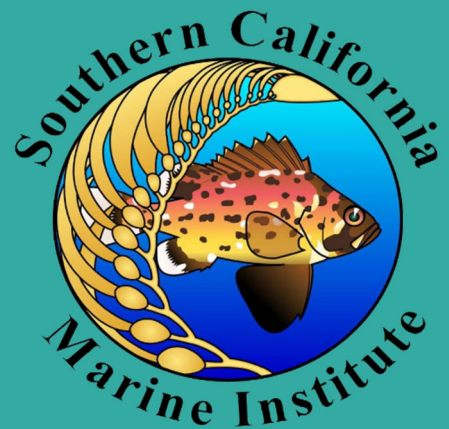


Southern California Marine Institute Annual Report 2020-2021

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Mission

The mission of the Southern California Marine Institute (SCMI) is to foster marine research and education, focusing on urban impacts of the greater Los Angeles region on the coastal ocean. We seek to improve scientific understanding and the development of solutions that will enable coastal waters and watersheds to thrive, adapt and become resilient to ongoing environmental stressors.

About Us

SCMI is a consortium representing a strategic alliance of 23 major universities, colleges, and foundations in Southern California. This includes nine universities from the California State University system representing the Ocean Studies Institute: Channel Islands, Dominguez Hills, Fullerton, Long Beach, Los Angeles, Northridge, Pomona, San Bernardino, and San Marcos. SCMI also comprises the combined marine resources of the University of Southern California, Wrigley Institute for Environmental Studies, University of California Los Angeles, Occidental College, Los Angeles Community College District, The Bay Foundation, and NOAA National Marine Fisheries Service West Coast Region.

The consortium structure of SCMI allows us to engