispersal of freshwater runoff plumes*

We completed and published numerical simulations of storm runoff plumes to parameterize the dilution surrounding kelp forests as a function of freshwater discharge, ocean currents, and wind conditions. High spatial resolution (100 m) numerical simulations using Regional Ocean Modeling System (ROMS) of storm water plumes from two creeks near Mohawk Reef were done for the two wettest seasons in the last 15 years. The dilution of storm water plumes was characterized with respect to discharge, distance from sources, cross-shelf distance, currents, winds, stratification, and vertical mixing. Dispersion of the freshwater plume was compared with our previously published parameterizations of cross- and along-shelf dispersion of Lagrangian particles. Satellite ocean color imagery were analyzed to address the impacts of storm runoff and suspended particle and phytoplankton distributions.

*Theme 3b. Nitrogen recycling and efflux from sediments*

High frequency water sampling from piers was initiated to examine daily and vertical variation of ammonium in the water column. We determined the concentration of important nitrogen species (ammonium, nitrate, urea) in sediment pore waters near reefs, and how it relates to concentrations observed in the surface and bottom waters. Rates of pore water remineralization and their pressure-driven advection into the water column are being examined using flow-through sediment bioreactors in the laboratory. Field sensors coupled with in situ radium measurements are being used to constrain rates of pore water flushing and sediment resuspension. We have begun to characterize the spatial and temporal variability in urea concentrations in the water column inside and outside of kelp forests to determine whether urea contributes to supporting kelp growth, either via direct assimilation or as an ammonium precursor. Two in situ experiments were conducted in the kelp forests at Mohawk and Carpinteria to study rates of urea cycling and uptake by phytoplankton and kelp.

*Theme 3c. Transport and fate of phytoplankton NPP*

We completed analysis of physical and bio-optical data collected from >400 cross-shelf sections obtained from an ocean glider over a wide range of oceanographic conditions. Modeling efforts with ROMS focused on the dynamical characterization of shelf currents, including coastal-trapped waves and submesoscale variability. Analysis of high-resolution towed profiler data and acoustic Doppler current profiler (ADCP) data from earlier oceanographic cruises was completed. These data were used to quantify the total chlorophyll biomass in offshore waters of the Santa Barbara Channel and to quantify chlorophyll biomass below the euphotic zone due to water mass subduction. We continued to collaborate with researchers from the University of South Carolina and the CCE LTER to maintain a 20+ year sediment trap time series in the Santa Barbara Basin located at 250 and 540 m depths.

**Specific Objectives:**

*Theme 1a. Effects of wave disturbance and climate variation on kelp forest structure and function*

Determine the importance of wave disturbance on kelp forest community structure, primary production and metapopulation dynamics under different climatic conditions using data from long-term experiments and core time-series measurements.

*Theme 1b. Determining the fate of kelp NPP:*

Determine the amount, rates and forms of biomass lost by giant kelp, the factors affecting these losses and the proportion of giant kelp NPP that is retained and utilized in the kelp forest versus exported to other ecosystems.

*Theme 1c. Effects of fishing on kelp forest structure and function:*

Experimentally investigate the short and long-term effects of fishing on kelp forest structure and function, and place these effects within the context of past variability resulting from different climatic conditions.

*Theme 2a. Export of nutrients from watersheds:*

Determine climatic variation in the fluxes of dissolved and particulate nutrients, organic matter and sediments to the Santa Barbara Channel from watersheds with different fire histories and land uses. Estimate post-fire nitrogen cycling and vegetation growth in chaparral ecosystems and determine the factors controlling the amount of nitrogen exported from them.

*Theme 2b. Trajectories of landscape changes in coastal watersheds:*

Use time series of airborne hyperspectral data to develop land cover maps before and after fires for use in ecohydrological modeling, nutrient flux calculations and examination of riparian conditions along streams. Calculate gully depths and erosion rates from Lidar data for unburned and burned catchments. Extend the time scale of our examination of landscape changes with cosmogenic radionuclide analysis of riverine sands and analyses of sediment cores taken from estuaries that border the Santa Barbara Channel.

*Theme 2c. Exchanges of nutrients on beaches*

Determine the degree to which beach ecosystems supply recycled marine nutrients to nearshore waters. Determine the effect of varying organic matter sources and processing history on the dissolved organic and inorganic carbon and nitrogen dynamics in intertidal beach sands.

*Theme 3a. Dilution and dispersal of freshwater runoff plumes*

Simulate many realizations of ROMS-modeled stormwater plumes to enable a robust statistical characterization of the dispersal and dilution of runoff in the coastal environment. Use ROMS output to quantify freshwater plume dilution fields as a function of along-and cross-shore distance from creek mouths and creek discharge rate. Assess the impacts of freshwater runoff events on ocean suspended particle and phytoplankton distributions from available satellite ocean color imagery.

*Theme 3b. Nitrogen recycling and efflux from sediments*

Determine the importance of regenerated N to the nitrogen demand of giant kelp by measuring rates of: 1) N efflux from sediments, 2) N recycling by kelp forest consumers and 3) uptake of different forms of recycled N by giant kelp.

*Theme 3c. Transport and fate of phytoplankton NPP*

Characterize coastal dispersal with respect to several environmental parameters such as season, coastal geometry, distance from the shore, and flow characteristics from high-resolution ROMS output. Analyze data from an autonomous glider to resolve cross-shelf sections of water properties and particle fields during various oceanographic conditions. Assess time/space distributions of suspended particles and phytoplankton from both glider and satellite ocean color observations and the roles of environmental variability.

## **Significant Results:**

*Theme 1a. Effects of wave disturbance and climate variation on kelp forest structure and function*

Analyses of long-term data revealed that giant kelp did not presage ecosystem effects of extreme warming off southern California despite its expected vulnerability. Fluctuations in the biomass of giant kelp, understory algae, invertebrates and fish remained within historical ranges despite 24 months of above average temperatures and below average nutrients. These results challenge the general perception that kelp-dominated systems are highly vulnerable to extreme warming events and question their general use as early indicators of climate change. Analyses of 15-year time series of algal and invertebrate biomass revealed temporal stability in community biomass increased across a benthic biodiversity gradient in response to selection processes involving dominant species rather than in response to compensatory dynamics or transgressive overyielding. Statistical models applied to Landsat imagery and ROMS simulations demonstrated that fluctuations in propagule production, rather than dispersal, are the dominant driver of connectivity in kelp metapopulations, and are an important determinant of local extinctions and colonizations.

*Theme 1b. Determining the fate of kelp NPP*

Studies tracking individual kelp blades showed that 1) shorter blade life spans and larger blade areas were associated with increased light availability, 2) nitrogen content and photosynthesis decreased with blade age, and 3) the decrease of N and P with age was greater in shorter-lived blades. These observations are generally consistent with resource allocation theory governing leaf life span in vascular plants and represent the first test of this theory in marine macroalgae. Photosynthetic pigment state and physiological condition of the kelp canopy in southern California more closely resembled changes in available nitrate than light while the reverse was true in the more nutrient replete waters of central California. Estimates of

canopy biomass from Landsat coupled with Chl:C measurements of blades provided estimates of NPP that were comparable to those obtained using more labor intensive diver surveys.

*Theme 1c. Effects of fishing on kelp forest structure and function*

Lobster densities and sizes continued to increase in recently established reserve sites relative to sites where fishing effort remained high. Disease associated with unusually warm water led to a 50% reduction in sea urchins a major prey item of lobster, both of which are important fisheries. Higher abundances of the invasive seaweed *Sargassum horneri* were recorded outside reserves where densities of native algae were lower, sea urchins were higher and lobster were lower compared to reserve sites, suggesting restrictions on fishing enhance the biotic resistance of kelp forests to invasion.

*Theme 2a. Export of nutrients from watersheds*

Simulations with the watershed model RHESSys demonstrated the sensitivity of nitrate concentration-discharge relationships to interactions between vertical soil nitrate distributions and vertical soil hydraulic conductivity. Studies of stream metabolism found that ecosystem rates of gross primary production are elevated in urban creeks compared to non-urban creeks and that this difference is likely caused by differences in nitrate concentrations and water temperature. As the drought continued for a fourth year, streams were dry or stagnant in October 2015 and did not begin to flow until early January 2016; overall, the El Nino did not result in significant runoff for the Santa Barbara region. A wildfire in June 2016 burned a portion of the Refugio watershed, one of our long-term sites.

*Theme 2b. Trajectories of landscape changes in coastal watersheds*

Analyses of airborne hyperspectral data from AVIRIS showed that pre-fire fuel types had little impact on fire spread except in orchards, lawns and riparian areas. Fire severity depended on fuel type, fuel moisture and meteorology and affected trajectories of vegetation recovery and nutrient and sediment export. Calculated subsidence rates in SBC estuaries are similar in magnitude to rates of relative sea-level rise experienced over the late Holocene, effectively doubling the sea-level rise rates experienced over the last five decades on the open coast for these coastal estuaries.

*Theme 2c. Exchanges of nutrients on beaches*

Elevated sea level and beach erosion associated with the 2015-16 ENSO coupled with low sediment inputs from streams due to extended drought resulted in very low levels of sand, consumer abundance and kelp consumption rates on intertidal beaches. Recovery of wrack consumer populations from these impacts has been slow and most have not returned to pre-2014 levels. Experimental results show kelp consumption rates vary significantly among diverse intertidal consumer species.

*Theme 3a. Dilution and dispersal of freshwater runoff plumes*

The numerical simulations of storm water runoff predicted plumes that are generally trapped against the coast and cross-shelf exchange that is largely influenced by surface winds and flow structures. Lateral spreading of plumes from storm water runoff is largely anisotropic, spreading 10 times faster along-shelf than cross-shelf. Simulated runoff events over 2 seasons were linked to the wind forcing, which leads to an initially narrow freshwater front at  $\sim 0.5$  km from shore that widens to a cross-shelf extent of  $\sim 2$  km. These results were used to develop a model describing the dilution field as a function of discharge, input tracer concentration, wind and current variability, and background density gradients. The results also allowed the quantification of relevant measures of the dilution field such as the fraction of time exceeding threshold concentrations, maximum dilution and probability density functions of the dilution field.

*Theme 3b. Nitrogen recycling and efflux from sediments*

Monthly water sampling revealed urea was consistently present throughout the water column at  $10^1$  to  $10^4$ -fold higher concentrations than ammonium. In situ isotope uptake experiments provided the first direct evidence that urea is a source of nitrogenous nutrition to giant kelp. We are currently analyzing experiment results to determine if this is due to direct assimilation or dissolution to ammonium, followed by uptake. Initial diffusive efflux measurements of ammonium from sediments indicated a potential flux of  $\sim 1.5$  mMol  $m^2 d^{-1}$ ; when mixed into a 10 m water column. Ammonium and urea concentrations in sediment pore water were consistently 30-100 fold higher than in the overlying water column. Pressure driven exchange of ammonium and urea in pore waters in the upper 15 cm of sediments could only contribute  $\sim 0.54$  mM N  $L^{-1}$  to a 10 m water column; therefore the sediment contribution seems strongly regulated by the rate at which pore waters are resupplied with ammonium and urea and the time scales over which they are exchanged.

*Theme 3c. Transport and fate of phytoplankton NPP*

The bio-optical and water property data from the glider sections, and complementary data from instrumented moorings, reveal cross-shore flow pathways between the inner-shelf and offshore waters. The role of surface gravity waves in the resuspension of sediments was clearly identified in new analyses of these data. Analysis of satellite ocean color imagery shows a decoupling of offshore and inshore processes regulating phytoplankton abundances for the Southern California Bight. Phytoplankton blooms in the warmer portions of the domain occurred in phase with SST minima, usually in early spring, while blooms in the cooler regions lag SST minima and occurred simultaneously with the strongest equatorward winds, often in the summer. Connections with El Niño conditions were also found, illustrating the wide range of processes that affect chlorophyll variability.

#### **Key outcomes or Other achievements:**

During the past year, SBC scientists published 40 journal articles and 6 book chapters, and currently have 9 additional journal articles in press. SBC graduate students produced 5 doctoral dissertations and one Masters thesis. A complete list of SBC publications and presentations can be found at: <http://sbc.lternet.edu/cgi-bin/publications.cgi>. Since Sept 2015, all ongoing time series (77 datasets) were updated with the latest available data (collected within previous year), and a new time-series added for beach wrack macroinvertebrate biomass and abundance. Datasets were cataloged for 11 short-term studies related to papers and student research, with an additional 16 datasets in progress. Planning has begun for anticipated new time-series (nearshore dissolved oxygen and alkalinity, kelp biomass from Landsat 7 & 8). Two peer-reviewed papers were published featuring SBC's data management practices.

Anomalous ocean warming and drought of unprecedented magnitude and duration led to several key research outcomes. Analyses of our time series data of coastal oceanography and kelp forest community structure revealed that fluctuations in the biomass of giant kelp, understory algae, invertebrates and fish remained within historical ranges despite 24 months of above average temperatures and below average nutrients. Sea stars, and to a lesser extent sea urchins, were exceptions, plummeting due to disease outbreaks linked to the warming. Our results challenge the general perception that kelp-dominated systems are highly vulnerable to extreme warming events and question their general use as early indicators of climate change. The unexpected resilience of giant kelp to the unprecedented warming highlights the limitations in our understanding of kelp ecology and prompted us to initiate new studies on the role of other forms of nitrogen in the nutritional needs of giant kelp. Results from these new studies provided the first evidence that urea is consistently present throughout the water column at high concentrations and that it is a source of nitrogenous nutrition to giant kelp. Elevated sea levels and large winter swells in 2016 coupled with a fifth year of an ongoing drought that is unprecedented in the historical record led to lowest sand levels that we have ever recorded at our long-term beach sites. This has had cascading effects on the beach food web as it reduced the retention of kelp wrack on beaches and led to declines in populations of beach amphipods that consume wrack and serve as prey for migrating shorebirds. Other key research outcomes and achievements are listed in "Accomplishments"

During this reporting period we hosted a midterm review of our project performed by a team of five scientists appointed by NSF. During the two and one half day review we gave 20 short research presentations during field trips to our kelp forest, beach and watershed study sites, two additional and more substantial presentations at UCSB to introduce and synthesize the accomplishments of our research and education programs, a poster session highlighting SBC research and education and hosted meetings with graduate students and university administrators. The external review team and NSF provided us with detailed comments on the strengths and perceived weaknesses of our program and suggestions on areas for new opportunities. A notable outcome of this review is that we have been meeting regularly to discuss ways to build on our strengths, improve on our perceived weaknesses and capitalize on areas of new opportunities. As part of this process we have been carefully examining our most stellar contributions to date and the opportunities that could be further exploited in future proposals. One area that we have been paying special attention to is a concern expressed by the review team and NSF about the broad scope of our project and the need to determine the extent to which its overall focus moving forward will be on the kelp forest or on coastal ecosystems that contain kelp forests. We will continue to work on resolving these issues in the coming year to ensure that we are well positioned to submit a compelling and competitive renewal proposal in 2018.

## What opportunities for training and professional development has the project provided?

Education and training are tightly integrated into all aspects of SBC LTER research. During the past year (year 4 of SBC III), 9 postdoctoral fellows, 36 graduate students, 6 REU students and 121 undergraduate students participated in SBC research. REU students work closely with SBC LTER researchers on a wide range of topics and most choose to pursue an advanced degree following their undergraduate education. UCSB undergraduates have a high propensity to get involved in sponsored research and the SBC LTER contributes substantially in this regard. In addition to gaining valuable research experience, many undergraduates earn academic credit or received monetary compensation for participating in SBC research as interns and honors students. Three of these students presented posters of their SBC research projects at UCSB's Undergraduate Research Colloquium on May 17, 2016. This campus wide annual colloquium and poster exhibition recognizes the scholarly achievements of UCSB's undergraduates and offers them an opportunity to share their hard work and develop their research and presentation skills. Over 250 students participated in the colloquium this year. The three SBC presenters were Rose Dodgen, "Niche separation in California beachhoppers" (Honorable Mention Prize); Nicolette Flannery, "Impacts of urbanization on sandy beach ecosystems"; and John Liedle "Feeding and distribution of the Norris's kelp snail"; mentored by Jenny Dugan, Nick Schooler and Christie Yorke, respectively.

The focus of SBC's mentoring and training of postdoctoral scientists is on providing them with strong interdisciplinary skills, professional development opportunities, and the experience, and support required for them to transition to career faculty positions. In addition to the specific training associated with the SBC project, postdoctoral scientists are mentored through grant proposal development and writing and the job application and interview process by SBC investigators and via access to UCSB's resources for postdoctoral scientists. During this past year former SBC post doc, Andrew Rassweiler, began a tenure-track assistant professor position at Florida State University and current post doc Max Castorani submitted a research proposal to NSF OCE-BIO as a lead principal investigator .

SBC graduate student and postdoctoral training are coordinated with several graduate programs on the UCSB campus to promote opportunities for interdisciplinary graduate training in ecology, physiology, geology, geography, hydrology, oceanography, and coastal policy. This enables valuable cross-training on environmental issues pertaining to coastal ecosystems, provides a common language for communicating scientific information on these issues, and contributes to the creation of a diverse scientific community of students and postdocs that fosters a respect and appreciation for other disciplines.

A new blog, "Short Stories About Long-Term Ecological Research" (SSALTER), is up and running: <https://ssalterblog.wordpress.com>. The new blog was created by LTER graduate students following a joint SBC-MCR-CCE LTER graduate student symposium and the LTER All Scientists Meeting in 2015. The goal is to provide an outlet for students engaged in long term ecological research to informally share their research experiences with each other and the wider world. Current moderators are Stella Swanson (MCR) Ali Freibott (CCE) and Christie Yorke (SBC). SSALTER also has a facebook page ("ssalterblog") and a twitter feed ("ssalterblog1").

UCSB's teaching aquarium (Research Experience & Education Facility know as the "REEF") features SBC LTER research and provides a wide range of training and professional development opportunities. The REEF also serves as a marine ecology teaching facility for UCSB courses in Earth Sciences, Ecology Evolution & Marine Biology, English and Teacher Ed programs through the Gevirtz Graduate School of Education and for many area colleges including Cal Lutheran Thousand Oaks, California State University Channel Islands, and Santa Barbara and Ventura community colleges. The REEF is equipped with state-of-the-art, aquaria and touch tanks. The REEF also utilizes a high-tech life support system for the Research Tank, which features current SBC LTER research. One of the joint goals of the SBC LTER and the REEF programs is to provide UCSB undergraduates majoring in Aquatic Biology, with a solid foundation in marine ecology and research. The REEF training provides them with the basis for communicating this knowledge in an educational format. To that end, The REEF develops its *Oceans-to-Classrooms* curriculum around a number of research programs at UCSB and SBC LTER is the most significant contributor to this endeavor. Support from the SBC Schoolyard LTER program has allowed the REEF to obtain teaching supplies and equipment for curriculum as well as provide salaries for professional staff and undergraduate internships. The REEF also utilizes SBC graduate students, research staff, and post-docs from the SBC LTER to train REEF interns, which, in turn, enhances their training as laboratory and field assistants and research divers for SBC research. A total of 48 undergraduate interns were trained in this rigorous and pedagogically sound program this year.

## How have the results been disseminated to communities of interest?

SBC's Schoolyard LTER (sLTER) program is organized around a theme of kelp forest ecology in the context of the Research Overview of the SBC LTER. Curriculum is developed for and delivered through UCSB's Marine Science Institute's Research Experience & Education Facility (REEF) and its *Oceans-to-Classrooms* (O<sub>2</sub>C) curricula. Our focus is on long-term connections with local, regional and state schools through a number of partnerships that include both on, and off, campus programs. Our approach also allows for an integrated program that spans both academic year activities, as well as summer programs, and includes undergraduate and graduate students, K-12 teachers, K-12 students, the UC Community and the general public. SBC LTER-based curriculum is rich in STEM content and meets California State Science Standards, Common Core State Standards and the introduction of Next Generation Science Standards. O<sub>2</sub>C and the REEF served over 16,000 visitors last year through continued outreach visits to schools, community events and on-campus programs. This included visits from primary and secondary schools from the San Joaquin Valley and Los Angeles, Ventura, Kern, San Bernardino Counties and Sedona, Arizona. This year sLTER specific program content reached over 6,000 students in grades K-12. On-campus efforts communicated the research of the SBC to over 800 UCSB undergraduate and graduate students. We continue to develop and adapt marine science lesson plans that engage students with learning about the local environment in the context of the SBC LTER. These lessons incorporate ongoing SBC research that includes working with project data. The program is developed to build student's skills in scientific inquiry through activities that move from structured or guided investigation to open-ended inquiry and experimentation. It also includes a combination of school-based activities, field trips, and on-campus experiences that immerse students in the environment of a college campus.

### 1. Focused sLTER Programming:

This year, sLTER focused on two partnership programs, 1) the American Association of University Women's (AAUW): Tech Trek Program, 2) Santa Barbara Unified School District (SBUSD) Ocean Science Sequence (OSS) Partnership.

- Tech Trek is an on-campus residential science and math summer program designed to develop interest, excitement and self-confidence in young women entering the eighth grade. Tech Trek is part of an interdisciplinary partnership involving science, technology, engineering, and math departments at UCSB through the Office of Education Partnerships (OEP). The goal of OEP is to build college-going communities that improve student learning, increase college-going rates in underrepresented populations, and provide equal access to higher education for California's diverse students. In working with Tech Trek, the SBC SLTER program engaged two groups of 76 girls each (152 TOTAL) from junior high and middle schools from San Luis Obispo, Santa Barbara, Ventura, Kern and Los Angeles counties, representing a diverse range of socioeconomic and demographic groups. During a weeklong residential immersion at UCSB, students participated in "core" science courses. This year the program focused on solutions to three real-world challenges, Ocean Exploration and Climate Change, Sustainable Foods, and What to Do With Decommissioned Oil Rigs. Participants enrolled in a "core" class based on their discipline of interest: Physics, Math, Engineering, or Marine Science. Cooperative project groups were then formed with "specialist" from each core area. The girls also engaged in a number of place-based, hands-on, activities that promoted concept application and citizenship, including a boat trip to SBC-LTER Kelp Forest study sites and SBC-based Floating Lab that focused on marine ecology and ecosystem services. Through this long-term commitment, we are now seeing former program participants enrolling in UCSB. Verizon has shown interest in supporting the program and worked with us this year to develop an apps course. This year's program brought key AAUW National Office personnel interested in expanding our learning model to other Tech Trek sites at both the state, and national level!
- SBC LTER's partnership with O<sub>2</sub>C and the REEF completed an incredibly successful year in teacher professional development, as well as academic support in participant classrooms. We remain committed to equipping educators with the tools they need to teach ocean and environmental science, foster science literacy, and cultivate next generation of ocean stewards. In 2014, the Santa Barbara Unified School District (SBUSD) adopted ocean science as a theme for their sixth grade curriculum and partnered with us and BaySci, a coordinated effort of science education leaders, institutions, school districts, and teachers led by the Lawrence Hall of Science that seeks to systematically enhance the quantity and quality of K-12 science teaching and learning in districts and schools. Partnering with BaySci helps ensure that Next



Generation Science Standards and the Common Core State Standards are convergently implemented, which is essential to curricular and intellectual coherence in our education system. SBC LTER scientists and professional education staff received training through the Lawrence Hall of Science on the science content, pedagogy, and implementation of the material.

2. SBC co-hosted a booth with MCR LTER at the 2016 Santa Barbara Earth Day Festival to raise public awareness about LTER research. This year's festival attracted approximately 23,000 people. A highlight was a virtual kelp forest in which SBC students and staff acted as 'dive buddies' for children who toured the forest and collected data on kelp forest inhabitants.

3. We are broadening our K-12 outreach efforts by developing "The Golden Forest", a bilingual book (English and Spanish) for the LTER Schoolyard Book Series that highlights material connections between giant kelp forests and sandy beaches. The text for the book has been finalized, an illustrator has been hired and the storyboards and sidebars are now in progress. Other programmatic outreach efforts include: (1) developing a Sandy Beaches Field Guide as a free iPhone application to complement SBC's Subtidal Field Guide and a local tidepool field guide that are available on iTunes.

4. SBC investigators, education representatives and students contributed to the following stories that appeared in newspapers and other media outlets.

- All Aboard Bob Ballard's E/V Nautilus!  
<http://www.independent.com/news/2016/jul/06/all-aboard-bob-ballards-ev-nautilus/>
- Real-Time Exploring via E/V Nautilus  
<http://www.independent.com/news/2016/aug/15/real-time-exploring-ev-nautilus/>
- The impact of invasive *Sargassum horneri* on the community dynamics of kelp beds, National Marine Sanctuary (2016) <http://sanctuaries.noaa.gov/news/feb16/foster-scholar-takes-on-invasive-species.html>
- California's Ecological Abundance: SBC investigators are lead and co-authors of several chapters in a new book, *Ecosystems of California*, published by UC Press <http://www.news.ucsb.edu/2016/016475/california-s-ecological-abundance>
- A 20+ year SBC time-series reveals new answers to questions about fluctuations in fish populations  
<http://www.news.ucsb.edu/2015/016170/fine-kettle-fish>

## What do you plan to do during the next reporting period to accomplish the goals?

Continue research activities as planned.

## Products

### Books & Book Chapters

- Blanchette, CA and Denny, MD and Engle, JM and Helmuth, B and Miller, LP and Nielsen, KJ and Smith, K (2016). Intertidal. *Ecosystems of California – A source book* Mooney, H and Zavaleta, E. University of California Press. . Status = PUBLISHED; Acknowledgement of Federal Support = Yes ; Peer Reviewed = Yes
- Carr, MH and Reed, DC (2016). Shallow rocky reefs and kelp forests, Chapter 17. *Ecosystems of California – A source book* Mooney, H and Zavaleta, E. University of California Press. . Status = PUBLISHED; Acknowledgement of Federal Support = No ; Peer Reviewed = Yes

- Dugan, JE and Hubbard, DM (2016). Sandy Beach Ecosystems, Chapter 20. *Ecosystems of California – A source book* Mooney, H and Zavaleta, E. University of California Press. . Status = PUBLISHED; Acknowledgement of Federal Support = No ; Peer Reviewed = Yes
- Holbrook, SJ (2016). Kelp Forests, Coral Reefs and the LTER Program: Synergies and Impacts on a Scientific Career. *Long-Term Environmental Research: Changing the Nature of Scientists* Walker, LR and M.R. Willig, MR. Oxford University Press. . Status = PUBLISHED; Acknowledgement of Federal Support = Yes ; Peer Reviewed = Yes ; ISBN: 9780199380213.
- O'Brien, MC (2016). Evolution of an Information Manager. *Long-Term Environmental Research: Changing the Nature of Scientists* Walker, LR and M.R. Willig, MR. Oxford University Press. . Status = PUBLISHED; Acknowledgement of Federal Support = Yes ; Peer Reviewed = Yes
- Power, ME, Kupferberg, SJ, Cooper, SD and Deas, ML (2016). California's river ecosystems, Chapter 33. *Ecosystems of California – A source book* Mooney, H and Zavaleta, E. University of California Press. . Status = PUBLISHED; Acknowledgement of Federal Support = No ; Peer Reviewed = Yes

## Inventions

### Journals or Juried Conference Papers

- Abelson, A and Halpern, BS and Reed, DC and Kendrick, G and Belmaker, J and Orth, RJ and Beck, M and Krause, G and Airoidi, E and Brokovich, E and Edgar, G and France, R and Shashar, N and de Blaeij, A and Shechter, M and Nelson, P (2016). Restoration of marine ecosystems: A need for ecological-social concept upgrade. *BioScience*. 66 156-163. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1093/biosci/biv171
- Aristizabal, MF and Fewings, MR and Washburn, L (2015). Contrasting spatial patterns in the diurnal and semidiurnal temperature variability in the Santa Barbara Channel, California. *J. Geophys. Res. Ocean*. 120 427-440. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1002/2015JC011239
- Chen, X and Emery, N and Garcia, E and Hanan, EJ and Hodges, H and Martin, T and Meyers, M and Peavey, L and Peng, H and jsantamaria, F and Uyeda, K and Anderson, S and Tague, CL (2013). Perspectives on disconnects between scientific information and management decisions on post-fire recovery in western US. *Environmental Management*. 52 1415. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1007/s00267-013-0165-y
- Emery, K and Harlow, D and Whitmer, AC and Gaines, SD (). Compelling evidence: an influence on middle school students' accounts that may impact decision-making about socioscientific issues. *Environmental Education Research*. . Status = AWAITING\_PUBLICATION; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes
- Fewings, MR and Washburn, L and Dorman, C and Gotschalk, C and Lombardo, K (). Synoptic Forcing of Wind Relaxations at Pt. Conception, California. *J. Geophys Res*. . Status = AWAITING\_PUBLICATION; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1002/2016JC011699
- Fewings, MR and Washburn, L and Ohlmann, JC (2015). Coastal water circulation patterns around the Northern Channel Islands and Point Conception, California. *Progress in Oceanography*. 138 283-304. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes
- Hanan, E and D'Antonio, CM and Roberts, DA and Schimel, JP (2016). Factors regulating nitrogen retention during the early stages of recovery from fire in coastal chaparral ecosystems. *Ecosystems*. 5 910–926. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1007/s10021-016-9975-0
- Hanan, EJ and Schimel, JP and Dowdy, K and D'Antonio, C (2016). Effects of substrate supply, pH, and char on net nitrogen mineralization and nitrification along a wildfire-structured age gradient in chaparral. *Soil Biology and Biochemistry*. 95 87-99. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1016/j.soilbio.2015.12.017
- Hanan, EJ and Tague, CL and Schimel, JP (). Nitrogen cycling and export in California chaparral: the role of climate in shaping ecosystem responses to fire. *Ecological Monographs*. . Status = AWAITING\_PUBLICATION; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes

- Johansson, MF and Alberto, F and Reed, DC and Raimondi, PT and Coelho, N and Young, M and Drake, P and Edwards, C and Cavanaugh, KC and Assis, J and Ladah, L and Bell, TW and Coyer, J and Siegel, DA and Serrao, E (2015). Seascape drivers of *Macrocystis pyrifera* population genetic structure in the northeast Pacific. *Molecular Ecology*. 24 4866. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes
- Kapsenberg, L and Hofmann, GE (2016). Ocean pH time-series and drivers of variability along the northern Channel Islands, California, USA. *Limnology and Oceanography*. 61 953-968. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1002/lno.10264
- Kapsenberg, L and Kelley, AL and Francis, LA and Raskin, SB (2015). Exploring the complexity of ocean acidification: an ecosystem comparison of coastal pH variability. *Science Scope*. 39 (3), 51. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes
- Koenigs, C and Miller, RJ and Page, HM (2015). Top predators rely on carbon derived from giant kelp (*Macrocystis pyrifera*). *Marine Ecology Progress Series*. 537 1. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes
- Kroeker, KJ and Sanford, E and Rose, JM and Blanchette, CA and Chan, F and Chavez, FP and Gaylord, BP and Helmuth, B and Hill, TM and Hofmann, GE and McManus, MA and Menge, BA and Nielsen, KJ and Raimondi, PT and Russell, AD and Washburn, L (2016). Interacting environmental mosaics drive geographic variation in mussel performance and predation vulnerability. *Ecology Letters*. 7 771-779. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1111/ele.12613
- Lastra, M, J López, JS Troncoso, DM Hubbard, JE Dugan (). Scavenger and burrowing features of *Hippa pacifica* (Dana 1852) on a range of tropical sandy beaches. *Marine Biology*. . Status = AWAITING\_PUBLICATION; Acknowledgment of Federal Support = No ; Peer Reviewed = Yes
- Liebowitz, D and Nielsen, KJ and Dugan, JE and Morgan, SG and Malone, DP and Largier, J and Hubbard, DM and Carr, MH (). Ecosystem connectivity and trophic subsidies of beach ecosystems. *Ecosphere*. . Status = AWAITING\_PUBLICATION; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes
- Marks, LM and Salinas-Ruiz, P and Reed, DC and Holbrook, SJ and Culver, C and Engle, J and Kushner, D and Caselle, JE and Freiwald, J and Smith, J and Aguilar, L and Kaplanis, N (2015). The range expansion of a non-native, invasive macroalga *Sargassum horneri* in the eastern Pacific. *Bioinvasions Records*. 4 243. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: <http://dx.doi.org/10.3391/bir.2015.4.4.02>
- Miller, RJ and Page, HM and Reed, DC (2015). Trophic versus structural effects of a marine foundation species, giant kelp (*Macrocystis pyrifera*). *Oecologia*. 179 (4), 1199. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1007/s00442-015-3441-0
- Morton, DN and =Bell, TW and Anderson, TW (2016). Spatial synchrony of amphipods in giant kelp forests. *Marine Biology*. 163 32. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1007/s00227-015-2807-5
- O'Brien, MC and Costa, D and Servilla, M (). Ensuring the quality of data packages in the LTER network data management system. *Ecological Informatics*. . Status = AWAITING\_PUBLICATION; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1016/j.ecoinf.2016.08.001
- Okamoto, DK (2016). Competition among Eggs Shifts to Cooperation along a Sperm Supply Gradient in an External Fertilizer. *The American Naturalist*. 187 E129-E142. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1086/685813
- Okamoto, DK and Schmitt, RJ and Holbrook, SJ (2016). Stochastic density effects on adult fish survival and implications for population fluctuation. *Ecology Letters*. 19 153-162. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1111/ele.12547
- Osborne, EB and Thunell, RC and Marshall, BJ and Holm, JA and Tappa, EJ and Benitez-Nelson, CR and Cai, WJ and Chen, B (). Calcification of the planktonic foraminifera *Globigerina bulloides* and carbonate ion concentration: Results from the Santa Barbara Basin. *Paleoceanography*. . Status = AWAITING\_PUBLICATION; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1002/2016PA002933

- Reed, DC and Nelson, JC and Harrer, S and Miller, RJ (2016). Estimating biomass of benthic kelp forest invertebrates from body size and percent cover data. *Marine Biology*. 163 1-6. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1007/s00227-016-2879-x
- Reed, DC, Carlson, CA, Halewood, ER, Nelson, JC, Harrer, S and Rassweiler, AR, Miller, RJ (2015). Patterns and controls of reef-scale production of dissolved organic carbon by giant kelp *Macrocystis pyrifera*. *Limnology and Oceanography*. 60 (6), 1996. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes
- Reynolds, LC and Simms, AR (2015). Late Quaternary relative sea level in Southern California and Monterey Bay. *Quaternary Science Reviews*. 126 57-66. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1016/j.quascirev.2015.08.003
- Rivist, EB and O'Brien, MC and Kapsenberg, L and Gotschalk, C and Blanchette, CA and Hoshijima, U and Hofmann, GE (). Beyond the benchtop and the benthos: dataset management planning and design for time series of ocean carbonate chemistry associated with Durafet®-based pH sensors. *Ecological Informatics*. . Status = AWAITING\_PUBLICATION; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes
- Rodriguez, GE and Reed, DC and Holbrook, SJ (). Blade life span, structural investment, and nutrient allocation in giant kelp. *Oecologia*. . Status = AWAITING\_PUBLICATION; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1007/s00442-016-3674-6
- Romero, L and Siegel, DA and McWilliams, JC and Uchiyama, Y and Jones, C (2016). Characterizing storm water dispersion and dilution from small coastal streams. *J. Geophys. Res.* 121 3926–3943. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1002/2015JC011323
- Schroeter, SC and Reed, DC and Raimondi, PT (2015). Effects of physical characteristics of reef structure on colonization and subsequent community development. *Marine Ecology Progress Series*. 540 43. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes
- Simms, AR and Reynolds, L and Bentz, M and Roman, A and Rockwell, T and Peters, R (). Tectonic subsidence of California estuaries increases forecasts of relative sea-level rise. *Estuaries and Coasts*. . Status = AWAITING\_PUBLICATION; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1007/s12237-016-0105-1
- Simons, RD and Page, HM and Zaleski, S and Miller, RJ and Dugan, JE and dschroeder, DM and Doheny, BM (2016). The effects of anthropogenic structures on habitat connectivity and the potential spread of non-native invertebrate species in the offshore environment. *PLoS One*. 11 e0152261. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1371/journal.pone.0152261
- Warrick, J, Melack, JM, Goodridge, BM (2015). Sediment yields from small, steep coastal watersheds of California. *Journal of Hydrology*. 4 515. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes
- Wear, EK and Carlson, CA and Windecker, L and Brzezinski, MA (2015). Roles of diatom nutrient stress and species identity in determining the short-and long-term bioavailability of diatom exudates to bacterioplankton. *Marine Chemistry*. 172 335-348. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1016/j.marchem.2015.09.001
- Young, M.A., K. C. Cavanaugh, T. W. Bell, P. T. Raimondi, C. A. Edwards, P. T. Drake, L. Erikson, C. Storlazzi (2016). Environmental controls on spatial patterns in the long-term persistence of giant kelp in central California. *Ecological Monographs*. 86 (1), 45. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: <http://dx.doi.org/10.1890/15-0267.1>
- Young, MA and Carr, MH (2015). Application of species distribution models to explain and predict the distribution, abundance and assemblage structure of nearshore temperate marine fishes. *Diversity and Distributions*. 21 1428–1440. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1111/ddi.12378
- Young, MA and Carr, MH (2015). Assessment of habitat representation across a network of marine protected areas with implications for the spatial design of monitoring. *PLoS ONE*. 10 e0116200. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1371/journal.pone.0116200

## Licenses

## Other Conference Presentations / Papers

- Dugan, J., K. Emery, M. Alber, C. Alexander, J. Byers, A. Gehman, S. Lawson, K. McGlathery, N. McLenaghan (2015). *A conceptual model for predicting the ecological effects of coastal armoring in soft sediment environments*. 2015 LTER All Scientists Meeting. Estes Park, Colorado. Status = OTHER; Acknowledgement of Federal Support = Yes
- Schooler, NK and Dugan, JE and Martin, K and Hubbard, DM (2016). *A new method for monitoring urban beach ecosystems*. National Sea Grant Site Review, University of Southern California. Los Angeles, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Osborne, E., Thunell, R., Bizimis, M., Buckley, W., and Cai, W. (2015). *A sediment trap evaluation of B/Ca in planktonic foraminifera as a carbonate system proxy, August 2015*. Goldschmidt Conference. Prague., Status = OTHER; Acknowledgement of Federal Support = Yes
- Jones, J, J Sweet, U Passow, GE Hofmann and L Washburn (2013). *A year of in situ pH monitoring at Stearns Wharf: Establishing variance and reliability with point sampling*. SBC LTER Annual Meeting. Santa Barbara, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Dugan, JE and Schooler, NK and Martin, K (2015). *All Ashore - Introducing a New Program for Monitoring Sandy Beaches by Citizen Scientists*. Beach Ecology Coalition, Pepperdine University. Malibu, CA. Status = OTHER; Acknowledgement of Federal Support = No
- Bell, TW and Siegel, DA (2016). *Assessment of giant kelp physiological state using airborne hyperspectral imagery (EC21B-04)*. 2016 Ocean Sciences Meeting (ASLO, AGU, TOS). New Orleans, LA, USA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Dugan, JE, Hubbard, DM and Quigley, B (2013). *Beyond beach width: steps toward identifying and integrating dynamic ecological envelopes with geomorphic features and datums for sandy beach ecosystems (invited)*. 44th Annual Binghamton Geomorphology Symposium. Newark, NJ. Status = OTHER; Acknowledgement of Federal Support = Yes
- Dugan, JE and Hubbard, DM and Blanchette, CA (2016). *Birds as indicator of ecosystem condition on rocky and sandy shores*. Annual Meeting of the Western Society of Naturalists. Sacramento, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Wear, EK and Carlson, CA and Siegel, DA and Guillocheau, N and Nelson, CE (2016). *Bottom-up controls on a coastal bacterioplankton time-series: relative utility of in situ vs. remotely-sensed measurements*. Coastal and Estuarine Research Federation. Portland, OR. Status = OTHER; Acknowledgement of Federal Support = Yes
- Goodridge, B and Melack, JM (2013). *Carbon and nitrogen stoichiometry regulates the magnitude and temporal dynamics of nitrogenous nutrient regeneration in sandy beach pore water*. American Geophysical Union, Annual Meeting. San Francisco, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Jones, J (2014). *Carbonate system monitoring and manipulation: current and future research*. UCSB Interdepartmental Graduate Program in Marine Science Seminar. Santa Barbara, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Schooler, NK, Dugan, JE, Hubbard, DM and Straughan, D (2013). *Changing sandy beach ecosystems in California: comparisons of intertidal biodiversity three decades apart*. 44th Annual Binghamton Geomorphology Symposium. Newark, NJ. Status = OTHER; Acknowledgement of Federal Support = Yes
- Schooler, NK, Dugan, JE, Hubbard, DM and Straughan, D (2013). *Changing sandy beach ecosystems in California: comparisons of intertidal biodiversity three decades apart (poster)*. 44th Annual Binghamton Geomorphology Symposium. Newark, NJ. Status = OTHER; Acknowledgement of Federal Support = Yes
- Romero, L and Siegel, DA and McWilliams, JC and Uchiyama, Y and Jones, C (2016). *Characterizing stormwater dispersion and dilution from small coastal streams (EC12B-04)*. 2016 Ocean Sciences Meeting (ASLO, AGU, TOS). New Orleans, LA, USA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Washburn, L (2014). *Circulation along the central California coast: Response to relaxations of upwelling winds*. King Abdullah University of Science and Technology. Thuwal Kingdom of Saudi Arabia. Status = OTHER; Acknowledgement of Federal Support = Yes
- Dugan, JE (2016). *Coastal Ecosystem Vulnerability Assessment for Santa Barbara County: Sandy Beaches*. Workshop: Santa Barbara Area Coastal Ecosystem Vulnerability Assessment for Coastal Communities (SBA CEVA). Santa Barbara, CA. Status = OTHER; Acknowledgement of Federal Support = Yes

- Melack, JM (2016). *Coastal Ecosystem Vulnerability Assessment for Santa Barbara County: Watershed Impacts*. Workshop: Santa Barbara Area Coastal Ecosystem Vulnerability Assessment for Coastal Communities (SBA CEVA). Santa Barbara, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Page, HM (2015). *Coastal Ecosystem Vulnerability Assessment for Santa Barbara County: Wetland vulnerability*. Workshop: Santa Barbara Area Coastal Ecosystem Vulnerability Assessment for Coastal Communities (SBA CEVA). Santa Barbara, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Emery, N and D'Antonio, C (2014). *Coastal fog effects on live fuel moisture of California shrublands*. International Society of Mediterranean Ecology (MEDECOS XIII). OlmueChile. Status = OTHER; Acknowledgement of Federal Support = Yes
- Okamoto, DK (2016). *Competition among Eggs Shifts to Cooperation along a Sperm Supply Gradient in an External Fertilizer*. International Temperate Reef Symposium. PisaItaly. Status = OTHER; Acknowledgement of Federal Support = Yes
- Okamoto, DK (2014). *Competition among eggs shifts to cooperation along a sperm supply gradient in an external fertilizer*. Annual Meeting of the Western Society of Naturalists. Tacoma, WA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Castorani, MC, DC Reed, F Alberto, TW Bell, RD Simons, KC Cavanaugh, DA Siegel and PT Raimondi (2015). *Connectivity structures local population dynamics: a long-term empirical test in a large metapopulation network*. Annual Meeting of the Ecological Society of America (ESA). Baltimore, MD. Status = OTHER; Acknowledgement of Federal Support = Yes
- Hendriks-Freitas, F, Stassinis, F, Halewood, S, Washburn, L and Siegel, DA (2014). *Coupling between physical and bio-optical variability across the innershelf Santa Barbara Channel, CA (poster)*. 2014 Ocean Sciences Meeting (ASLO, TOS, AGU). Honolulu, HI. Status = OTHER; Acknowledgement of Federal Support = Yes
- Dugan, JE and Emery, K and Alber, M and Alexander, C and Beyers, J and Gehman, A and McLenaghan, N and Sojka, S (2016). *Cross-site synthesis: a conceptual model for predicting the ecological effects of coastal armoring in soft-sediment environment (Poster)*. Coastal and Estuarine Research Federation. Portland, OR. Status = OTHER; Acknowledgement of Federal Support = Yes
- Simon, SE, Johnson, M, Cano, A.; Blanchette, C, and Whitmer, A.C. (2013). *Culturally Relevant Ecology, Learning Progressions and Environmental Literacy at the Santa Barbara Coastal LTER, Poster*. Santa Barbara Coastal Long-term Ecological Research Project Annual Meeting. Santa Barbara, CA. USA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Johnson, M, Simon, SE, Cano, A, Blanchette, C, and Whitmer, AC (2013). *Culturally Relevant Ecology, Learning Progressions and Environmental Literacy at the Santa Barbara Coastal LTER. Poster*. Santa Barbara Coastal Long-term Ecological Research Project Annual Meeting. Santa Barbara, CA. USA. Status = OTHER; Acknowledgement of Federal Support = Yes
- O' Brien, M., M. Schildhauer, M. Jones, D. McGuinness, B. Leinfelder, C. Jones, S. Hou, L. Walker (2015). *DataONE Semantics and Provenance*. 2015 LTER All Scientists Meeting. Estes Park, Colorado. Status = OTHER; Acknowledgement of Federal Support = Yes
- Reynolds, LC and Truong, C and Ejarque, M and Simms, AR and Anderson, S (2016). *Dating historical sediments in estuaries: A multiproxy approach (Poster)*. American Geophysical Union, Annual Meeting. San Francisco, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Castorani, MC and Reed, DC and Raimondi, PT and Alberto, F and Bell, TW and Cavanaugh, KC and Siegel, DA and Simons, RD (2016). *Demographic connectivity structures the dynamics of giant kelp metapopulations*. International Temperate Reef Symposium. PisaItaly. Status = OTHER; Acknowledgement of Federal Support = Yes
- Marks, LM and Reed, DC and Holbrook, SJ (2016). *Development of management strategies for the invasive seaweed Sargassum horneri (poster)*. International Conference on Marine Bioinvasions. SydneyAustralia. Status = OTHER; Acknowledgement of Federal Support = Yes
- Marks, LM and Reed, DC and Holbrook, SJ (2016). *Ecological causes and consequences of the invasive seaweed Sargassum horneri in the eastern Pacific*. International Conference on Marine Bioinvasions. SydneyAustralia. Status = OTHER; Acknowledgement of Federal Support = Yes

- Guerrini, A (2015). *Ecological histories: Contrasting uses of history at two LTER sites*. Annual Meeting of the Ecological Society of America (ESA). Baltimore, MD. Status = OTHER; Acknowledgement of Federal Support = Yes
- Frazier, HN and Melack, JM (2016). *Ecosystem metabolism response to urban development in coastal California streams*. Society for Freshwater Science Annual Meeting. Sacramento, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Hanan, E and Schimel, JP and Tague, CL (2016). *Effects of climate and fire timing on nitrogen cycling and retention in chaparral watersheds*. American Geophysical Union, Annual Meeting. San Francisco, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- James, A., C. Carlson, U. Passow, M. Brzezinski, R. Parsons, J.N. Trapani (2015). *Elevated pCO<sub>2</sub> Increases Respiration of DOC by Natural Bacterioplankton*. 2015 LTER All Scientists Meeting. Estes Park, Colorado. Status = OTHER; Acknowledgement of Federal Support = Yes
- James, A (2016). *Elevated pCO<sub>2</sub> Increases Respiration of DOC by Natural Bacterioplankton (poster)*. LTER All Scientists Meeting. Estes Park, CO. Status = OTHER; Acknowledgement of Federal Support = Yes
- Servilla, M, O'Brien, MC, and Costa, D (2013). *Ensuring the quality of data packages in the LTER Network data management system*. American Geophysical Union, Annual Meeting. San Francisco, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Ellis, DP, Washburn, L, Ohlmann, C, Schofield, O and Moline, M (2014). *Evaluating the performance of underwater gliders as virtual moorings off Pt. Sal, California*. 2014 Ocean Sciences Meeting (ASLO, TOS, AGU). Honolulu, HI. Status = OTHER; Acknowledgement of Federal Support = Yes
- Reed, DC (2016). *Extreme warming challenges kelp forests as sentinels of climate change*. International Temperate Reef Symposium. Pisa, Italy. Status = OTHER; Acknowledgement of Federal Support = Yes
- Hanan, E., N. Tague, J. Schimel (2015). *Factors regulating nitrogen retention during the early stages of recovery from fire in coastal chaparral ecosystems*. 2015 LTER All Scientists Meeting. Estes Park, Colorado. Status = OTHER; Acknowledgement of Federal Support = Yes
- Hanan, E (2015). *Factors regulating nitrogen retention during the early stages of recovery from fire in coastal chaparral ecosystems (poster)*. LTER All Scientists Meeting. Estes Park, CO. Status = OTHER; Acknowledgement of Federal Support = Yes
- Liedle, J and Yorke, C (2016). *Feeding and distribution of the Norris's kelp snail*. UCSB Undergraduate Research Colloquium. Santa Barbara, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Harrison, CS, Siegel, DA and Mitarai, S (2014). *Filamentation and eddy-eddy interactions in marine larval accumulation and transport*. 2014 Ocean Sciences Meeting (ASLO, TOS, AGU). Honolulu, HI. Status = OTHER; Acknowledgement of Federal Support = Yes
- Bentz, M and Simms, AR and Buzzas-Stephans, P (2015). *Foraminifera zonations in southern California Salt Marshes. (poster)*. Pacific Section American Association of Petroleum Geologists/Society for Sedimentary Geology (AAPG/SEPM). Oxnard, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Osborne, EB, Thunell, RC, Benitez-Nelson, CR and Cai, WJ (2013). *Foraminiferal area density as a proxy for changing ocean acidity in the California Current System (poster)*. American Geophysical Union, Annual Meeting. San Francisco, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Reed, DC (2014). *Forest Restoration: A case study of the Wheeler North Artificial Reef in southern California (invited)*. Marine Ecological Restoration (MER) Workshop. Eilat/Israel. Status = OTHER; Acknowledgement of Federal Support = Yes
- Castorani, MC and Reed, DC and Raimondi, PT and Alberto, F and Bell, TW and Cavanaugh, KC and Siegel, DA and Simons, RD (2016). *Giant kelp: a model system for testing metapopulation theory*. Annual Meeting of the Western Society of Naturalists. Sacramento, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Ohlmann, JC and Washburn, L and Ellis, DP and Fewings, MR (2016). *HF Radar Observations of Pressure-Driven Coastal Flows Opposing the Prevailing Winds*. 2016 Ocean Sciences Meeting (ASLO, AGU, TOS). New Orleans, LA, USA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Reynolds, LC and Simms, AR and Rockwell, T and Peters, R (2016). *Holocene evolution of Carpinteria Marsh, southern California: storms and subsidence*. Southern California Earthquake Center, Annual Meeting. Palm Springs, CA. Status = OTHER; Acknowledgement of Federal Support = Yes

- Reynolds, L, AR Simms, T Rockwell and R Peters (2015). *Holocene evolution of Carpinteria Salt Marsh, Southern California: Evidence for Subsidence*. Annual Meeting of the Seismological Society of America. Pasadena, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Reynolds, L and Simms, AR (2015). *Holocene relative sea level in southern California: implications for estimates of recent tectonic rates on the coast*. Pacific Section American Association of Petroleum Geologists/Society for Sedimentary Geology (AAPG/SEPM). Oxnard, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Flannery, N and Dodgen, R and Schooler, NK and Dugan, JE (2016). *Impacts of urbanization on sandy beach ecosystems*. UCSB Undergraduate Research Colloquium. Santa Barbara, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Hanan, E and Schimel, JP (2015). *Integrating pH, substrate, and plant regrowth effects on soil N cycling after fire*. Annual Meeting of the Ecological Society of America (ESA). Baltimore, MD. Status = OTHER; Acknowledgement of Federal Support = Yes
- Hanan, E., Schimel, J.P., Tague, C.L. and D'Antonio, C. (2014). *Integrating pH, substrate, and plant regrowth effects on soil N cycling after fire*. American Geophysical Union, Annual Meeting. San Francisco, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Aristizabal, MF and Fewings, MR and Washburn, L (2016). *Intermittency in the Diurnal and Semidiurnal Temperature Oscillations in the Santa Barbara Channel, California*. 2016 Ocean Sciences Meeting (ASLO, AGU, TOS). New Orleans, LA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Simons, RD, MM Nishimoto, L Washburn, and DA Siegel (2014). *Linking physical dynamics and biological productivity in a coastal mesoscale eddy*. American Geophysical Union, Annual Meeting. San Francisco, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Hubbard, DM, Dugan, JE, Schooler, NK, and Viola, S. (2013). *Local extirpations and regional declines: the case of endemic upper beach fauna in southern California*. Coastal and Estuarine Research Federation. San Diego, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Bell, TW (2016). *Longterm Monitoring of Giant Kelp Biomass Dynamics Exposes Non-Linear Relationships with Environmental Drivers*. Annual Meeting of the Western Society of Naturalists. Sacramento, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Cavanaugh, KC (2016). *Macroecology of giant kelp forests: Environmental and spatial controls of giant kelp dynamics*. Scripps Institute of Oceanography Marine Biology Seminar. San Diego, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Jones, J, Sweet, J, Gotschalk, C, Washburn, L, Hofmann, GE and Passow, U (2014). *Monitoring the carbonate system at Stearns Wharf*. UCSB Interdepartmental Graduate Program in Marine Science Seminar. Santa Barbara, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Romero, L, Uchiyama, Y, Ohlmann, JC, McWilliams, JC and Siegel, DA (2014). *Nearshore anisotropic relative dispersion in Southern California*. 2014 Ocean Sciences Meeting (ASLO, TOS, AGU). Honolulu, HI. Status = OTHER; Acknowledgement of Federal Support = Yes
- Washburn, L and Romero, E and Johnson, C and Emery, BM (2016). *New applications for autonomous aerial vehicles in coastal oceanographic research*. 2016 Ocean Sciences Meeting (ASLO, AGU, TOS). New Orleans, LA, USA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Dodgen, R and Dugan, JE and Schooler, NK (2016). *Niche separation in California beachhoppers*. UCSB Undergraduate Research Colloquium. Santa Barbara, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Washburn, L, Ohlmann, C, Ellis, DP, Schofield, O and Moline, M (2014). *Observations of poleward flows around the bio-geographic boundary at Pt. Conception, CA using ocean observing system technologies*. 2014 Ocean Sciences Meeting (ASLO, TOS, AGU). Honolulu, HI. Status = OTHER; Acknowledgement of Federal Support = Yes
- Fernandez, J, Reed, N, Barloon, W, Johnson, C and Washburn, L (2014). *Oceanographic pressure sensor calibration*. 2014 Ocean Sciences Meeting (ASLO, TOS, AGU). Honolulu, HI. Status = OTHER; Acknowledgement of Federal Support = Yes
- Emery, BM and Mezic, I and Loire, S and Arabi, H and Ohlmann, JC and Harlan, J (2016). *Oil Spill Trajectories from HF Radars: Applied Dynamical Systems Methods vs. a Lagrangian Stochastic Model*. 2016 Ocean Sciences Meeting (ASLO, AGU, TOS). New Orleans, LA, USA. Status = OTHER; Acknowledgement of Federal Support = No



- Matson, P (2016). *Physical dynamics associated with a novel coccolithophore bloom in the Santa Barbara Channel*. UCSB Interdepartmental Graduate Program in Marine Science. Santa Barbara, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Reed, DC, L Washburn, C Blanchette and TW Bell (2015). *Physical-chemical anomalies and associated ecological responses in southern California kelp forests*. Pacific Anomalies Science and Technology Workshop, Scripps Institution of Oceanography. La Jolla, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Osborne, E., Thunell, R., Bizimis, M., and Benitez-Nelson, C. (2014). *Planktonic foraminiferal response to ocean acidification in the Santa Barbara Basin over the last century*. AGU Fall Meeting, San Francisco, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Osborne, R., Thunell, R., Gruber, N., Benitez-Nelson, C., and Cai, W. (2015). *Planktonic foraminiferal shell thickness as a carbonate ion concentration proxy*. SCOR Workshop on the Biology of Planktonic Foraminifera, Catalina Island, CA, Status = OTHER; Acknowledgement of Federal Support = Yes
- Bell, TW, Cavanaugh, KC, Reed, DC and Siegel, DA (2013). *Primary controls on giant kelp biomass throughout California*. Annual Meeting of the Western Society of Naturalists. Oxnard, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Reed, DC (2013). *Production not attraction accounts for high macroalga biomass at Wheeler North Reef*. Annual Meeting of the Western Society of Naturalists. Oxnard, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Jin, H.; Shin, H.J.; Johnson, M.; Kim, J.; Anderson, C.W. (2014). *Promise and Problems of Learning Progression-guided Interventions. Oral presentation*. National Association for Research in Science Teaching Annual International Conference. Pittsburgh, PA. USA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Reynolds, L, Holmquist, J, Brown, L, Southon, J, Simms, AR and McDonald, G (2014). *Radiocarbon Reservoir Variability in California Estuaries*. International Radiocarbon in the Environment Conference. Belfast, Northern Ireland, UK. Status = OTHER; Acknowledgement of Federal Support = Yes
- Washburn, L and Emery, BM and Ohlmann, JC and Fewings, MR and Romero, E and Johnson, C and Salazar, D and Robbins, I (2015). *Recent research and technology development using HF radars in Southern California*. Radiowave Oceanography Workshop, Woods Hole Oceanographic Institution. Woods Hole, MA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Chen, M and Wetherley, E and Roberts, DA and Potapenko, J (2016). *Reconstructing Fire Severity and Post-Fire Recovery in a Southern California Watershed Using Hyperspectral Imagery and LiDAR*. Annual Meeting of the American Association of Geographers. San Francisco, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Bell, TW (2014). *Remote monitoring of giant kelp biomass and photosynthetic condition: An evaluation of the potential for the Hyperspectral Infrared Imager (HyspIRI) mission (poster)*. Annual Meeting of the Western Society of Naturalists. Tacoma, WA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Bell, TW (2014). *Remote monitoring of giant kelp biomass and photosynthetic condition: An evaluation of the potential for the Hyperspectral Infrared Imager (HyspIRI) mission (poster)*. HyspIRI Science Workshop. Pasadena, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Bell, TW (2014). *Remote monitoring of giant kelp biomass and physiological condition: An evaluation of the potential for the Hyperspectral Infrared Imager (HyspIRI) mission (poster)*. American Geophysical Union, Annual Meeting. San Francisco, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Bell, TW (2015). *Remote monitoring of giant kelp biomass and physiological condition: An evaluation of the potential for the Hyperspectral Infrared Imager (HyspIRI) mission (poster)*. International Ocean Color Meeting. San Francisco, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Simons, RD, Nishimoto, MM, Washburn, L, Brown, KS and Siegel, DA (2014). *Retention of juvenile fish in a coastal mesoscale eddy: Field observations and three-dimensional modeling*. 2014 Ocean Sciences Meeting (ASLO, TOS, AGU). Honolulu, HI. Status = OTHER; Acknowledgement of Federal Support = Yes
- Koenigs, C. (2015). *Role of biodiversity in promoting stability in kelp forest communities (poster)*. LTER All Scientists Meeting. Estes Park, CO. Status = OTHER; Acknowledgement of Federal Support = Yes

- Koenigs, C. (2015). *Role of diversity in promoting stability in kelp forest communities*. 2015 LTER All Scientists Meeting. Estes Park, Colorado. Status = OTHER; Acknowledgement of Federal Support = Yes
- Koenigs, C (2015). *Role of diversity in promoting stability in kelp forest communities (poster)*. LTER All Scientists Meeting. Estes Park, CO. Status = OTHER; Acknowledgement of Federal Support = Yes
- Simon, S., D. Reed (2015). *SBC sLTER: Place-based Ocean Science Education*. 2015 LTER All Scientists Meeting. Estes Park, Colorado. Status = OTHER; Acknowledgement of Federal Support = Yes
- Dugan, JE, Hubbard, DM and Page, HM (2013). *Sandy beaches as recipient ecosystems: the influence of subsidies on intertidal community structure and higher trophic levels*. Coastal and Estuarine Research Federation. San Diego, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Reynolds, LC and Simms, AR and Carlin, J (2016). *Sedimentary Record of Recent Flood Events from Saucos Canyon, Santa Cruz Island, California*. Cordilleran Section, Geological Society of America 112th Annual Meeting. Ontario, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Reynolds, LC and Simms, AR and Carlin, J (2016). *Sedimentary Record of Recent Flood Events from Saucos Canyon, Santa Cruz Island, California*. University of California Natural Reserve System Mathias Symposium. Bodega Bay, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Reynolds, L, Simms, AR, King, B, Rockwell, T and Peters, R (2013). *Sedimentological Evidence of the 1812 Santa Barbara Tsunami in Carpinteria Marsh, CA*. American Geophysical Union, Annual Meeting. San Francisco, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Reynolds, L, Simms, AR, King, B, Rockwell, T and Peters, R (2013). *Sedimentological Evidence of the 1812 Santa Barbara Tsunami in Carpinteria Marsh, CA (poster)*. Southern California Earthquake Center, Annual Meeting. Palm Springs, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Romero, L, Uchiyama, Y, Ohlmann, JC, McWilliams, JC and Siegel, DA (2013). *Simulations of nearshore particle-pair dispersion in Southern California*. 60th Annual Eastern Pacific Ocean Conference. Fallen Leaf Lake, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Wear, EK and Carlson, CA and Siegel, DA and Guillocheau, N and Nelson, CE (2016). *Spatial variability in bacterioplankton community composition can equal the magnitude of seasonal changes within a highly heterogeneous coastal system (Poster)*. International Society for Microbial Ecology (ISME). Montreal, ON, Canada. Status = OTHER; Acknowledgement of Federal Support = Yes
- Chen, M (2015). *Studying Fire Severity and Post-fire Landscape Recovery on SBC Site Using Hyperspectral and LiDAR Data*. UCSB Departmental of Evolution, Ecology and Marine Biology Seminar. Santa Barbara, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Rahimi, A.M., Miller, R.J., Fedorov, D.V., Sunderrajan, S., Doheny, B.M., Page, H.M. and Manjunath, B.S. (2014). *Subtidal marine biodiversity classification using dropout regularization*. Proceedings of the 22th International Conference on Pattern Recognition (ICPR); workshop on Computer Vision for Analysis of Underwater Imagery. . Status = OTHER; Acknowledgement of Federal Support = Yes
- Hendrikx Freitas, F and Fields, E and Maritorena, S and Siegel, DA (2016). *Surface waves as major controls on particle backscattering in southern California coastal waters (ME52A-04)*. 2016 Ocean Sciences Meeting (ASLO, AGU, TOS). New Orleans, LA, USA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Reed, DC (2014). *Targets and evaluation of ecological restoration (invited)*. Marine Ecological Restoration (MER) Workshop. Eilat/Israel. Status = OTHER; Acknowledgement of Federal Support = Yes
- Simms, AR and Reynolds, LC and Bentz, M and Roman, A and Rockwell, T and Peters, R (2016). *Tectonics subsidence of California estuaries increases forecasts of relative sea-level rise*. Cordilleran Section, Geological Society of America 112th Annual Meeting. Ontario, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Bell, TW (2014). *Temporal and spatial variability in the photosynthetic condition of giant kelp*. Annual Meeting of the Western Society of Naturalists. Tacoma, WA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Guerrini, A (2016). *The Long View: History, Novelty, and Change*. Annual Meeting of the Ecological Society of America (ESA). Ft. Lauderdale, FL. Status = OTHER; Acknowledgement of Federal Support = Yes
- Aristizabal, MF, Fewings, MR, Washburn, L and Dorman, C (2014). *The influence of internal waves on the temperature variability in the Santa Barbara Channel*. 2014 Ocean Sciences Meeting (ASLO, TOS, AGU). Honolulu, HI. Status = OTHER; Acknowledgement of Federal Support = Yes

- O'Brien, MC (2016). *The respository landscape from the data contributor point-of-view*. Earth Science Information Partners (ESIP), Summer Meeting. Durham, NC. Status = OTHER; Acknowledgement of Federal Support = Yes
- Viola, S., M. Page, R. Miller, S. Zaleski, B. Doheny, J. Dugan, D. Schroeder (2015). *The role of disturbance, larval supply, and native community on the establishment of a non-native species on oil platforms in the Santa Barbara Channel*. 2015 LTER All Scientists Meeting. Estes Park, Colorado. Status = OTHER; Acknowledgement of Federal Support = Yes
- Viola, SV and Page, HM and Miller, RJ and Zaleski, S and Doheny, B and Dugan, JE and Schroeder, D (2015). *The role of disturbance, larval supply, and native community on the establishment of a non-native species on oil platforms in the Santa Barbara Channel (poster)*. LTER All Scientists Meeting. Estes Park, CO. Status = OTHER; Acknowledgement of Federal Support = Yes
- Viola, SV and Page, HM and Miller, RJ and Zaleski, S and Doheny, BM and Dugan, JE and Schroeder, D (2016). *The role of disturbance, larval supply, and native community on the establishment of an non-native species on offshore oil platforms in the Santa Barbara Channel (Poster)*. 2016 Ocean Sciences Meeting (ASLO, AGU, TOS). New Orleans, LA, USA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Reed, DC (2013). *The value of Long Term Ecological Research (invited plenary)*. Annual Meeting of the Western Society of Naturalists. Oxnard, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Reed, DC (2014). *The value of a long-term perspective in understanding short-term dynamics of giant kelp ecosystems (invited plenary)*. 10th International Temperate Reefs Symposium. Perth, Western Australia, Australia. Status = OTHER; Acknowledgement of Federal Support = Yes
- Goodridge, B and Melack, JM (2014). *Time-scale of stream nutrient recovery following wildfire in an upland chaparral watershed in Santa Barbara, California*. Joint Aquatic Sciences Meeting. Portland, OR. Status = OTHER; Acknowledgement of Federal Support = Yes
- Hanan, E., Schimel, JP and Tague, CL (2015). *Timing of fire influences nitrogen cycling and retention in chaparral watersheds*. Southern California Chaparral Symposium (USFS). Arcadia, CA. Status = OTHER; Acknowledgement of Federal Support = Yes
- Yorke, C., R. Miller, H.M. Page (2015). *Trophic resources to subtidal suspension feeders*. 2015 LTER All Scientists Meeting. Estes Park, Colorado. Status = OTHER; Acknowledgement of Federal Support = Yes
- Yorke, C (2015). *Trophic resources to subtidal suspension feeders (poster)*. LTER All Scientists Meeting. Estes Park, CO. Status = OTHER; Acknowledgement of Federal Support = Yes
- Lamy, T and Miller, RJ and Rassweiler, AR and Siegel, DA and Kyriakidis, P and Reed, DC and Staines, J (2016). *Uncovering the complex and multiscale drivers of marine community dynamics*. International Temperate Reef Symposium. Pisaltaly. Status = OTHER; Acknowledgement of Federal Support = Yes
- Cooper, SD, Peterson, S, Bookhagen, B, Roberts, D, Wiseman, SW, Roberts, D, Bennett, D, Page, HM, Even, T, Sadro, S, Nelson, CE and Dudley, TL (2014). *Wildfire impacts from watersheds to stream food webs*. Joint Aquatic Sciences Meeting. Portland, OR. Status = OTHER; Acknowledgement of Federal Support = Yes
- Fewings, MR, L Washburn, C Dorman, C Gotschalk, K Brown and J Bane (2014). *Wind relaxations in the California Current upwelling System*. 2015 Ocean Sciences Meeting (ASLO, AGU). GrenadaSpain. Status = OTHER; Acknowledgement of Federal Support = Yes

## Other Products

## Other Publications

## Patents

## Technologies or Techniques

## Thesis/Dissertations

- Young, M. *A Landscape Ecology Approach to Informing the Ecology and Management of Coastal Marine Species and Ecosystems*. (2014). University of California, Santa Cruz. Acknowledgement of Federal Support = No
- Ellis, D. *Best Methods for Measuring Ocean Currents from Underwater Gliders*. (2016). Dept of Geography, University of California Santa Barbara. Acknowledgement of Federal Support = Yes
- Hanan EJ. *Biogeochemical responses to fire in coastal chaparral ecosystems*. (2015). Department of Ecology, Evolution and Marine Biology, Univers. Acknowledgement of Federal Support = Yes
- Barron, R. *Constraining the variability of optical properties in the Santa Barbara Channel, CA: A phytoplankton story*. (2014). Geography Dept., University of California, Santa Barbara. Acknowledgement of Federal Support = Yes
- Bell, T. *Environmental Drivers of Giant Kelp Biomass and Physiological Condition Dynamics Across Space and Time*. (2016). University of California Santa Barbara. Acknowledgement of Federal Support = Yes
- Windecker, L. *Extracellular Release in Marine Phytoplankton*. (2016). Department of Ecology, Evolution and Marine Biology, Univers. Acknowledgement of Federal Support = Yes
- Meerdink, S. K. *Linking seasonal foliar traits to VSWIR-TIR spectroscopy across California ecosystems*. (2014). Geography Department, University of California, Santa Barbar. Acknowledgement of Federal Support = Yes
- Goodridge, B. M. *Nitrogen dynamics in coastal California watersheds, beaches, and the nearshore ocean*. (2014). Bren School, University of California, Santa Barbara. Acknowledgement of Federal Support = Yes
- Wong, S. H. *Oceanography at the land-sea interface: linking physics to human health and ecosystems*. (2014). Dept of Civil & Environmental Engineering, Stanford Univ. Acknowledgement of Federal Support = Yes
- Henderikx Freitas, F. *Space-time variability of bio-optical properties in the Southern California Bight*. (2015). Dept of Geography, University of California Santa Barbara,. Acknowledgement of Federal Support = Yes
- Emery, N. *Summer Fog and Live Fuel Moisture in Coastal Californian Shrubland Ecosystems*. (2016). Department of Ecology, Evolution and Marine Biology, Univers. Acknowledgement of Federal Support = Yes
- Okamoto, D. *The role of fluctuating food supply on recruitment, survival and population dynamics in the sea*. (2014). University of California, Santa Barbara. Acknowledgement of Federal Support = Yes
- Rodriguez, G. E. *Turnover dynamics of the giant kelp, *Macrocystis pyrifera**. (2014). University of California, Santa Barbara. Acknowledgement of Federal Support = Yes

## Websites

- SBC LTER Website

<http://sbc.lternet.edu>

Project website for the SBC LTER

## Participants/Organizations

### What individuals have worked on the project?

Name	Most Senior Project Role	Nearest Person Month Worked
<a href="#">Reed, Daniel</a>	PD/PI	3
<a href="#">Holbrook, Sally</a>	Co PD/PI	1
<a href="#">Melack, John</a>	Co PD/PI	1
<a href="#">Miller, Robert</a>	Co PD/PI	1
<a href="#">Siegel, David</a>	Co PD/PI	1

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
<a href="#">Alberto, Filipe</a>	Co-Investigator	1
<a href="#">Benitez-Nelson, Claudia</a>	Co-Investigator	1
<a href="#">Blanchette, Carol</a>	Co-Investigator	1
<a href="#">Brzezinski, Mark</a>	Co-Investigator	1
<a href="#">Byrnes, Jarrett</a>	Co-Investigator	1
<a href="#">Carlson, Craig</a>	Co-Investigator	1
<a href="#">Cavanaugh, Kyle</a>	Co-Investigator	1
<a href="#">Cooper, Scott</a>	Co-Investigator	1
<a href="#">D'Antonio, Carla</a>	Co-Investigator	1
<a href="#">Dugan, Jenifer</a>	Co-Investigator	4
<a href="#">Fewings, Melanie</a>	Co-Investigator	1
<a href="#">Guerrini, Anita</a>	Co-Investigator	1
<a href="#">Hofmann, Gretchen</a>	Co-Investigator	1
<a href="#">Lenihan, Hunter</a>	Co-Investigator	1
<a href="#">Lopez-Carr, David</a>	Co-Investigator	1
<a href="#">MacIntyre, Sally</a>	Co-Investigator	1
<a href="#">McPhee-Shaw, Erika</a>	Co-Investigator	1
<a href="#">McWilliams, Jim</a>	Co-Investigator	1
<a href="#">Ohlmann, Carter</a>	Co-Investigator	1
<a href="#">Page, Henry</a>	Co-Investigator	1
<a href="#">Passow, Uta</a>	Co-Investigator	1
<a href="#">Raimondi, Pete</a>	Co-Investigator	1
<a href="#">Rassweiler, Andrew</a>	Co-Investigator	1
<a href="#">Roberts, Dar</a>	Co-Investigator	1
<a href="#">Romero, Leonel</a>	Co-Investigator	2
<a href="#">Schimel, Josh</a>	Co-Investigator	1
<a href="#">Schmitt, Russ</a>	Co-Investigator	1
<a href="#">Schroeter, Steve</a>	Co-Investigator	1
<a href="#">Simms, Alexander</a>	Co-Investigator	1
<a href="#">Tague, Naomi</a>	Co-Investigator	1
<a href="#">Washburn, Libe</a>	Co-Investigator	2
<a href="#">Whitmer, Ali</a>	Co-Investigator	1
<a href="#">Wright, Bill</a>	Co-Investigator	1
<a href="#">Thunell, Robert</a>	Faculty	1
<a href="#">Kay, Matt</a>	Community College Faculty	1
<a href="#">Paddack, Michele</a>	Community College Faculty	1
<a href="#">Aguilera, Rosana</a>	Postdoctoral (scholar, fellow or other postdoctoral position)	12

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
<a href="#">Castorani, Max</a>	Postdoctoral (scholar, fellow or other postdoctoral position)	6
<a href="#">Cortes, Alicia</a>	Postdoctoral (scholar, fellow or other postdoctoral position)	6
<a href="#">Ejarque, Ana</a>	Postdoctoral (scholar, fellow or other postdoctoral position)	6
<a href="#">Goodridge, Blair</a>	Postdoctoral (scholar, fellow or other postdoctoral position)	12
<a href="#">Lamy, Thomas</a>	Postdoctoral (scholar, fellow or other postdoctoral position)	2
<a href="#">Sadro, Steven</a>	Postdoctoral (scholar, fellow or other postdoctoral position)	12
<a href="#">Smith, Jason</a>	Postdoctoral (scholar, fellow or other postdoctoral position)	6
<a href="#">Gotschalk, Chris</a>	Other Professional	2
<a href="#">Hubbard, David</a>	Other Professional	1
<a href="#">Johnson, Cyril</a>	Other Professional	1
<a href="#">Johnson, Michelle</a>	Other Professional	0
<a href="#">Klose, Kristie</a>	Other Professional	12
<a href="#">O'Brien, Margaret</a>	Other Professional	12
<a href="#">Simon, Scott</a>	Other Professional	12
<a href="#">Wiseman, Sheila</a>	Other Professional	12
<a href="#">Bitter, Mark</a>	Technician	1
<a href="#">Doheney, Brandon</a>	Technician	1
<a href="#">Fields, Erik</a>	Technician	3
<a href="#">Guillocheau, Nathalie</a>	Technician	1
<a href="#">Halewood, Elisa</a>	Technician	3
<a href="#">Halewood, Stuart</a>	Technician	4
<a href="#">Harrer, Shannon</a>	Technician	12
<a href="#">Jones, Janet</a>	Technician	3
<a href="#">Madden, Jessica</a>	Technician	3
<a href="#">Meyerhof, Matthew</a>	Technician	12
<a href="#">Nelson, Clint</a>	Technician	12
<a href="#">Opalk, Keri</a>	Technician	2
<a href="#">Romero, Eduardo</a>	Technician	1
<a href="#">Salazar, David</a>	Technician	3
<a href="#">Sampson, Sarah</a>	Technician	1
<a href="#">Stassinis, Erik</a>	Technician	1
<a href="#">Sugano, Cailan</a>	Technician	2
<a href="#">Weaver, Crystal</a>	Technician	0

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
<a href="#">Bennett, Danuta</a>	Staff Scientist (doctoral level)	0
<a href="#">Even, Thomas</a>	Staff Scientist (doctoral level)	1
<a href="#">Nelson, Craig</a>	Staff Scientist (doctoral level)	1
<a href="#">Simons, Rachel</a>	Staff Scientist (doctoral level)	1
<a href="#">Allen, James</a>	Graduate Student (research assistant)	0
<a href="#">Barron, Rebecca</a>	Graduate Student (research assistant)	0
<a href="#">Bell, Tom</a>	Graduate Student (research assistant)	12
<a href="#">Bentz, Michael</a>	Graduate Student (research assistant)	12
<a href="#">Berry, Heather</a>	Graduate Student (research assistant)	12
<a href="#">Catlett, Dylan</a>	Graduate Student (research assistant)	2
<a href="#">Chen, Helen</a>	Graduate Student (research assistant)	12
<a href="#">Chen, Xiaoli</a>	Graduate Student (research assistant)	12
<a href="#">Chen, Mingquan</a>	Graduate Student (research assistant)	12
<a href="#">Dauhajre, Daniel</a>	Graduate Student (research assistant)	12
<a href="#">Ellis, Daniel</a>	Graduate Student (research assistant)	4
<a href="#">Emery, Nate</a>	Graduate Student (research assistant)	6
<a href="#">Emery, Kyle</a>	Graduate Student (research assistant)	6
<a href="#">Hanan, Erin</a>	Graduate Student (research assistant)	9
<a href="#">Hendriks Freitas, Fernanda</a>	Graduate Student (research assistant)	4
<a href="#">Ho Chuen Wong, Simon</a>	Graduate Student (research assistant)	0
<a href="#">Hoshijima, Umi</a>	Graduate Student (research assistant)	12
<a href="#">Huynh, Nicholas</a>	Graduate Student (research assistant)	12
<a href="#">James, Anna</a>	Graduate Student (research assistant)	12
<a href="#">Johnson, Kevin</a>	Graduate Student (research assistant)	4
<a href="#">Jones, Jonathan</a>	Graduate Student (research assistant)	3
<a href="#">Kapsenberg, Lydia</a>	Graduate Student (research assistant)	4
<a href="#">Koenigs, Craig</a>	Graduate Student (research assistant)	12
<a href="#">Lowman, Heili</a>	Graduate Student (research assistant)	1
<a href="#">Ma, Stephanie</a>	Graduate Student (research assistant)	5
<a href="#">Malakhoff, Katrina</a>	Graduate Student (research assistant)	1
<a href="#">Marks, Lindsay</a>	Graduate Student (research assistant)	12
<a href="#">Meerdink, Susan</a>	Graduate Student (research assistant)	6
<a href="#">Okamoto, Daniel</a>	Graduate Student (research assistant)	12
<a href="#">Peters, Joseph</a>	Graduate Student (research assistant)	4
<a href="#">Reynolds, Laura</a>	Graduate Student (research assistant)	12
<a href="#">Rodriguez, Gabriel</a>	Graduate Student (research assistant)	2
<a href="#">Sainz, Jade</a>	Graduate Student (research assistant)	1

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
<a href="#">Schooler, Nicholas</a>	Graduate Student (research assistant)	4
<a href="#">Valdez, Andrea</a>	Graduate Student (research assistant)	2
<a href="#">Viola, Sloane</a>	Graduate Student (research assistant)	4
<a href="#">Wear, Emma</a>	Graduate Student (research assistant)	12
<a href="#">Wetherly, Erin</a>	Graduate Student (research assistant)	4
<a href="#">Windecker, Laura</a>	Graduate Student (research assistant)	3
<a href="#">Wong, Juliet</a>	Graduate Student (research assistant)	3
<a href="#">Yorke, Christie</a>	Graduate Student (research assistant)	4
<a href="#">Abady, David</a>	Undergraduate Student	0
<a href="#">Aguilar, Jessica</a>	Undergraduate Student	1
<a href="#">Amiri, Sarah</a>	Undergraduate Student	1
<a href="#">Amirkiai, Semira</a>	Undergraduate Student	1
<a href="#">Anderson, Kylie</a>	Undergraduate Student	0
<a href="#">Antonio, Cristiana</a>	Undergraduate Student	1
<a href="#">Applewhite, Conner</a>	Undergraduate Student	0
<a href="#">Arcega, Abraham</a>	Undergraduate Student	1
<a href="#">Argiris, Jennay</a>	Undergraduate Student	1
<a href="#">Armantrout, Kim</a>	Undergraduate Student	1
<a href="#">Bachhuber, Silke</a>	Undergraduate Student	2
<a href="#">Bailey, Benjamin</a>	Undergraduate Student	2
<a href="#">Baker, Elijah</a>	Undergraduate Student	1
<a href="#">Baldwin, Daniel</a>	Undergraduate Student	1
<a href="#">Bao, Zhiping</a>	Undergraduate Student	1
<a href="#">Bar, Matthew</a>	Undergraduate Student	0
<a href="#">Barger, Chandler</a>	Undergraduate Student	1
<a href="#">Barlev, Stephanie</a>	Undergraduate Student	0
<a href="#">Bendell, Bradford</a>	Undergraduate Student	0
<a href="#">Beresford, Laura</a>	Undergraduate Student	0
<a href="#">Berkon, Daniel</a>	Undergraduate Student	1
<a href="#">Bicomong, Megan</a>	Undergraduate Student	1
<a href="#">Bognar, Sebastian</a>	Undergraduate Student	1
<a href="#">Bragg, Austin</a>	Undergraduate Student	0
<a href="#">Caldwell, Jordan</a>	Undergraduate Student	1
<a href="#">Callihan, Isolde</a>	Undergraduate Student	0
<a href="#">Capacete, Nicole</a>	Undergraduate Student	1
<a href="#">Casey, Thomas</a>	Undergraduate Student	1
<a href="#">Chang, Caroline</a>	Undergraduate Student	0
<a href="#">Chellew, Joe</a>	Undergraduate Student	1



<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
<a href="#">Claycomb, Noelle</a>	Undergraduate Student	1
<a href="#">Coleman, Alex</a>	Undergraduate Student	1
<a href="#">Corwin, Garrett</a>	Undergraduate Student	0
<a href="#">Cottrell, Kaitlin</a>	Undergraduate Student	1
<a href="#">Crane, Samuel</a>	Undergraduate Student	2
<a href="#">Daleiden, Cheyenne</a>	Undergraduate Student	0
<a href="#">Daleiden, Cheyenne</a>	Undergraduate Student	1
<a href="#">Daniel, Bryn</a>	Undergraduate Student	0
<a href="#">Dao, Michael</a>	Undergraduate Student	0
<a href="#">Darrow, Hailey</a>	Undergraduate Student	1
<a href="#">Dodgen, Rose</a>	Undergraduate Student	2
<a href="#">Drake, Josh</a>	Undergraduate Student	2
<a href="#">Duenas, Daisy</a>	Undergraduate Student	0
<a href="#">Eakin, Pete</a>	Undergraduate Student	1
<a href="#">Eldridge, Michael</a>	Undergraduate Student	1
<a href="#">English, Chance</a>	Undergraduate Student	1
<a href="#">Fallgatter, Ryan</a>	Undergraduate Student	0
<a href="#">Fawaz, Mohamad</a>	Undergraduate Student	2
<a href="#">Fitzgerald, Chad</a>	Undergraduate Student	0
<a href="#">Flaherty, Devyn</a>	Undergraduate Student	0
<a href="#">Flannery, Nicolette</a>	Undergraduate Student	2
<a href="#">Foy, Megan</a>	Undergraduate Student	1
<a href="#">Fozard, Dylan</a>	Undergraduate Student	1
<a href="#">Frank, Nora</a>	Undergraduate Student	1
<a href="#">Frey, Emily</a>	Undergraduate Student	1
<a href="#">Fried, William</a>	Undergraduate Student	1
<a href="#">Fyfe, Caroline</a>	Undergraduate Student	1
<a href="#">Gallagher, Jordan</a>	Undergraduate Student	4
<a href="#">Garcia, Kristina</a>	Undergraduate Student	0
<a href="#">Garcia, Elisa</a>	Undergraduate Student	1
<a href="#">Garibian, Lucy</a>	Undergraduate Student	1
<a href="#">Ggrich, Grant</a>	Undergraduate Student	2
<a href="#">Gibbs, Briana</a>	Undergraduate Student	0
<a href="#">Gomez-Torrero, Fernando</a>	Undergraduate Student	0
<a href="#">Gonzalez, Selena</a>	Undergraduate Student	2
<a href="#">Greene, Aral</a>	Undergraduate Student	1
<a href="#">Grundberg, Brandon</a>	Undergraduate Student	0
<a href="#">Gutierrez, Kali</a>	Undergraduate Student	0

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
<a href="#">Haas, Lauren</a>	Undergraduate Student	1
<a href="#">Halili, Dhanika</a>	Undergraduate Student	1
<a href="#">Harris, Elizabeth</a>	Undergraduate Student	1
<a href="#">Heber, Emily</a>	Undergraduate Student	0
<a href="#">Hernandez, Christian</a>	Undergraduate Student	1
<a href="#">Herrington, Nasim</a>	Undergraduate Student	1
<a href="#">Honeycutt, Randi</a>	Undergraduate Student	1
<a href="#">Honeyman, Christopher</a>	Undergraduate Student	1
<a href="#">Horanic, Emma</a>	Undergraduate Student	2
<a href="#">Howard, Rebecca</a>	Undergraduate Student	0
<a href="#">Howarth, Lincoln</a>	Undergraduate Student	1
<a href="#">Hsu, Jackie</a>	Undergraduate Student	1
<a href="#">Hudson, Bryn</a>	Undergraduate Student	0
<a href="#">Ibarra, Diego</a>	Undergraduate Student	1
<a href="#">Idiarte, Fernando</a>	Undergraduate Student	0
<a href="#">Inga, Joshua</a>	Undergraduate Student	2
<a href="#">Issac, Inji</a>	Undergraduate Student	0
<a href="#">Janerewong, Thummanoon</a>	Undergraduate Student	1
<a href="#">Johnson, Olivia</a>	Undergraduate Student	0
<a href="#">Kahler, Alexandra</a>	Undergraduate Student	2
<a href="#">Kelley, Morgan</a>	Undergraduate Student	1
<a href="#">Kha, Kevin</a>	Undergraduate Student	1
<a href="#">Kim, Vivian</a>	Undergraduate Student	0
<a href="#">Kim, Wesley</a>	Undergraduate Student	2
<a href="#">Kim, Stephanie</a>	Undergraduate Student	1
<a href="#">Knutson, Emma</a>	Undergraduate Student	3
<a href="#">Kubler-Dudgeon, Lila</a>	Undergraduate Student	1
<a href="#">Kudo, Marissa</a>	Undergraduate Student	2
<a href="#">Lane, Aaron</a>	Undergraduate Student	1
<a href="#">Lee, Sunny</a>	Undergraduate Student	2
<a href="#">Lee, Meikko</a>	Undergraduate Student	1
<a href="#">Leflore, Monica</a>	Undergraduate Student	1
<a href="#">Leong, Noelle</a>	Undergraduate Student	1
<a href="#">Leshuk, Elizabeth</a>	Undergraduate Student	1
<a href="#">Lewis, Samuel</a>	Undergraduate Student	2
<a href="#">Loberg, Maria</a>	Undergraduate Student	0
<a href="#">Lomen, Kelsey</a>	Undergraduate Student	1

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
<a href="#">Macarewich, Sophia</a>	Undergraduate Student	0
<a href="#">Macler, Alicia</a>	Undergraduate Student	1
<a href="#">Malone, Shannon</a>	Undergraduate Student	0
<a href="#">Marks, Sean</a>	Undergraduate Student	0
<a href="#">Martin, Trace</a>	Undergraduate Student	0
<a href="#">Matamoros, Joselyne</a>	Undergraduate Student	0
<a href="#">Matousek, Kaitlyn</a>	Undergraduate Student	1
<a href="#">Mayho, Madison</a>	Undergraduate Student	1
<a href="#">Mayorga, Bella</a>	Undergraduate Student	1
<a href="#">McCamy, Colleen</a>	Undergraduate Student	1
<a href="#">McCausland, Maria</a>	Undergraduate Student	2
<a href="#">Mercer, Kristin</a>	Undergraduate Student	1
<a href="#">Moffitt, Emma</a>	Undergraduate Student	1
<a href="#">Montiano, Olivia</a>	Undergraduate Student	0
<a href="#">Morrison, Seamus</a>	Undergraduate Student	1
<a href="#">Munson, Brittany</a>	Undergraduate Student	0
<a href="#">Nelson, Sharlyn</a>	Undergraduate Student	0
<a href="#">O'Hare, Sophie</a>	Undergraduate Student	1
<a href="#">Ochoa, Jacob</a>	Undergraduate Student	1
<a href="#">Overstreet, Taylor</a>	Undergraduate Student	1
<a href="#">Parkinson, Anne-Marie</a>	Undergraduate Student	3
<a href="#">Pasma, Robert</a>	Undergraduate Student	2
<a href="#">Peterson, Ruby</a>	Undergraduate Student	2
<a href="#">Pettijohn, Dyer</a>	Undergraduate Student	1
<a href="#">Quan, Charles</a>	Undergraduate Student	2
<a href="#">Quintanilla, Derek</a>	Undergraduate Student	1
<a href="#">Raskin, Tatiana</a>	Undergraduate Student	2
<a href="#">Rodriguez, Brenda</a>	Undergraduate Student	1
<a href="#">Rogalski, Alexa</a>	Undergraduate Student	3
<a href="#">Rosenblatt, Sara</a>	Undergraduate Student	0
<a href="#">Royal, Keitasha</a>	Undergraduate Student	1
<a href="#">Russel-Halterman, Kimikio</a>	Undergraduate Student	1
<a href="#">Sager, Ria</a>	Undergraduate Student	1
<a href="#">Salinas-Ruiz, Paulina</a>	Undergraduate Student	6
<a href="#">Schock, Ben</a>	Undergraduate Student	1
<a href="#">Shapiro, Emma</a>	Undergraduate Student	1
<a href="#">Shyshka, Emily</a>	Undergraduate Student	0

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
<a href="#">Simon, Dana</a>	Undergraduate Student	0
<a href="#">Sloan, Erinn</a>	Undergraduate Student	0
<a href="#">Smith, Kaitlyn</a>	Undergraduate Student	0
<a href="#">Smithers, David</a>	Undergraduate Student	0
<a href="#">Soglin, Tatiana</a>	Undergraduate Student	1
<a href="#">Starcevich, Ana</a>	Undergraduate Student	1
<a href="#">Ta, Hillary</a>	Undergraduate Student	1
<a href="#">Takata, Lance</a>	Undergraduate Student	1
<a href="#">Thomson, Spencer</a>	Undergraduate Student	1
<a href="#">Truong, Andrew</a>	Undergraduate Student	2
<a href="#">Truong, Anthony</a>	Undergraduate Student	2
<a href="#">Tsuruta, Gabriel</a>	Undergraduate Student	1
<a href="#">Walton, Sebastian</a>	Undergraduate Student	1
<a href="#">Watt, William</a>	Undergraduate Student	1
<a href="#">Weigel, Amber</a>	Undergraduate Student	1
<a href="#">Weinstein, Drew</a>	Undergraduate Student	0
<a href="#">Wellington, Bethelam</a>	Undergraduate Student	1
<a href="#">Weston, Joseph</a>	Undergraduate Student	1
<a href="#">White, Carly</a>	Undergraduate Student	1
<a href="#">White, Alison</a>	Undergraduate Student	2
<a href="#">Wilken, John</a>	Undergraduate Student	1
<a href="#">Wilson, Claire</a>	Undergraduate Student	3
<a href="#">Witt, Kendra</a>	Undergraduate Student	0
<a href="#">Worl, Kelli</a>	Undergraduate Student	0
<a href="#">Wright, Michael</a>	Undergraduate Student	1
<a href="#">Yom, Kimberly</a>	Undergraduate Student	0
<a href="#">Zarate, Daniel</a>	Undergraduate Student	1
<a href="#">Zink, Shayla</a>	Undergraduate Student	1
<a href="#">Holehouse, Erin</a>	High School Student	0
<a href="#">Lebow, Rose</a>	High School Student	0
<a href="#">Magoun, Erin</a>	High School Student	0
<a href="#">Moreno, Luiza</a>	High School Student	0
<a href="#">Perez, Daniel</a>	High School Student	0
<a href="#">Wachtell, Alexis</a>	High School Student	0
<a href="#">Wheaton, Olivia</a>	High School Student	0
<a href="#">Cedeno, Tiffany</a>	Research Experience for Undergraduates (REU) Participant	4
<a href="#">Liedle, John</a>	Research Experience for Undergraduates (REU) Participant	4

Name	Most Senior Project Role	Nearest Person Month Worked
<a href="#">Lowenberg, Lance</a>	Research Experience for Undergraduates (REU) Participant	0
<a href="#">Traxler, Taylor</a>	Research Experience for Undergraduates (REU) Participant	2
<a href="#">Trong, Michael</a>	Research Experience for Undergraduates (REU) Participant	0
<a href="#">Simon, Eleanor</a>	Other	0

### Full details of individuals who have worked on the project:

#### Daniel C Reed

**Email:** reed@lifesci.ucsb.edu

**Most Senior Project Role:** PD/PI

**Nearest Person Month Worked:** 3

**Contribution to the Project:** Leads overall project and directs kelp forest and reef research

**Funding Support:** Private, NSF, UCSB

**International Collaboration:** No

**International Travel:** Yes, Italy - 0 years, 0 months, 8 days

#### Sally J Holbrook

**Email:** holbrook@lifesci.ucsb.edu

**Most Senior Project Role:** Co PD/PI

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Co-investigator

**Funding Support:** UC Santa Barbara

**International Collaboration:** No

**International Travel:** No

#### John M Melack

**Email:** melack@bren.ucsb.edu

**Most Senior Project Role:** Co PD/PI

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Leads the watershed research component (Theme 2) and contributes to research in Theme 3

**Funding Support:** UCSB

**International Collaboration:** No

**International Travel:** No

#### Robert J Miller

**Email:** miller@msi.ucsb.edu

**Most Senior Project Role:** Co PD/PI

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Co - Principal investigator responsible for leading Theme 3B and participates in research affiliated with Theme 1a and 1b

**Funding Support:** NSF, NASA, BOEM

**International Collaboration:** No

**International Travel:** No

#### David A Siegel

**Email:** davey@eri.ucsb.edu

**Most Senior Project Role:** Co PD/PI

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Serves as co investigator. Leads ocean remote sensing studies.

**Funding Support:** NASA, UCSB

**International Collaboration:** No

**International Travel:** No

**Filipe Alberto**

**Email:** albertof@uwm.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** conducted research on population genetics of giant kelp

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Claudia Benitez-Nelson**

**Email:** cbnelson@geol.sc.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** conducted research on harmful algal blooms and biogeochemical cycling and mixing of ocean water

**Funding Support:** University of South Carolina

**International Collaboration:** No

**International Travel:** No

**Carol Blanchette**

**Email:** blanchette@lifesci.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** investigated ocean acidification and coordinated K-12 education activities

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Mark Brzezinski**

**Email:** brzezins@lifesci.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Directed monthly monitoring of water chemistry at the core kelp forests sites. Participated in process studies involving i) the analysis of oceanographic data from SBC cruises ii) the partitioning of net primary production among giant kelp, understory algae and phytoplankton within kelp forests, iii) interactions between the kelp forest and its flow environment and iv) the connectivity between kelp forests and offshore waters and the exchange of materials across the continental shelf.

**Funding Support:** University of California, Santa Barbara

**International Collaboration:** No

**International Travel:** No

**Jarrett Byrnes**

**Email:** Jarrett.Byrnes@umb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Investigated the direct and indirect effects of wave disturbance on kelp forest food web structure via changes in kelp abundance and productivity using long-term data records.

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Craig Carlson**

**Email:** carlson@lifesci.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Investigates the role of microbial mediation of dissolved organic matter in near shore

SBC system. Involved with data synthesis and sample analyses of DOM for SBC researchers.

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Kyle Cavanaugh**

**Email:** kyle@eri.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Conducted studies of spatiotemporal variability of giant kelp biomass and production across multiple scales of observation. Combined satellite and aerial remote sensing with detailed field measurements to scale up local observations to larger areas and longer times.

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Scott Cooper**

**Email:** scooper@lifesci.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Coordinated and oversaw projects dealing with stream ecology, performed field and laboratory work, analyzed data and wrote papers and reports.

**Funding Support:** UCSB

**International Collaboration:** No

**International Travel:** No

**Carla D'Antonio**

**Email:** dantonio@lifesci.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Led evaluations of how plant communities and soil and plant nitrogen respond to high intensity wildfire

**Funding Support:** University of California, Santa Barbara

**International Collaboration:** No

**International Travel:** No

**Jenifer Dugan**

**Email:** j\_dugan@lifesci.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 4

**Contribution to the Project:** Assisted with overall project coordination. Led core measurements and ecological studies of sandy beach ecosystems

**Funding Support:** Sea Grant, NOAA

**International Collaboration:** No

**International Travel:** No

**Melanie Fewings**

**Email:** melanie.fewings@uconn.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** investigated tidal and subtidal-frequency variations of water velocity and temperature on the inner continental shelves of California's Channel Islands and along the mainland in the Santa Barbara Basin, and how those patterns relate to the delivery of larval fish and invertebrates.

**Funding Support:** University of Connecticut

**International Collaboration:** No

**International Travel:** No

**Anita Guerrini**

**Email:** anita.guerrini@oregonstate.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** investigating the role of history in informing ecological restoration in the coastal zone of the Santa Barbara Channel

**Funding Support:** Oregon State University

**International Collaboration:** No

**International Travel:** No

**Gretchen Hofmann**

**Email:** hofmann@lifesci.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Led investigations of the impact on marine organisms of rising atmospheric CO2 concentrations via ocean warming and acidification

**Funding Support:** University of California, Santa Barbara

**International Collaboration:** No

**International Travel:** No

**Hunter Lenihan**

**Email:** lenihan@bren.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Directed and conducted collaborative research in fisheries biology, ecology and management

**Funding Support:** University of California, Santa Barbara

**International Collaboration:** No

**International Travel:** No

**David Lopez-Carr**

**Email:** carr@geog.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Conducted research on human impacts to coastal marine ecosystems, and the adaptations of humans to environmental change in these systems

**Funding Support:** University of California, Santa Barbara

**International Collaboration:** No

**International Travel:** No

**Sally MacIntyre**

**Email:** sally@eri.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** studied inputs of incoming streams and delivery of subsidies to kelp and other organisms in the nearshore environment

**Funding Support:** UCSB

**International Collaboration:** No

**International Travel:** No

**Erika McPhee-Shaw**

**Email:** eshaw@mlml.calstate.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Collaborated on nearshore oceanographic analyses and research

**Funding Support:** University

**International Collaboration:** No

**International Travel:** No

**Jim McWilliams**

**Email:** jcm@atmos.ucla.edu



**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Contributes to studies of coastal circulation at SBC. Ran and applied the Regional Ocean Model System (ROMS) to several SBC LTER sites in the Santa Barbara Channel

**Funding Support:** UCLA

**International Collaboration:** No

**International Travel:** No

**Carter Ohlmann**

**Email:** carter@eri.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** conducted research on nearshore oceanographic circulation and dispersal of particles

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Henry M Page**

**Email:** page@lifesci.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** led research on studies that use stable isotope techniques to explore the sources of organic matter used by kelp forest and stream consumers

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Uta Passow**

**Email:** uta.passow@lifesci.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** conducted measurements of pH, DIC (dissolved inorganic carbon) and TA (total alkalinity) to ground-truth data from simultaneously deployed SeaFet sensors, which measure pH continuously

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Pete Raimondi**

**Email:** raimondi@biology.ucsc.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Co-leads investigations of the metapopulation dynamics of giant kelp, *Macrocystis pyrifera*

**Funding Support:** UCSC

**International Collaboration:** No

**International Travel:** No

**Andrew Rassweiler**

**Email:** rassweil@lifesci.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Investigated long-term dynamics of kelp forest communities

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Dar Roberts**

**Email:** dar@geog.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked: 1**

**Contribution to the Project:** led studies mapping vegetation species and plant functional types, urban composition, pre-fire fuel conditions (fuel types, canopy moisture and fuel loads) and post-fire impacts in the various SBC watersheds that feed in to the coastal zone

**Funding Support:** UCSB

**International Collaboration:** No

**International Travel:** No

**Leonel Romero**

**Email:** leromero@eri.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked: 2**

**Contribution to the Project:** investigates the coastal circulation and mixing of runoff waters using the Regional Ocean Model System (ROMS) coupled to a wave model (e.g. Simulating Waves Nearshore - SWAN) to model surface wave-current interactions and stream water dispersion for several SBC LTER sites

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Josh Schimel**

**Email:** Schimel@lifesci.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked: 1**

**Contribution to the Project:** investigated patterns and mechanisms affecting nutrient transport to the coastal ocean

**Funding Support:** UCSB

**International Collaboration:** No

**International Travel:** No

**Russ Schmitt**

**Email:** Schmitt@lifesci.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked: 1**

**Contribution to the Project:** co-leads investigations of kelp forest community dynamics

**Funding Support:** UCSB

**International Collaboration:** No

**International Travel:** No

**Steve Schroeter**

**Email:** schroete@lifesci.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked: 1**

**Contribution to the Project:** led integration of ongoing collection of long term dataset on coastal invertebrate larval settlement patterns into SBC core monitoring.

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Alexander Simms**

**Email:** asimms@geol.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked: 1**

**Contribution to the Project:** Directed research on the sedimentary record of SBC coastal ecosystems that can be used to decipher the long-term history of environmental changes. He directed the collection and analysis of sediment cores for reconstructing a long-term record of how physical processes affecting the coast have change through time.

**Funding Support:** University of California, Santa Barbara

**International Collaboration:** Yes, Spain

**International Travel:** No

**Naomi Tague**

**Email:** ctague@bren.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** used LTER data on stream flow and stream chemistry as well as remote sensing analysis of terrestrial vegetation and land use to improve the parameterization of coupled eco-hydrologic models

**Funding Support:** UCSB

**International Collaboration:** No

**International Travel:** No

**Libe Washburn**

**Email:** washburn@eri.ucsb.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 2

**Contribution to the Project:** Continued analysis and synthesis of data from SBC-LTER cruises. Advised and helped design new mooring hardware. Assisted and advised on oversight of mooring operations. Coordinated ocean acidification sampling for SBC-LTER. Assisted with project planning. Helped develop SBC-LTER oceanographic research directions

**Funding Support:** UCSB

**International Collaboration:** No

**International Travel:** No

**Ali Whitmer**

**Email:** acw39@georgetown.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Contributes to education and outreach. Co-PI on MSP grant, works with all research and theme groups. Mentors postdoc (Hammond) in demographic research.

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Bill Wright**

**Email:** wwright@chapman.edu

**Most Senior Project Role:** Co-Investigator

**Nearest Person Month Worked:** 1

**Contribution to the Project:** conducted research on predator prey interactions and behavior inside and outside marine reserves

**Funding Support:** Chapman University

**International Collaboration:** No

**International Travel:** No

**Robert C. Thunell**

**Email:** thunell@geol.sc.edu

**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Project Coordinator

**Funding Support:** University Supported

**International Collaboration:** No

**International Travel:** No

**Matt Kay**

**Email:** mattckay@gmail.com

**Most Senior Project Role:** Community College Faculty

**Nearest Person Month Worked:** 1

**Contribution to the Project:** conducted collaborative fisheries research on spiny lobster populations

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Michele Paddack****Email:** mjpaddack@sbcc.edu**Most Senior Project Role:** Community College Faculty**Nearest Person Month Worked:** 1**Contribution to the Project:** ROA participant**Funding Support:** ROA**International Collaboration:** No**International Travel:** No**Rosana Aguilera****Email:** raguilera@bren.ucsb.edu**Most Senior Project Role:** Postdoctoral (scholar, fellow or other postdoctoral position)**Nearest Person Month Worked:** 12**Contribution to the Project:** Hydrological modeling**Funding Support:** NSF**International Collaboration:** No**International Travel:** No**Max Castorani****Email:** max.castorani@ucsb.edu**Most Senior Project Role:** Postdoctoral (scholar, fellow or other postdoctoral position)**Nearest Person Month Worked:** 6**Contribution to the Project:** Investigated long-term dynamics of kelp forest communities**Funding Support:** NSF other**International Collaboration:** No**International Travel:** No**Alicia Cortes****Email:** alicia.cortes@ucsb.edu**Most Senior Project Role:** Postdoctoral (scholar, fellow or other postdoctoral position)**Nearest Person Month Worked:** 6**Contribution to the Project:** Physical oceanographic process studies**Funding Support:** none**International Collaboration:** No**International Travel:** No**Ana Ejarque****Email:** ana.ejarque@nau.edu**Most Senior Project Role:** Postdoctoral (scholar, fellow or other postdoctoral position)**Nearest Person Month Worked:** 6**Contribution to the Project:** Data Collection/Analysis**Funding Support:** None**International Collaboration:** No**International Travel:** No**Blair Goodridge****Email:** bgoodridge@bren.ucsb.edu**Most Senior Project Role:** Postdoctoral (scholar, fellow or other postdoctoral position)**Nearest Person Month Worked:** 12**Contribution to the Project:** Blair collected base flow samples manually and used automated sampling machines to collect storm samples from streams. He processed base flow samples. He measured conductivity and temperature of base flow samples. He prepared base flow samples for analysis of ammonium, nitrate, and phosphate. He prepared base flow, storm, and marine plume samples for analysis of total dissolved nitrogen (TDN) and total dissolved phosphorus (TDP) concentrations. He analyzed ammonium, nitrate, phosphate, total dissolved nitrogen (TDN), and total dissolved phosphorus (TDP) concentrations in base flow, storm, and marine plume samples. He analyzed total suspended solids (TSS) in storm samples. He downloaded data from in situ dataloggers and rain gauges. He surveyed the studied streams and measured discharge of them. He maintained field equipment including in situ dataloggers, rain gauges, and automated sampling machines. He interviewed, hired, trained, and supervised

undergraduate student workers. He edited and updated the field and laboratory Standard Operating Procedures (SOPs). He edited and updated the Chemical Hygiene Plan and MSDS binders for the laboratory. He typed up and processed field and laboratory data. He analyzed field and laboratory data using Matlab. He maintained cleanliness and organization of the laboratory, field room, and storage areas.

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Thomas Lamy**

**Email:** thomas.lamy27@gmail.com

**Most Senior Project Role:** Postdoctoral (scholar, fellow or other postdoctoral position)

**Nearest Person Month Worked:** 2

**Contribution to the Project:** Reef data analysis, research mentor

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Steven Sadro**

**Email:** sadro@lifesci.ucsb.edu

**Most Senior Project Role:** Postdoctoral (scholar, fellow or other postdoctoral position)

**Nearest Person Month Worked:** 12

**Contribution to the Project:** Analyzed stream physical-chemical data and assisted with paper development.

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Jason Smith**

**Email:** jsmith@ucsb.edu

**Most Senior Project Role:** Postdoctoral (scholar, fellow or other postdoctoral position)

**Nearest Person Month Worked:** 6

**Contribution to the Project:** Nitrogen cycling in nearshore sediments

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Chris Gotschalk**

**Email:** gots@lifesci.ucsb.edu

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 2

**Contribution to the Project:** assisted with development of SBC's autonomous glider program, which included hands on experience in programming missions, trouble shooting equipment failures and developing methods of methods of processing and analyzing sensor data

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**David Hubbard**

**Email:** hubbard@lifesci.ucsb.edu

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 1

**Contribution to the Project:** assisted with sandy beach core monitoring

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Cyril Johnson**

**Email:** cjohnson@msi.ucsb.edu

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Assisted with design and fabrication of mooring hardware  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Michelle Johnson**

**Email:** mjohnson@msi.ucsb.edu  
**Most Senior Project Role:** Other Professional  
**Nearest Person Month Worked:** 0

**Contribution to the Project:** Collaborated in the planning and delivery of professional development for teachers, as well as in-classroom support for teachers for the SBC and MSP projects.

**Funding Support:** NSF  
**International Collaboration:** No  
**International Travel:** No

**Kristie Klose**

**Email:** kristieaklose@fs.fed.us  
**Most Senior Project Role:** Other Professional  
**Nearest Person Month Worked:** 12

**Contribution to the Project:** Worked on papers associated with algal data.

**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Margaret O'Brien**

**Email:** mob@msi.ucsb.edu  
**Most Senior Project Role:** Other Professional  
**Nearest Person Month Worked:** 12

**Contribution to the Project:** serves as information manager for project

**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Scott Simon**

**Email:** simon@msi.ucsb.edu  
**Most Senior Project Role:** Other Professional  
**Nearest Person Month Worked:** 12

**Contribution to the Project:** Led the LTER schoolyard and PD programs at SBC.

**Funding Support:** NSF  
**International Collaboration:** No  
**International Travel:** No

**Sheila Wiseman**

**Email:** wiseman9@cox.net  
**Most Senior Project Role:** Other Professional  
**Nearest Person Month Worked:** 12

**Contribution to the Project:** Managed laboratory, assisted with field work, processed stream invertebrate samples, invertebrate gut analyses, entered and analyzed stream invertebrate and leaf litter data.

**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Mark Bitter**

**Email:** mcbitter@umail.ucsb.edu  
**Most Senior Project Role:** Technician  
**Nearest Person Month Worked:** 1

**Contribution to the Project:** Ocean acidification studies

**Funding Support:** UCSB  
**International Collaboration:** No

**International Travel:** No

**Brandon Doheney**

**Email:** bdoheny13@gmail.com

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Kelp forest data collection and surveys

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Erik Fields**

**Email:** fields@eri.ucsb.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 3

**Contribution to the Project:** Contributed to oceanographic remote sensing research

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Nathalie Guillocheau**

**Email:** nathalie@eri.ucsb.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 1

**Contribution to the Project:** conducted HPLC analyses for oceanographic research

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Elisa Halewood**

**Email:** elisa.wallner@lifesci.ucsb.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 3

**Contribution to the Project:** Served as laboratory manager and conducts DOM analyses. She has analyzed several large data sets for the SBC including the inshore monthly Time Series as well as experimental data sets from SBC researchers. She serves as the point of contact for data management for SBC related projects on microbial oceanography including DOM.

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Stuart Halewood**

**Email:** halewood@eri.ucsb.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 4

**Contribution to the Project:** assisted with development of SBC's autonomous glider program, which included hands on experience in programming missions, trouble shooting equipment failures and developing methods of methods of processing and analyzing sensor data

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Shannon Harrer**

**Email:** harrer@msi.ucsb.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 12

**Contribution to the Project:** Conduct field activities, supervise undergraduate interns and lead data management, quality control analysis and synthesis for kelp forests

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Janet Jones**

**Email:** ja\_jones@lifesci.ucsb.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 3

**Contribution to the Project:** Data Collection/Analysis

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Jessica Madden**

**Email:** jessicamadden831@gmail.com

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 3

**Contribution to the Project:** Assisted with field research

**Funding Support:** BOEM

**International Collaboration:** No

**International Travel:** No

**Matthew Meyerhof**

**Email:** mmeyerhof@bren.ucsb.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 12

**Contribution to the Project:** Collected base flow samples manually and used automated sampling machines to collect storm samples from streams. He processed base flow samples. He measured conductivity and temperature of base flow samples. He prepared base flow samples for analysis of ammonium, nitrate, and phosphate. He prepared base flow, storm, and marine plume samples for analysis of total dissolved nitrogen (TDN) and total dissolved phosphorus (TDP) concentrations. He analyzed ammonium, nitrate, phosphate, total dissolved nitrogen (TDN), and total dissolved phosphorus (TDP) concentrations in base flow, storm, and marine plume samples. He analyzed total suspended solids (TSS) in storm samples. He downloaded data from in situ dataloggers and rain gauges. He surveyed the studied streams and measured discharge of them. He maintained field equipment including in situ dataloggers, rain gauges, and automated sampling machines. He interviewed, hired, trained, and supervised undergraduate student workers. He edited and updated the field and laboratory Standard Operating Procedures (SOPs). He edited and updated the Chemical Hygiene Plan and MSDS binders for the laboratory. He typed up and processed field and laboratory data. He analyzed field and laboratory data using Matlab. He maintained cleanliness and organization of the laboratory, field room, and storage areas.

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Clint Nelson**

**Email:** c\_nelson@lifesci.ucsb.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 12

**Contribution to the Project:** Lead SBC Field research activities

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Keri Opalk**

**Email:** kerilynno@gmail.com

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 2

**Contribution to the Project:** Phytoplankton and Carbon Cycling Sampling and Analysis

**Funding Support:** none

**International Collaboration:** No



**International Travel:** No

**Eduardo Romero**

**Email:** romero@msi.ucsb.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Assisted in coordinating field sampling. Assisted with preparation of instruments for field deployments. Participated in SCUBA diving to deploy instruments. Learned to operate research launch for mooring operations and other field sampling. Assisted with instrument preparations and calibration.

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**David Salazar**

**Email:** Salazar@msi.ucsb.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 3

**Contribution to the Project:** Coordinated field sampling. Oversaw preparation of instruments for field deployments and oversaw instrument downloading from instruments and uploading to data base. Operated research launch for mooring deployments and other field sampling. Kept project records, and oversaw instrument calibrations, and arranged instrument servicing.

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Sarah Sampson**

**Email:** srsampson@ucsb.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Kelp forest data collection and surveys

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Erik Stassinis**

**Email:** eriks@eri.ucsb.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 1

**Contribution to the Project:** assisted with SBC's autonomous glider program, which included hands on experience in programming missions, trouble shooting equipment failures and developing methods of methods of processing and analyzing sensor data

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Cailan Sugano**

**Email:** cailan.sugano@lifesci.ucsb.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 2

**Contribution to the Project:** Maintains ocean Ph sensors

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Crystal Weaver**

**Email:** crissieo@sbcglobal.net

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Assists with core monitoring of sandy beaches

**Funding Support:** Sea Grant  
**International Collaboration:** No  
**International Travel:** No

**Danuta Bennett**

**Email:** bennett@lifesci.ucsb.edu

**Most Senior Project Role:** Staff Scientist (doctoral level)

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Processed algal samples, entered algal data, analyzed algal and invertebrate gut data.

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Thomas Even**

**Email:** even@lifesci.ucsb.edu

**Most Senior Project Role:** Staff Scientist (doctoral level)

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Assisted with manuscript production

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Craig Nelson**

**Email:** cr\_nelson@lifesci.ucsb.edu

**Most Senior Project Role:** Staff Scientist (doctoral level)

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Prepared and analyzed microbial samples. Entered and analyzed microbial data.

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Rachel Simons**

**Email:** simons@eri.ucsb.edu

**Most Senior Project Role:** Staff Scientist (doctoral level)

**Nearest Person Month Worked:** 1

**Contribution to the Project:** investigated larval transport and population connectivity in the Southern California Bight, which includes the Santa Barbara Channel, using a three-dimensional physical-biological model.

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**James Allen**

**Email:** jgallen@eri.ucsb.edu

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Data Collection/Analysis

**Funding Support:** UCSB

**International Collaboration:** No

**International Travel:** No

**Rebecca Barron**

**Email:** rebecca@eri.ucsb.edu

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked:** 0

**Contribution to the Project:** investigated inherent optical properties (IOP) in the Santa Barbara Channel and factors controlling IOP variability

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Tom Bell**

**Email:** thomas.bell@lifesci.ucsb.edu

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked:** 12

**Contribution to the Project:** Investigates biomass dynamics in kelp forests

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Michael Bentz**

**Email:** jmichaelbentz@gmail.com

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked:** 12

**Contribution to the Project:** Data Collection/Analysis

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Heather Berry**

**Email:** heather.berry@geog.ucsb.edu

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked:** 12

**Contribution to the Project:** Investigated responses of watershed hydrology to land use change

**Funding Support:** NSF, GRFP Fellowship, teaching assistant

**International Collaboration:** No

**International Travel:** No

**Dylan Catlett**

**Email:** dcat4444@gmail.com

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked:** 2

**Contribution to the Project:** Studies of phytoplankton optics and genomics

**Funding Support:** NASA, MBON

**International Collaboration:** No

**International Travel:** No

**Helen Chen**

**Email:** hc10024@gmail.com

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked:** 12

**Contribution to the Project:** Data Collection/Analysis

**Funding Support:** UCSB

**International Collaboration:** No

**International Travel:** No

**Xiaoli Chen**

**Email:** xiaoli\_chen@umail.ucsb.edu

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked:** 12

**Contribution to the Project:** Data Collection/Analysis

**Funding Support:** ERPI

**International Collaboration:** No

**International Travel:** No

**Mingquan Chen**

**Email:** mingquan@geog.ucsb.edu

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked:** 12

**Contribution to the Project:** Land use and remote sensing

**Funding Support:** NASA  
**International Collaboration:** No  
**International Travel:** No

**Daniel Dauhajre**

**Email:** ddauhajre@atmos.ucla.edu  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 12  
**Contribution to the Project:** Investigated nearshore ocean circulation using ROMs and other models  
**Funding Support:** none  
**International Collaboration:** Yes, japan  
**International Travel:** No

**Daniel Ellis**

**Email:** daniel.ellis@lifesci.ucsb.edu  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 4  
**Contribution to the Project:** worked on ocean circulation and nearshore processes  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Nate Emery**

**Email:** nemery@lifesci.ucsb.edu  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 6  
**Contribution to the Project:** Data Collection/Analysis  
**Funding Support:** NSF  
**International Collaboration:** No  
**International Travel:** No

**Kyle Emery**

**Email:** kyle.emery@lifesci.ucsb.edu  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 6  
**Contribution to the Project:** Sandy Beach ecosystem research  
**Funding Support:** NSF  
**International Collaboration:** No  
**International Travel:** No

**Erin Hanan**

**Email:** erin.hanan@lifesci.ucsb.edu  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 9  
**Contribution to the Project:** led work analyzing fire effects on terrestrial biogeochemistry. This included work linking field measurements with remote sensing and modeling.  
**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Fernanda Hendrikx Freitas**

**Email:** fernanda@eri.ucsb.edu  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 4  
**Contribution to the Project:** Conducted research on ocean optical properties using the autonomous glider  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Simon Ho Chuen Wong****Email:** whcsimon@stanford.edu**Most Senior Project Role:** Graduate Student (research assistant)**Nearest Person Month Worked:** 0**Contribution to the Project:** investigated the fate and transport of runoff, including nutrients and pollutants, from two coastal streams that drain into the Santa Barbara Channel. My research includes numerical modeling of coastal streams in an idealized model using a coupled wave-current model, Regional Ocean Model System (ROMS) with Simulating WAVes Nearshore (SWAN).**Funding Support:** none**International Collaboration:** No**International Travel:** No**Umi Hoshijima****Email:** umihiko.hoshijima@lifesci.ucsb.edu**Most Senior Project Role:** Graduate Student (research assistant)**Nearest Person Month Worked:** 12**Contribution to the Project:** Data Collection/Analysis**Funding Support:** None**International Collaboration:** No**International Travel:** No**Nicholas Huynh****Email:** nicholasghuynh@gmail.com**Most Senior Project Role:** Graduate Student (research assistant)**Nearest Person Month Worked:** 12**Contribution to the Project:** Microbial oceanography and carbon cycling**Funding Support:** UCSB**International Collaboration:** No**International Travel:** No**Anna James****Email:** anna.james@lifesci.ucsb.edu**Most Senior Project Role:** Graduate Student (research assistant)**Nearest Person Month Worked:** 12**Contribution to the Project:** investigated the impact of variable pCO<sub>2</sub> on DOM production by Diatoms and DOM utilization by heterotrophic bacterioplankton. She uses samples and data from the SBC to help with interpretation of results.**Funding Support:** NSF**International Collaboration:** No**International Travel:** No**Kevin Johnson****Email:** kevin.johnson@lifesci.ucsb.edu**Most Senior Project Role:** Graduate Student (research assistant)**Nearest Person Month Worked:** 4**Contribution to the Project:** Conducts research on ocean acidification**Funding Support:** none**International Collaboration:** No**International Travel:** No**Jonathan Jones****Email:** jonathan.jones@lifesci.ucsb.edu**Most Senior Project Role:** Graduate Student (research assistant)**Nearest Person Month Worked:** 3**Contribution to the Project:** Data Collection/Analysis**Funding Support:** None**International Collaboration:** No**International Travel:** No

**Lydia Kapsenberg****Email:** lydia.kapsenberg@lifesci.ucsb.edu**Most Senior Project Role:** Graduate Student (research assistant)**Nearest Person Month Worked:** 4**Contribution to the Project:** conducted research on variation in pH in the Santa Barbara Channel and the effects of ocean acidification on marine invertebrates**Funding Support:** none**International Collaboration:** No**International Travel:** No**Craig Koenigs****Email:** craig.koenigs@lifesci.ucsb.edu**Most Senior Project Role:** Graduate Student (research assistant)**Nearest Person Month Worked:** 12**Contribution to the Project:** Data Collection/Analysis**Funding Support:** NSF**International Collaboration:** No**International Travel:** No**Heili Lowman****Email:** heili.lowman@lifesci.ucsb.edu**Most Senior Project Role:** Graduate Student (research assistant)**Nearest Person Month Worked:** 1**Contribution to the Project:** Nitrogen cycling in nearshore sediments**Funding Support:** NSF**International Collaboration:** No**International Travel:** No**Stephanie Ma****Email:** stephanie.ma@lifesci.ucsb.edu**Most Senior Project Role:** Graduate Student (research assistant)**Nearest Person Month Worked:** 5**Contribution to the Project:** Participated in data collection, data entry, sample processing, sample analysis, data analysis for studies of watershed vegetation**Funding Support:** NSF, other**International Collaboration:** No**International Travel:** No**Katrina Malakhoff****Email:** kmalakhoff@gmail.com**Most Senior Project Role:** Graduate Student (research assistant)**Nearest Person Month Worked:** 1**Contribution to the Project:** kelp forest data collection**Funding Support:** none**International Collaboration:** No**International Travel:** No**Lindsay Marks****Email:** lindsay.marks85@gmail.com**Most Senior Project Role:** Graduate Student (research assistant)**Nearest Person Month Worked:** 12**Contribution to the Project:** Investigated population dynamics of the invasive seaweed, *Sargassum horneri*.**Funding Support:** UCSB**International Collaboration:** No**International Travel:** No**Susan Meerdink****Email:** susanmeerdink@geog.ucsb.edu**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked: 6**

**Contribution to the Project:** conducted research to calibrate remote sensing data with vegetation in SBC watersheds

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Daniel Okamoto**

**Email:** okamoto@lifesci.ucsb.edu

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked: 12**

**Contribution to the Project:** Investigated the role of resource availability in structuring Surfperch population dynamics in kelp forests

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Joseph Peters**

**Email:** jpeters@umail.ucsb.edu

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked: 4**

**Contribution to the Project:** impact of consumer-derived nutrients in kelp forest ecosystems and how these nutrients affect kelp production and species interactions.

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Laura Reynolds**

**Email:** lcreynolds15@gmail.com

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked: 12**

**Contribution to the Project:** Assisted with research on the sedimentary record of SBC coastal ecosystems including the collection and analysis of sediment cores for reconstructing a long-term record of how physical processes affecting the coast have change through time.

**Funding Support:** none

**International Collaboration:** Yes, Spain

**International Travel:** No

**Gabriel Rodriguez**

**Email:** gerodriguez@umail.ucsb.edu

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked: 2**

**Contribution to the Project:** Investigated dynamics of primary production, growth and losses of giant kelp individuals

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Jade Sainz**

**Email:** jadesainz@umail.ucsb.edu

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked: 1**

**Contribution to the Project:** Fisheries research

**Funding Support:** UC Mexxus

**International Collaboration:** No

**International Travel:** No

**Nicholas Schooler**

**Email:** schooler@lifesci.ucsb.edu

**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 4  
**Contribution to the Project:** Assists with sandy beach monitoring and investigates biodiversity of sandy beaches  
**Funding Support:** Sea Grant  
**International Collaboration:** No  
**International Travel:** No

**Andrea Valdez**

**Email:** andrea.valdez@lifesci.ucsb.edu  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** Phytoplankton and Carbon Cycling Sampling and Analysis  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Sloane Viola**

**Email:** sloaneviola@gmail.com  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 4  
**Contribution to the Project:** assisted with sandy beach research and sample processing  
**Funding Support:** Sea Grant, BOEM  
**International Collaboration:** Yes, new zealand  
**International Travel:** No

**Emma Wear**

**Email:** emma.wear@lifesci.ucsb.edu  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 12  
**Contribution to the Project:** Investigated the temporal and spatial variability of DOM availability in the SBC and how that impacts bacterioplankton production and diversity as part of a collaborative project. Her research is aided by data and samples from the SBC and Plumes and Blooms projects  
**Funding Support:** NSF, NASA  
**International Collaboration:** No  
**International Travel:** No

**Erin Wetherly**

**Email:** wetherley@geog.ucsb.edu  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 4  
**Contribution to the Project:** Data Collection/Analysis  
**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Laura Windecker**

**Email:** windecker@lifesci.ucsb.edu  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 3  
**Contribution to the Project:** studies of phytoplankton carbon partitioning  
**Funding Support:** Sea Grant  
**International Collaboration:** No  
**International Travel:** No

**Juliet Wong**

**Email:** juliet.wong@lifesci.ucsb.edu  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 3  
**Contribution to the Project:** Data Collection/Analysis for ocean acidification studies



**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Christie Yorke**

**Email:** christie.yorke@lifesci.ucsb.edu  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 4  
**Contribution to the Project:** Conducts research on the role of kelp detritus in nearshore food webs  
**Funding Support:** NSF fellowship  
**International Collaboration:** Yes, new zealand  
**International Travel:** No

**David Abady**

**Email:** david.a.abady@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** sorted samples and participated in field work on sandy beaches  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Jessica Aguilar**

**Email:** jessica\_aguilar@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Sarah Amiri**

**Email:** protectphytoplankton@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Assisted with remote sensing of kelp forests  
**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Semira Amirkiai**

**Email:** semira.amirkiai@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** stream sample processing, data entry, data collection  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Kylie Anderson**

**Email:** kylieandersonn@yahoo.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** sorted samples and participated in field work on sandy beaches  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Cristiana Antonio**

**Email:** cca@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Conner Applewhite**

**Email:** conner.b.apple@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** sLTER/REEF informal science education intern

**Funding Support:** UCSB Coastal Fund

**International Collaboration:** No

**International Travel:** No

**Abraham Arcega**

**Email:** abraham\_m\_arcega@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** Coastal Fund, NOAA BWET

**International Collaboration:** No

**International Travel:** No

**Jennay Argiris**

**Email:** argirisjennay@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** stream sample processing, data entry, data collection

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Kim Armantrout**

**Email:** kim\_armantrout@yahoo.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** Coastal Fund, NOAA BWET

**International Collaboration:** No

**International Travel:** No

**Silke Bachhuber**

**Email:** bachhuber@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 2

**Contribution to the Project:** sLTER/REEF informal science education intern

**Funding Support:** UCSB Coastal Fund

**International Collaboration:** No

**International Travel:** No

**Benjamin Bailey**

**Email:** ben.bailey782@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 2

**Contribution to the Project:** Worked on mooring hardware. Assisted with instrument preparation

**Funding Support:** none

**International Collaboration:** No  
**International Travel:** No

**Elijah Baker**

**Email:** ebaker00@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Daniel Baldwin**

**Email:** danielbaldwin@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Zhiping Bao**

**Email:** zbao13@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** sLTER/REEF informal science education intern  
**Funding Support:** UCSB Coastal Fund  
**International Collaboration:** No  
**International Travel:** No

**Matthew Bar**

**Email:** Mbarr0118@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** Data Collection/Analysis  
**Funding Support:** NSF  
**International Collaboration:** No  
**International Travel:** No

**Chandler Barger**

**Email:** chandlernicolebarger@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Stephanie Barlev**

**Email:** stephaniebarlev@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** sorted samples and participated in field work on sandy beaches  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Bradford Bendell**

**Email:** ford bendell@gmail.com

**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** Data collection, processing, and analysis for sandy beach ecosystems  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Laura Beresford**

**Email:** lauraberesford@sbcglobal.net  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** Data collection, processing, and analysis for sandy beach ecosystems  
**Funding Support:** UCSB Coastal Fund  
**International Collaboration:** No  
**International Travel:** No

**Daniel Berkon**

**Email:** danielberkon@aol.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Megan Bicomong**

**Email:** maprilbico@rocketmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Sample processing in lab for sandy beaches  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Sebastian Bognar**

**Email:** sebastian17@comcast.net  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** sample processing; data entry; field assistance  
**Funding Support:** NSF  
**International Collaboration:** No  
**International Travel:** No

**Austin Bragg**

**Email:** austinbragg5195@aol.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** UCSB Coastal fund  
**International Collaboration:** No  
**International Travel:** No

**Jordan Caldwell**

**Email:** jcaldwell2014@yahoo.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Sample processing in lab and field work for sandy beaches  
**Funding Support:** none  
**International Collaboration:** No

**International Travel:** No

**Isolde Callihan**

**Email:** ibcallihan@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** sample processing; data collection; data entry; field assistance

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Nicole Capacete**

**Email:** n\_capacete@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** Coastal Fund, NOAA BWET

**International Collaboration:** No

**International Travel:** No

**Thomas Casey**

**Email:** twcasey@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Caroline Chang**

**Email:** cbc@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Data collection, data analysis

**Funding Support:** S. Calif. Earthquake Center

**International Collaboration:** No

**International Travel:** No

**Joe Chellew**

**Email:** joechellew@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** UCSB Coastal fund

**International Collaboration:** No

**International Travel:** No

**Noelle Claycomb**

**Email:** claycomb.noelle@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Data collection, processing, and analysis for sandy beach ecosystems

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Alex Coleman**

**Email:** alex2018@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked: 1**

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** Coastal Fund, NOAA BWET

**International Collaboration:** No

**International Travel:** No

**Garrett Corwin**

**Email:** garrettcorwin@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked: 0**

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Kaitlin Cottrell**

**Email:** kaitlinmcottrell@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked: 1**

**Contribution to the Project:** sorted samples and participated in field work on sandy beaches

**Funding Support:** Sea Grant, UCSB Coastal Fund

**International Collaboration:** No

**International Travel:** No

**Samuel Crane**

**Email:** enarcmas@hotmail.co.uk

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked: 2**

**Contribution to the Project:** stream sample processing, data entry, data collection

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Cheyenne Daleiden**

**Email:** littlechey.daleiden@yahoo.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked: 0**

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** UCSB Coastal fund

**International Collaboration:** No

**International Travel:** No

**Cheyenne Daleiden**

**Email:** chey.daleiden@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked: 1**

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** Coastal Fund, NOAA BWET

**International Collaboration:** No

**International Travel:** No

**Bryn Daniel**

**Email:** brynsomerset@mac.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked: 0**

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** UCSB Coastal fund

**International Collaboration:** No

**International Travel:** No

**Michael Dao****Email:** michaelledao@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 0**Contribution to the Project:** Volunteer sLTER informal science educator**Funding Support:** None**International Collaboration:** No**International Travel:** No**Hailey Darrow****Email:** hdarrow@umail.ucsb.edu**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** Volunteer sLTER informal science educator**Funding Support:** None**International Collaboration:** No**International Travel:** No**Rose Dodgen****Email:** redodgen@comcast.net**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 2**Contribution to the Project:** sorted samples and participated in field work on sandy beaches**Funding Support:** UCSB Coastal Fund**International Collaboration:** No**International Travel:** No**Josh Drake****Email:** jdrake@umail.ucsb.edu**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 2**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities**Funding Support:** None**International Collaboration:** No**International Travel:** No**Daisy Duenas****Email:** semidaisyy@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 0**Contribution to the Project:** Volunteer sLTER informal science educator**Funding Support:** None**International Collaboration:** No**International Travel:** No**Pete Eakin****Email:** peakin@umail.ucsb.edu**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** stream sample processing, data entry, data collection**Funding Support:** none**International Collaboration:** No**International Travel:** No**Michael Eldridge****Email:** meldridge@umail.ucsb.edu**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** stream sample processing, data entry, data collection

**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Chance English**

**Email:** cje@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** UCSB Coastal fund  
**International Collaboration:** No  
**International Travel:** No

**Ryan Fallgatter**

**Email:** rtfallgatter@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** Stream sample collection and processing  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Mohamad Fawaz**

**Email:** mohamadfawaza@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** Participated in data collection, data entry, sample processing, sample analysis, data analysis for studies of watershed vegetation  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Chad Fitzgerald**

**Email:** fitzchad@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** Volunteer sLTER informal science educator  
**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Devyn Flaherty**

**Email:** devyn.flaherty@yahoo.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** sLTER/REEF informal science education intern  
**Funding Support:** UCSB Coastal Fund  
**International Collaboration:** No  
**International Travel:** No

**Nicolette Flannery**

**Email:** nflannery1993@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** Data collection, processing, and analysis for sandy beach ecosystems  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No



**Megan Foy****Email:** meganfoy@umail.ucsb.edu**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities**Funding Support:** None**International Collaboration:** No**International Travel:** No**Dylan Fozard****Email:** dylfoz@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** Salaried sLTER informal science educator**Funding Support:** UCSB Coastal fund**International Collaboration:** No**International Travel:** No**Nora Frank****Email:** norahawaii18@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** Salaried sLTER informal science educator**Funding Support:** Coastal Fund, NOAA BWET**International Collaboration:** No**International Travel:** No**Emily Frey****Email:** emily8frey@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** Data collection, processing, and analysis for sandy beach ecosystems**Funding Support:** UCSB Coastal Fund**International Collaboration:** No**International Travel:** No**William Fried****Email:** williamfried77@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** Salaried sLTER informal science educator**Funding Support:** Coastal Fund, NOAA BWET**International Collaboration:** No**International Travel:** No**Caroline Fyfe****Email:** carolineecfyfe@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** Salaried sLTER informal science educator**Funding Support:** Coastal Fund, NOAA BWET**International Collaboration:** No**International Travel:** No**Jordan Gallagher****Email:** jordanpgallagher@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 4**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** NSF  
**International Collaboration:** No  
**International Travel:** No

**Kristina Garcia**

**Email:** kristina.g993@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** sLTER/REEF informal science education intern  
**Funding Support:** UCSB Coastal Fund  
**International Collaboration:** No  
**International Travel:** No

**Elisa Garcia**

**Email:** elisa0\_o@hotmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Lucy Garibian**

**Email:** lucine1726@hotmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Assisted with remote sensing of kelp forests  
**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Grant Ggrich**

**Email:** ggrgich@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities and outreach activities  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Briana Gibbs**

**Email:** bree.gibbs18@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** UCSB Coastal fund  
**International Collaboration:** No  
**International Travel:** No

**Fernando Gomez-Torrero**

**Email:** fgomeztorrero@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** sLTER/REEF informal science education intern  
**Funding Support:** UCSB Coastal Fund  
**International Collaboration:** No  
**International Travel:** No

**Selena Gonzalez**

**Email:** selenajg@comcast.net  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** stream sample processing, data entry, data collection  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Aral Greene**

**Email:** aralgreene@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Brandon Grundberg**

**Email:** bgrundberg@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** Worked on new sampling bottle for pH. Assisted with instrument preparation  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Kali Gutierrez**

**Email:** waterpolochica@yahoo.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** sLTER/REEF informal science education intern  
**Funding Support:** UCSB Coastal Fund  
**International Collaboration:** No  
**International Travel:** No

**Lauren Haas**

**Email:** lhaas@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Dhanika Halili**

**Email:** dhanika.halili@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Sample processing in lab for sandy beaches  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Elizabeth Harris**

**Email:** elizabethmharris11@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET

**International Collaboration:** No

**International Travel:** No

**Emily Heber**

**Email:** emily\_k\_heber@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** sLTER/REEF informal science education intern

**Funding Support:** UCSB Coastal Fund

**International Collaboration:** No

**International Travel:** No

**Christian Hernandez**

**Email:** chernandez@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** Coastal Fund, NOAA BWET

**International Collaboration:** No

**International Travel:** No

**Nasim Herrington**

**Email:** nrh@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Sample processing in lab and field work for sandy beaches

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Randi Honeycutt**

**Email:** randihoneycutt@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Christopher Honeyman**

**Email:** chrishoneyman94@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Emma Horanic**

**Email:** ehoranic@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 2

**Contribution to the Project:** stream sample processing, data entry, data collection

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Rebecca Howard**

**Email:** howardrebecca@gmail.com

**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** sLTER/REEF informal science education intern  
**Funding Support:** UCSB Coastal Fund  
**International Collaboration:** No  
**International Travel:** No

**Lincoln Howarth**

**Email:** chowarth@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Sample processing in lab for sandy beaches  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Jackie Hsu**

**Email:** hsu@kenyon.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Sample processing in lab for sandy beaches  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Bryn Hudson**

**Email:** brynhudson8@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** Volunteer sLTER informal science educator  
**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Diego Ibarra**

**Email:** ibarra@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Fernando Idiarte**

**Email:** fernando.idiarte@ago.org  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** data collection, field assistance  
**Funding Support:** NSF  
**International Collaboration:** No  
**International Travel:** No

**Joshua Inga**

**Email:** jinga@ca.rr.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** Worked on mooring hardware. Assisted with instrument preparation  
**Funding Support:** none  
**International Collaboration:** No

**International Travel:** No

**Inji Issac**

**Email:** inji2isaac@hotmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** UCSB Coastal Fund

**International Collaboration:** No

**International Travel:** No

**Thummanoon Janerewong**

**Email:** tjenarewong@uamail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Olivia Johnson**

**Email:** olivjjohnson@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Data collection, processing, and analysis for sandy beach ecosystems

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Alexandra Kahler**

**Email:** amkahler@uamail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 2

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Morgan Kelley**

**Email:** morgankelley@sbcglobal.net

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Kevin Kha**

**Email:** kevinkha@uamail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** UCSB Coastal fund

**International Collaboration:** No

**International Travel:** No

**Vivian Kim**

**Email:** kimviva13@live.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0  
**Contribution to the Project:** sLTER/REEF informal science education intern  
**Funding Support:** UCSB Coastal Fund  
**International Collaboration:** No  
**International Travel:** No

**Wesley Kim**

**Email:** wesleykim@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** Sample processing in lab for sandy beaches and outreach activities  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Stephanie Kim**

**Email:** svk@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities  
**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Emma Knutson**

**Email:** emmaknutson@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 3  
**Contribution to the Project:** REU participant, Engaged in independent research project  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Lila Kubler-Dudgeon**

**Email:** lilakublerdudgeon@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** stream sample processing, data entry, data collection  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Marissa Kudo**

**Email:** marissakudo@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** Data Collection/Analysis  
**Funding Support:** NSF  
**International Collaboration:** No  
**International Travel:** No

**Aaron Lane**

**Email:** Aaronlane412@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities  
**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Sunny Lee****Email:** srosunnyl@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 2**Contribution to the Project:** Data collection, processing, and analysis for sandy beach ecosystems**Funding Support:** none**International Collaboration:** No**International Travel:** No**Meikko Lee****Email:** meikko@umail.ucsb.edu**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** Stream sample processing**Funding Support:** NSF**International Collaboration:** No**International Travel:** No**Monica Leflore****Email:** monica.leflore@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** Salaried sLTER informal science educator**Funding Support:** UCSB Coastal fund**International Collaboration:** No**International Travel:** No**Noelle Leong****Email:** noellekleong@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** Salaried sLTER informal science educator**Funding Support:** Coastal Fund, NOAA BWET**International Collaboration:** No**International Travel:** No**Elizabeth Leshuk****Email:** eleshuk@umail.ucsb.edu**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** Salaried sLTER informal science educator**Funding Support:** Coastal Fund, NOAA BWET**International Collaboration:** No**International Travel:** No**Samuel Lewis****Email:** samuellewis@umail.ucsb.edu**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 2**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities**Funding Support:** None**International Collaboration:** No**International Travel:** No**Maria Loberg****Email:** marialoberg@yahoo.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 0**Contribution to the Project:** sLTER/REEF informal science education intern



**Funding Support:** UCSB Coastal Fund

**International Collaboration:** No

**International Travel:** No

**Kelsey Lomen**

**Email:** kelsey.lomen@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Sample processing in lab for sandy beaches

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Sophia Macarewich**

**Email:** simacarewich@cox.net

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** sLTER/REEF informal science education intern

**Funding Support:** UCSB Coastal Fund

**International Collaboration:** No

**International Travel:** No

**Alicia Macler**

**Email:** acmacler@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Sample processing in lab for sandy beaches

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Shannon Malone**

**Email:** shannonmalone@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Data Collection/Analysis

**Funding Support:** UCSB Coastal Fund

**International Collaboration:** No

**International Travel:** No

**Sean Marks**

**Email:** seanmarks@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Trace Martin**

**Email:** trace.michael@hotmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** sample processing; data entry; sample collection; field assistance

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Joselyne Matamoros**

**Email:** joselynematomoros@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** Volunteer sLTER informal science educator  
**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Kaitlyn Matousek**

**Email:** patidakaitlyn@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities  
**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Madison Mayho**

**Email:** madmayho10@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Bella Mayorga**

**Email:** isabellamayorga97@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Sample processing in lab and field work for sandy beaches  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Colleen McCamy**

**Email:** colleen.rebecca.mc@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities  
**Funding Support:** NSF  
**International Collaboration:** No  
**International Travel:** No

**Maria McCausland**

**Email:** mariamccausland@comcast.net  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities  
**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Kristin Mercer**

**Email:** kristinmercier@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET

**International Collaboration:** No

**International Travel:** No

**Emma Moffitt**

**Email:** emmamoffitt@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Sample processing in lab for sandy beaches

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Olivia Montiano**

**Email:** oliviamontiano@umail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Seamus Morrison**

**Email:** seamusmo@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** Coastal Fund, NOAA BWET

**International Collaboration:** No

**International Travel:** No

**Brittany Munson**

**Email:** Brittany\_fr\_munson@yahoo.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Volunteer sLTER informal science educator

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Sharlyn Nelson**

**Email:** sharlynnelson@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Data collection, processing, and analysis for sandy beach ecosystems

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Sophie O'Hare**

**Email:** s.ohare99@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Jacob Ochoa**

**Email:** jakeochoa97@gmail.com

**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Taylor Overstreet**

**Email:** toverstreet@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Anne-Marie Parkinson**

**Email:** amlparkinson@yahoo.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 3  
**Contribution to the Project:** Participated in data collection, data entry, sample processing, sample analysis, data analysis for studies of watershed vegetation  
**Funding Support:** UCSB  
**International Collaboration:** No  
**International Travel:** No

**Robert Pasma**

**Email:** rasma95@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** Worked on mooring hardware. Assisted with instrument preparation  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Ruby Peterson**

**Email:** rubyepeterson@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** Participated in data collection, data entry, sample processing, sample analysis, data analysis for studies of watershed vegetation  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Dyer Pettijohn**

**Email:** dyer.pettijohn@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Sample processing in lab for sandy beaches  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Charles Quan**

**Email:** xwyvern@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Derek Quintanilla**

**Email:** dquintanilla@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Tatiana Raskin**

**Email:** tar@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities  
**Funding Support:** NSF  
**International Collaboration:** No  
**International Travel:** No

**Brenda Rodriguez**

**Email:** brenda395@ca.rr.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Alexa Rogalski**

**Email:** Alexarogalski2014@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 3  
**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities and K-12 outreach  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Sara Rosenblatt**

**Email:** serosenblatt@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** sLTER/REEF informal science education intern  
**Funding Support:** UCSB Coastal Fund  
**International Collaboration:** No  
**International Travel:** No

**Keitasha Royal**

**Email:** keitasha.royal07@yahoo.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** stream sample processing, data entry, data collection  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Kimikio Russel-Halterman**

**Email:** kimiko@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** UCSB Coastal fund  
**International Collaboration:** No  
**International Travel:** No

**Ria Sager**

**Email:** riasager@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Data collection, processing, and analysis for sandy beach ecosystems  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Paulina Salinas-Ruiz**

**Email:** pausr91@hotmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 6  
**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities.  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Ben Schock**

**Email:** bschock7@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Assisted with remote sensing of kelp forests  
**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Emma Shapiro**

**Email:** eshapiro@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Emily Shyshka**

**Email:** emilyshyshka@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**Dana Simon**

**Email:** snoopfrog555@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** sample processing; data collection  
**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Erinn Sloan**

**Email:** esloan@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Worked on new sampling bottle for pH. Assisted with instrument preparation

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Kaitlyn Smith**

**Email:** kaitlyncsmith11@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Stream sample collection and processing

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**David Smithers**

**Email:** smithers\_david@yahoo.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Volunteer sLTER informal science educator

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Tatiana Soglin**

**Email:** tsoglin@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** Coastal Fund, NOAA BWET

**International Collaboration:** No

**International Travel:** No

**Ana Starcevich**

**Email:** starcevichana@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Sample processing in lab for sandy beaches and outreach

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Hillary Ta**

**Email:** Hillaryta1031@yahoo.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Lance Takata**

**Email:** lancetakata@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No  
**International Travel:** No

**Spencer Thomson**

**Email:** Spencer.skiwknd@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities  
**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Andrew Truong**

**Email:** Truong.andrew.736@yahoo.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities  
**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Anthony Truong**

**Email:** A\_truong@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities  
**Funding Support:** None  
**International Collaboration:** No  
**International Travel:** No

**Gabriel Tsuruta**

**Email:** gtsuruta@sbcglobal.net  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** UCSB Coastal fund  
**International Collaboration:** No  
**International Travel:** No

**Sebastian Walton**

**Email:** sebastianwalton@umail.ucsb.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Sample processing in lab for sandy beaches  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

**William Watt**

**Email:** williamhwatt@aol.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Salaried sLTER informal science educator  
**Funding Support:** Coastal Fund, NOAA BWET  
**International Collaboration:** No



**International Travel:** No

**Amber Weigel**

**Email:** amber.wiegel@yahoo.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** Coastal Fund, NOAA BWET

**International Collaboration:** No

**International Travel:** No

**Drew Weinstein**

**Email:** drewweinstein@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Data collection, processing, and analysis for sandy beach ecosystems

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Bethlehem Wellington**

**Email:** bethlehemwellington@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** Coastal Fund, NOAA BWET

**International Collaboration:** No

**International Travel:** No

**Joseph Weston**

**Email:** joeweston2@yahoo.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** UCSB Coastal fund

**International Collaboration:** No

**International Travel:** No

**Carly White**

**Email:** carlyqwhite@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** UCSB Coastal fund

**International Collaboration:** No

**International Travel:** No

**Alison White**

**Email:** aw24932@yahoo.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 2

**Contribution to the Project:** sample processing; data entry; field assistance

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**John Wilken**

**Email:** johntwilken@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** Coastal Fund, NOAA BWET

**International Collaboration:** No

**International Travel:** No

**Claire Wilson**

**Email:** wilsonclaire4@yahoo.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

**Contribution to the Project:** Participated in data collection, data entry, sample processing, sample analysis, data analysis for studies of watershed vegetation

**Funding Support:** UCSB

**International Collaboration:** No

**International Travel:** No

**Kendra Witt**

**Email:** kwitt@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Volunteer sLTER informal science educator

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Kelli Worl**

**Email:** kworl111@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Data collection, processing, and analysis for sandy beach ecosystems

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Michael Wright**

**Email:** mdwright@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Kimberly Yom**

**Email:** ksyom3@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Stream sample collection and processing

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Daniel Zarate**

**Email:** danielzarate@umail.ucsb.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Shayla Zink**

**Email:** szink8@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Salaried sLTER informal science educator

**Funding Support:** Coastal Fund, NOAA BWET

**International Collaboration:** No

**International Travel:** No

**Erin Holehouse**

**Email:** eholehouse76@gmail.com

**Most Senior Project Role:** High School Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Assisted with kelp forest laboratory and data activities

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Rose Lebow**

**Email:** rlebow144@gmail.com

**Most Senior Project Role:** High School Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Assisted with kelp forest laboratory and data activities

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Erin Magoun**

**Email:** erinmagoun@gmail.com

**Most Senior Project Role:** High School Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Assisted with kelp forest laboratory and data activities

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Luiza Moreno**

**Email:** luizaarm@gmail.com

**Most Senior Project Role:** High School Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Assisted with kelp forest laboratory and data activities

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Daniel Perez**

**Email:** danperezsbsd@gmail.com

**Most Senior Project Role:** High School Student

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Volunteer sLTER informal science educator

**Funding Support:** none

**International Collaboration:** No

**International Travel:** No

**Alexis Wachtell**

**Email:** wachtell@sbcglobal.net

**Most Senior Project Role:** High School Student

**Nearest Person Month Worked: 0**

**Contribution to the Project:** Volunteer sLTER informal science educator

**Funding Support:** None

**International Collaboration:** No

**International Travel:** No

**Olivia Wheaton**

**Email:** wheaton@gmail.com

**Most Senior Project Role:** High School Student

**Nearest Person Month Worked: 0**

**Contribution to the Project:** Scientific illustrations of kelp forest organisms

**Funding Support:** Pinhead Program

**International Collaboration:** No

**International Travel:** No

**Tiffany Cedeno**

**Email:** cedeno\_tiffany@hotmail.com

**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant

**Nearest Person Month Worked: 4**

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** NSF REU

**International Collaboration:** No

**International Travel:** No

**Year of schooling completed:**

**Home Institution:**

**Government fiscal year(s) was this REU participant supported:**

**John Liedle**

**Email:** johnliedle@umail.ucsb.edu

**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant

**Nearest Person Month Worked: 4**

**Contribution to the Project:** Data Collection/Analysis, Assisted with kelp forest laboratory, field and data activities

**Funding Support:** NSF

**International Collaboration:** No

**International Travel:** No

**Year of schooling completed:**

**Home Institution:**

**Government fiscal year(s) was this REU participant supported:**

**Lance Lowenberg**

**Email:** lancelowenberg@umail.ucsb.edu

**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant

**Nearest Person Month Worked: 0**

**Contribution to the Project:** Worked on new sampling bottle for pH. Assisted with instrument preparation

**Funding Support:** NSF REU

**International Collaboration:** No

**International Travel:** No

**Year of schooling completed:**

**Home Institution:**

**Government fiscal year(s) was this REU participant supported:**

**Taylor Traxler**

**Email:** Ttrax4240@yahoo.com

**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant

**Nearest Person Month Worked: 2**

**Contribution to the Project:** Assisted with kelp forest laboratory, field and data activities

**Funding Support:** NSF REU

**International Collaboration:** No  
**International Travel:** No  
**Year of schooling completed:**  
**Home Institution:**  
**Government fiscal year(s) was this REU participant supported:**

**Michael Trong**  
**Email:** michaeltruong994@gmail.com  
**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant

**Nearest Person Month Worked:** 0  
**Contribution to the Project:** Data collection, data analysis  
**Funding Support:** NSF REU

**International Collaboration:** No  
**International Travel:** No  
**Year of schooling completed:**  
**Home Institution:**  
**Government fiscal year(s) was this REU participant supported:**

**Eleanor Simon**  
**Email:** ELSimon02@gmail.com  
**Most Senior Project Role:** Other  
**Nearest Person Month Worked:** 0  
**Contribution to the Project:** Volunteer sLTER informal science educator  
**Funding Support:** none  
**International Collaboration:** No  
**International Travel:** No

## What other organizations have been involved as partners?

Name	Type of Partner Organization	Location
<a href="#">American Assoc. Univ. Women, Tech Trek</a>	Other Nonprofits	Santa Barbara, CA
<a href="#">Arizona State University</a>	Academic Institution	Tempe, Arizona
<a href="#">LTER Math Science Partnership</a>	Academic Institution	Santa Barbara, CA
<a href="#">La Cumbre Junior High School</a>	School or School Systems	Santa Barbara, CA
<a href="#">Monash University</a>	Academic Institution	Melbourne, Australia
<a href="#">Moss Landing Marine Laboratory</a>	Academic Institution	Moss Landing, CA
<a href="#">National Marine Fisheries Service</a>	Other Organizations (foreign or domestic)	California
<a href="#">National Oceanic and Atmospheric Association</a>	Other Organizations (foreign or domestic)	Washington, D.C.
<a href="#">Ocean Education Trust</a>	Other Nonprofits	Kingston, RI
<a href="#">Santa Barbara Channel Keeper</a>	Other Nonprofits	Santa Barbara, CA
<a href="#">Santa Barbara Unified School District (SBusd)</a>	School or School Systems	Santa Barbara, CA
<a href="#">Scripps Institution of Oceanography</a>	Academic Institution	La Jolla, CA
<a href="#">California Dept of Fish and Wildlife</a>	State or Local Government	Sacramento, C
<a href="#">Southern California Coastal Ocean Observing System (SCCOOS)</a>	Other Organizations (foreign or domestic)	California
<a href="#">US Forest Service</a>	Other Organizations (foreign or domestic)	Santa Barbara, CA

<b>Name</b>	<b>Type of Partner Organization</b>	<b>Location</b>
<a href="#">US Geological Survey</a>	Other Organizations (foreign or domestic)	Santa Cruz, CA
<a href="#">Universidad Austral de Chile</a>	Academic Institution	Valdivia, Chile
<a href="#">University of Auckland</a>	Academic Institution	Auckland, New Zealand
<a href="#">University of Barcelona</a>	Academic Institution	Barcelona, Spain
<a href="#">University of California Davis</a>	Academic Institution	Bodega Bay, CA
<a href="#">University of California Los Angeles</a>	Academic Institution	Los Angeles, CA
<a href="#">University of California San Diego</a>	Academic Institution	La Jolla, CA
<a href="#">University of California Santa Cruz</a>	Academic Institution	Santa Cruz, CA
<a href="#">California Sea Grant Extension Program</a>	Academic Institution	La Jolla, CA
<a href="#">University of California, Berkeley</a>	Academic Institution	Berkeley, CA
<a href="#">University of Coimbra</a>	Academic Institution	Coimbra, Portugal
<a href="#">University of Connecticut</a>	Academic Institution	Groton, CT
<a href="#">University of Girona</a>	Academic Institution	Girona, Spain
<a href="#">University of New Mexico</a>	Academic Institution	Albuquerque, NM
<a href="#">University of South Carolina</a>	Academic Institution	Columbia, SC
<a href="#">University of Wisconsin</a>	Academic Institution	Milwaukee, WI
<a href="#">Channel Islands National Marine Sanctuary</a>	Other Organizations (foreign or domestic)	Santa Barbara, CA
<a href="#">Channel Islands National Park</a>	Other Organizations (foreign or domestic)	Ventura, CA
<a href="#">City of Santa Barbara</a>	State or Local Government	Santa Barbara, CA
<a href="#">County of Santa Barbara</a>	State or Local Government	Santa Barbara, CA
<a href="#">Hope School District GATE Program</a>	School or School Systems	Santa Barbara, CA
<a href="#">Kobe University</a>	Academic Institution	Japan

### **Full details of organizations that have been involved as partners:**

#### **American Assoc. Univ. Women, Tech Trek**

**Organization Type:** Other Nonprofits

**Organization Location:** Santa Barbara, CA

**Partner's Contribution to the Project:**

Financial support

Facilities

**More Detail on Partner and Contribution:** Tech Trek is a math/science camp designed to develop interest, excitement and self-confidence in young women who will enter eighth grade in the fall. It features hands-on activities in math, science and related fields. All sleeping, eating, instructional and recreational facilities are located on a university campus where camps are held. Tech Trek is an ongoing SBC Schoolyard partner.

#### **Arizona State University**

**Organization Type:** Academic Institution

**Organization Location:** Tempe, Arizona

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:**

**California Dept of Fish and Wildlife**

**Organization Type:** State or Local Government

**Organization Location:** Sacramento, C

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:**

**California Sea Grant Extension Program**

**Organization Type:** Academic Institution

**Organization Location:** La Jolla, CA

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:** Collaborate on new climate change assessment study for SBC

**Channel Islands National Marine Sanctuary**

**Organization Type:** Other Organizations (foreign or domestic)

**Organization Location:** Santa Barbara, CA

**Partner's Contribution to the Project:**

Facilities

**More Detail on Partner and Contribution:** Collaborated with SBC on oceanographic data collection and education activities

**Channel Islands National Park**

**Organization Type:** Other Organizations (foreign or domestic)

**Organization Location:** Ventura, CA

**Partner's Contribution to the Project:**

Facilities

Collaborative Research

**More Detail on Partner and Contribution:** Shared and collaborated on long term data on kelp forest communities in the Santa Barbara Channel

**City of Santa Barbara**

**Organization Type:** State or Local Government

**Organization Location:** Santa Barbara, CA

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:**

**County of Santa Barbara**

**Organization Type:** State or Local Government

**Organization Location:** Santa Barbara, CA

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:**

**Hope School District GATE Program**

**Organization Type:** School or School Systems

**Organization Location:** Santa Barbara, CA

**Partner's Contribution to the Project:**

Financial support

Facilities

**More Detail on Partner and Contribution:** Collaborates with SBC on K-12 education

**Kobe University**

**Organization Type:** Academic Institution

**Organization Location:** Japan

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:**

**LTET Math Science Partnership**

**Organization Type:** Academic Institution

**Organization Location:** Santa Barbara, CA

**Partner's Contribution to the Project:**

Financial support

Collaborative Research

**More Detail on Partner and Contribution:** LTER Math-Science-Partnership (MSP) The project connects the research and education prowess in the environmental sciences of universities and sites within LTER with teacher professional development in science and mathematics of partner middle schools and high schools. It extends across the nation and involves four LTER research sites, the Shortgrass Steppe, Baltimore Ecosystems Study, Kellogg Biological Station, and Santa Barbara Coastal and their partnering institutions, the LTER Network Office, and a group of 22 K-12 schools and districts that will directly impact over 250 science and mathematics teachers and 70,000 students from diverse backgrounds.

**La Cumbre Junior High School**

**Organization Type:** School or School Systems

**Organization Location:** Santa Barbara, CA

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:** SBC-LTER is collaborating with LCJHS through the NSF funded Math and Science Partnership.

**Monash University**

**Organization Type:** Academic Institution

**Organization Location:** Melbourne, Australia

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:**

**Moss Landing Marine Laboratory**

**Organization Type:** Academic Institution

**Organization Location:** Moss Landing, CA

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:**

**National Marine Fisheries Service**

**Organization Type:** Other Organizations (foreign or domestic)

**Organization Location:** California

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:** Santa Barbara, Long Beach and Santa Cruz, CA

**National Oceanic and Atmospheric Association**

**Organization Type:** Other Organizations (foreign or domestic)

**Organization Location:** Washington, D.C.

**Partner's Contribution to the Project:**

Financial support

**More Detail on Partner and Contribution:**

**Ocean Education Trust**

**Organization Type:** Other Nonprofits

**Organization Location:** Kingston, RI

**Partner's Contribution to the Project:**

In-Kind Support

Facilities

Personnel Exchanges

**More Detail on Partner and Contribution:** NautilusLive! program



**Santa Barbara Channel Keeper****Organization Type:** Other Nonprofits**Organization Location:** Santa Barbara, CA**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:** The Santa Barbara Channel Keeper staff conduct monthly collections along the Ventura River, and we complement their in situ measurements with high quality nutrient chemistry on water samples from local streams and rivers.**Santa Barbara Unified School District (SBUSD)****Organization Type:** School or School Systems**Organization Location:** Santa Barbara, CA**Partner's Contribution to the Project:**

Financial support

Facilities

**More Detail on Partner and Contribution:** Collaborates to conduct Explore the Sea Summer Program for K-12 students**Scripps Institution of Oceanography****Organization Type:** Academic Institution**Organization Location:** La Jolla, CA**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:** Collaborate on new climate change assessment study for SBC**Southern California Coastal Ocean Observing System (SCCOOS)****Organization Type:** Other Organizations (foreign or domestic)**Organization Location:** California**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:** SCCOOS: SBC partners with Scripps Institution of Oceanography, the University of Southern California, and Cal Poly San Luis Obispo as part of the Southern California Coastal Ocean Observing System (SCCOOS). SCCOOS has provided data and instrumentation to the SBC-LTER**US Forest Service****Organization Type:** Other Organizations (foreign or domestic)**Organization Location:** Santa Barbara, CA**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:****US Geological Survey****Organization Type:** Other Organizations (foreign or domestic)**Organization Location:** Santa Cruz, CA**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:** Conducts collaborative research on kelp forest communities and coastal sediment inputs and dynamics**Universidad Austral de Chile****Organization Type:** Academic Institution**Organization Location:** Valdivia, Chile**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:****University of Auckland****Organization Type:** Academic Institution**Organization Location:** Auckland, New Zealand

**Partner's Contribution to the Project:**

In-Kind Support

Facilities

Collaborative Research

**More Detail on Partner and Contribution:**

**University of Barcelona**

**Organization Type:** Academic Institution

**Organization Location:** Barcelona, Spain

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:**

**University of California Davis**

**Organization Type:** Academic Institution

**Organization Location:** Bodega Bay, CA

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:** Collaborate on effects of kelp forests on flow and water column subsidies

**University of California Los Angeles**

**Organization Type:** Academic Institution

**Organization Location:** Los Angeles, CA

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:** Collaborate on modeling studies of nearshore plume and particle dispersal

**University of California San Diego**

**Organization Type:** Academic Institution

**Organization Location:** La Jolla, CA

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:** Collaborate on oceanographic data collection and analyses

**University of California Santa Cruz**

**Organization Type:** Academic Institution

**Organization Location:** Santa Cruz, CA

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:** Collaborate on kelp forest metapopulation research

**University of California, Berkeley**

**Organization Type:** Academic Institution

**Organization Location:** Berkeley, CA

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:**

**University of Coimbra**

**Organization Type:** Academic Institution

**Organization Location:** Coimbra, Portugal

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:**

**University of Connecticut**

**Organization Type:** Academic Institution

**Organization Location:** Groton, CT

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:** collaborates on coastal physical oceanography including observational process studies of wind-, wave-, and tidally-driven circulation, heating and cooling of the shallow continental shelf, and coastal-trapped waves.

**University of Girona**

**Organization Type:** Academic Institution

**Organization Location:** Girona, Spain

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:****University of New Mexico**

**Organization Type:** Academic Institution

**Organization Location:** Albuquerque, NM

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:****University of South Carolina**

**Organization Type:** Academic Institution

**Organization Location:** Columbia, SC

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:** Collaborate to maintain a sediment trap time-series in the Santa Barbara Basin designed to provide data on the composition and flux of particles sinking to the seafloor

**University of Wisconsin**

**Organization Type:** Academic Institution

**Organization Location:** Milwaukee, WI

**Partner's Contribution to the Project:**

Collaborative Research

**More Detail on Partner and Contribution:** collaborates on population genetics and metapopulation analyses of kelp forests

**What other collaborators or contacts have been involved?**

Nothing to report

## Impacts

**What is the impact on the development of the principal discipline(s) of the project?**

Results from SBC research are helping to address the growing need for understanding ecosystem level processes in coastal systems. Of particular significance are our unique time series data and findings pertaining to: (1) controls and fate of primary production, (2) the movement and utilization of different sources and forms of nutrients, (3) environmental drivers of nearshore food webs, and (4) exchange of organic and inorganic materials among ecosystems.

SBC's development of an ongoing time series of canopy biomass for giant kelp in California and Mexico from Landsat satellite imagery has provided an unprecedented opportunity to test ecological theory pertaining to patterns and drivers of population dynamics at unprecedented temporal resolution and spatial and temporal scales. The time series continues to generate considerable interest from the science community and contributed substantively to several collaborations this past year. Investigators Byrnes and Cavanaugh (both former post docs) partnered with ZooInverse to continue to develop a web-based citizen science project (Floating Forests) that uses the efforts of

volunteers to analyze Landsat imagery of giant kelp from across the world. To date, Floating Forests has logged 6695 users who have conducted more than 2.6 million classifications and more than 650,000 images have been analysed. Byrnes also spearheaded the formation of the Kelp Ecosystem Ecology Network (KEEN) to assess the impacts of environmental change on kelp forests globally. This network includes 79 members from > 20 bioregions and six continents who use standardized sampling methods and experimental protocols (based on those developed by SBC LTER) to create an unified open access dataset for assessing past and predicting future changes in kelp forests worldwide.

With funding from NASA, BOEM and NOAA SBC investigators, Miller, Carlson, Iglesias-Rodriguez, Rassweiler, Reed and Siegel, are developing a prototype marine Biodiversity Observation Network (BON) in the Santa Barbara Channel that is intimately linked with SBC LTER. Tracking biodiversity in marine habitats will improve capacity for science-based decision-making intended to protect natural ecosystems and sustain the services that they provide amid increasing threats of coastal development, invasive species and climate change. The concentration and wide array of biodiversity measurements already taking place in the Santa Barbara Channel, particularly by SBC LTER and Channel Islands National Park, make this area an ideal testing ground for this pioneering effort. Additionally, this new project builds strongly on SBC's Information management framework to manage the large amount of biodiversity data generated.

Ongoing analysis of the large volume of data collected during the SBC LTER UNOLS cruises continues to provide new insights into the fate and transport of phytoplankton. These analyses will positively impact the principal discipline of biological oceanography. In particular, modeling efforts to understand the evolution of phytoplankton blooms, including harmful algal blooms, in the coastal ocean will improve as they incorporate effects of frontal processes that lead to subduction of phytoplankton biomass.

SBC partners with other research programs to maintain spatially extensive array of moored sensors is providing spatially comprehensive high frequency data on ocean properties including currents, temperature and pH. This year with help of supplemental funding we added sensors for measuring oxygen and chlorophyll fluorescence, and routine water samples for measuring total alkalinity and total CO<sub>2</sub>.

Additional efforts and cross site collaborations during the past year that have broadened the reach of SBC research include:

- SBC is collaborating with CCE and scientists from the University of South Carolina to maintain a 20+ year sediment trap time series in the Santa Barbara Basin. Data from this novel time series are being used to address a variety of research topics including the transport and fate of harmful algal blooms, and the development of proxies that can be used to reconstruct changes in climate over the geologic past.
- Investigator Cooper is a member of an LTER working group conducting a meta-analysis of nutrient enrichment effects on stream ecosystems and serves on the STREON technical advisory committee, advises NEON personnel on stream ecology issues, and organizes workshops for the NSF Stream Resiliency Research Coordination Network, collectively dealing with the effects of nutrient loading, biodiversity loss, and extreme events on stream ecosystems.
- Investigator Rassweiler and post docs Castorani and Lamy are participating in a LTER cross-site synthesis working group titled "Using the metacommunity concept to synthesize biodiversity patterns across LTER sites".
- Investigator Cooper was the co-organizer and co-editor for recent special issue of Freshwater Science on "The Effects of Fire on Freshwater Ecosystems" (Published December 2015, 17 articles).
- Investigator Guerrini contributed to a symposium on Historical Ecology and Novel Ecosystems at the 2016 ESA meeting and submitted a synthesis working group proposal on developing LTER historical data resources in 2015.
- Investigator Dugan is a member of an LTER working group developing a new synthesis of the ecological responses of soft sediment ecosystems to armoring and coastal squeeze and lead author on a manuscript on this topic.
- SBC investigators co-authored several chapters on different ecosystems including Kelp Forests (Reed), Rocky Intertidal (Blanchette), Sandy Beaches (Dugan), Rivers (Cooper) and Lakes (Melack) in a new Ecosystems of California book edited by H. Mooney and E. Zavaleta published by the University of California Press in 2016.

## **What is the impact on other disciplines?**

The research mission of SBC LTER is very interdisciplinary in scope. As such, our research contributes to a wide range of disciplines including: marine, aquatic and terrestrial ecology, physical, biological and chemical oceanography, hydrology, geology, geography, environmental history, science education and informatics. Investigator Guerrini is working with other LTER sites to analyze and explore the history of LTER programs. The theme of history record-keeping and analysis is likely to become a more important feature of LTER programs as the first generation of LTER researchers move into retirement. Guerrini and colleagues submitted a synthesis working group proposal on that topic to the LTER Communications Office in 2015. Although it was not one of the two (out of 26) proposals selected for funding it received favorable marks and she is continuing to pursue opportunities for this work with her collaborators from SBC, AEF and other LTER sites.

## **What is the impact on the development of human resources?**

Our project provides significant opportunities for scientific training in research at multiple levels. During the past year 121 undergraduate students, 36 graduate students, 9 post doctoral fellows were trained through substantial involvement in SBC research. Additionally, SBC faculty investigators actively incorporate the activities and findings of SBC LTER research into their teaching and curriculum development, thereby extending the project's contributions to the broader student body. The active involvement of large numbers of undergraduate students in SBC research (typically >80 each year) not only provides valuable undergraduate training, but also affords SBC's graduate students and post docs with significant opportunities for mentorship training. For example, each year 20-30 undergraduate students receive academic credit to participate in a structured SBC marine research training program that runs the entire academic year. Students in the program actively participate in the collection, processing and analysis of core data and many develop their own independent research projects. The experience gained from such training has proven to be very important to SBC graduate students and postdoctoral fellows who routinely go on to academic positions where the training legacy from SBC LTER continues. During this reporting period former SBC post doc, Andrew Rassweiler, and former SBC graduate student Sarah Lester began tenure-track assistant professor positions at Florida State University and current post doc Max Castorani submitted a research proposal to NSF OCE-BIO as a lead principal investigator.

Four SBC graduate students participated in Tech Savvy, a program that gives girls in grades six through nine an opportunity to explore STEM education and related careers through hands-on workshops. Two of these workshops were created and hosted by SBC graduate students Heather Frazier, Helen Chen, Fernanda Henderikx-Freitas, and Susan Meerdink, who represented the UCSB Department of Geography's Visibility and Outreach committee. The first workshop "Selfies from Space" introduced girls to Landsat and aerial imagery through a trivia game. The second workshop "Is it getting hot in here? Exploring your climate" featured two experiments. one where the girls learned that melting land-based ice contributes to greater sea-level rise than melting sea ice and one that demonstrated the climate's greenhouse effect using a FLIR camera to measure temperature.

Additional impacts on the development of human resources are achieved through SBC's extensive outreach programs (see Accomplishments), which primarily target K-12 students and teachers. These outreach programs, particularly the REEF, provide large numbers of undergraduate student interns with a solid foundation in marine ecology and training in communicating their knowledge in an educational format. The REEF utilizes SBC graduate students, research staff, and post-docs to train REEF interns, which, in turn, enhances their training as laboratory and field assistants for SBC research. Several SBC investigators mentor middle and high school students in developing and executing science projects and conducting research each year.

The success of SBC's outreach programs has led us to explore new methods for reaching larger audiences. To this end Investigator Blanchette is leading SBC's efforts on a bilingual LTER children's book, *The Golden Forest*, that highlights the links between giant kelp forests and sandy beaches. The text has been finalized and story boards and illustrations for the book are currently in progress. In addition, an iPhone application for sandy beach ecosystems developed with collaborative funding is due to be released in the next few months on iTunes. This new guide will complement the SBC LTER Kelp Forest Field Guide, an interactive field guide that provides information on >150 marine algae, plants, fish and invertebrates that inhabit the unique ecosystem of California nearshore kelp forests.

## **What is the impact on physical resources that form infrastructure?**

NSF funds awarded to SBC are being used to maintain a custom 22' research vessel that was specifically designed for diving and oceanographic research and an autonomous ocean glider that is customized for coastal research. Both items were purchased with NSF funds awarded to SBC. Research groups collaborating with SBC have access to the vessel and glider for their research needs. SBC partners with other research programs (e.g. Southern California Ocean Observing System (SCOOS), Partnership for Interdisciplinary Study of Coastal Oceans (PISCO)) to maintain an extensive array of moored sensors that is providing spatially comprehensive high frequency data on ocean properties including currents, temperature salinity, chlorophyll, oxygen and pH.

## **What is the impact on institutional resources that form infrastructure?**

Nothing to report.

## **What is the impact on information resources that form infrastructure?**

SBC's publicly available data holdings increased by about 10% during the past year. As in the recent past, new datasets often represent data from students or postdoctoral scholars, specifically designed to meet journals' increasingly frequent requirement to post data along with research papers. The number of datasets of this type is now large enough that patterns are becoming evident, and SBC is developing protocols for a consistent approach to naming and describing paper-related datasets which we hope will advance the community's ability to form linkages between papers and their data resources. New time-series are being developed and existing ones adapted. New instrumentation for in situ oxygen measurements is being installed at our ongoing mooring sites which already produce several series of datasets for currents, hydrography and pH, (see data catalog, "Inshore Ocean"). Incorporation of these new data streams will drive a reassessment of current data package design as outlined for our pH data in Rivest, et al (in press). Plans are underway for a new dataset on taxon-specific biomass, applying results from recent work (e.g., package id knb-lter-sbc.99.1). All metadata are available in the XML specification Ecological Metadata Language (EML), with data and metadata uploaded regularly to the LTER Network Information System catalog. SBC's own data catalog is based on this same corpus and organized into sampling collections, which are accessible from the website's research descriptions and sampling sites map. Our local infrastructure provides nightly backup for all data. O'Brien also is co-Investigator of the new Environmental Data Initiative, EDI (NSF #1629233, #1565103) which will extend the LTER approach to data management to other ecosystem-level research endeavors funded by NSF, particularly MSB, LTREB and the Organization of Biological Field Stations (OBFS), and also will facilitate coordinate data curation activities within the LTER Network. As these new responsibilities will detract from her ability to fully serve SBC LTER, we are now recruiting a replacement. O'Brien also continues to work two other NSF funded projects, DataONE (DataNet, ACI) and GeoLink (EarthCube, GEO), specifically in the areas of semantics and data discovery, which highlights the usability of SBC data, and increases the visibility of all LTER data in federated systems.

## **What is the impact on technology transfer?**

Nothing to report.

## **What is the impact on society beyond science and technology?**

SBC investigators actively apply their knowledge of coastal ecosystems to inform, develop and implement changes in local and regional policies. Investigators serve as advisors and committee and board members for a number of local and national groups concerned with conservation and management of natural resources.

Investigators Reed and Page work with the staff of the California Coastal Commission (CCC) on a large multi-dimensional program designed to mitigate for the loss of coastal marine resources caused by the operation of the San Onofre Nuclear Generating Station (SONGS), a coastal power plant located in north San Diego County. The major emphasis in this program is compensation for lost marine resources via wetland and kelp forest restoration. Reed and Page's primary responsibilities are to consult with the CCC and their staff, the employees of the power plant (Southern California Edison), and other resource agencies on ecological issues relating to the design of the mitigation projects and to develop and implement monitoring programs capable of determining whether the biological and physical performance of these projects meet pre-determined standards. Much of the science done on these mitigation projects is very complementary to that done by SBC and there is considerable exchange of information and ideas between the two projects.

As a panel member at the White House Citizen Science Forum on September 30, 2015, Investigator Cavanaugh presented the Floating Forests project, a citizen science-based effort to map giant kelp using satellite imagery. SBC lead investigator Reed and Post Doc Castorani participated in a two-day CICESE workshop that engaged researchers from California and Baja California to discuss the state of ecological and socioeconomic knowledge on the coupled human-natural system of kelp forests across the binational region (California and Mexico). This workshop produced a technical report ("Mexico-California bi-national initiative of kelp forest ecosystems and fisheries") and the participants are working on a shorter review paper to be submitted for peer review. SBC investigators and students are contributing time and expertise to the ongoing NRDA (National Response Damage Assessment) investigation of the impacts of the May 2015 Refugio Oil Spill on the coastal ecosystems of the Santa Barbara Channel. SBC time series data are providing much needed information on a number of coastal ecosystems affected by the oil spill.

SBC investigators and students are collaborating with the Bureau of Ocean Energy Management, National Marine Fisheries Service and the Channel Islands National Marine Sanctuary to assess factors affecting the spread and ecological consequences of two recent and rapidly spreading invasive species in southern California (the brown seaweed *Sargassum horneri* and the colonial bryozoan *Watersipora subtorquata*).

SBC researchers are also engaged in informing policy for local watershed issues. We have developed mutually beneficial, cooperative associations with local and national government agencies and departments, and NGOs. Our intensive sampling of nutrients and particulates during the entire hydrograph for most storms complements the agency data collection, and we cooperatively share data and interpretations. In 2015-16 we performed high quality nutrient chemistry analyses on water samples from local streams and rivers for Santa Barbara Channelkeeper. Investigator Melack chairs UCSB's committee on wetlands that is overseeing restoration of campus wetlands that is being used as mitigation for staff and student housing projects. Investigator Cooper regularly provides advice about stream environmental issues and the monitoring and management of southern California steelhead populations to personnel from the California Department of Fish and Wildlife (DFW), National Marine Fisheries Service (NMFS), U.S. Forest Service (USFS), the cities of Santa Barbara and Goleta, and the Environmental Defense Center and the Audubon Society's Conservation Committee.

Investigators Melack, Page, Dugan and Reed are co-investigators of an ongoing study of climate change vulnerability entitled "Santa Barbara Area Coastal Ecosystem Vulnerability Assessment". The study is funded by NOAA actively engages the cities of Santa Barbara, Goleta and Carpinteria in assessing and evaluating the responses of Santa Barbara County's wetlands, beaches and coastal watersheds to climatic forcing. This study relies largely on SBC core datasets and is fostering collaboration with climate scientists from Scripps Institution of Oceanography and coastal processes scientists from USGS. This study is actively engaging the cities of Santa Barbara, Goleta and Carpinteria in assessment and evaluation of the responses of local coastal ecosystems, including, wetlands, beaches and coastal watersheds to climatic forcing. Workshops on project results for Santa Barbara county wetlands, watersheds and beaches were led by Page, Melack and Dugan respectively in 2015-2016. SBC research has led to a growing recognition of the unique biodiversity, functions and wildlife supported by beaches and the role of kelp and other macroalgal wrack as an ecological resource by local and state agencies. SBC results are contributing to the development of new policies for conservation and management of sandy beach ecosystems worldwide. Investigator Dugan plays an active advisory role with coastal consortiums, state agencies and groups concerned with improving the conservation and management of beach ecosystems, including the California Coastal Commission, California Dept. of Fish and Wildlife, and the Ocean Science Trust. In September 2015 Dugan presented a webinar on Sandy Beach Ecosystems and Oil Spills for the trustees of the 2015 Refugio Oil Spill. In July 2016 Dugan and SBC graduate student N. Schooler provided a webinar and a field training on ecological monitoring approaches for sandy beach ecosystems to the National Park Service.

## **Changes/Problems**

### **Changes in approach and reason for change**

Nothing to report.

### **Actual or Anticipated problems or delays and actions or plans to resolve them**

Nothing to report.

### **Changes that have a significant impact on expenditures**

Nothing to report.

### **Significant changes in use or care of human subjects**

Nothing to report.

### **Significant changes in use or care of vertebrate animals**

Nothing to report.

### **Significant changes in use or care of biohazards**

Nothing to report.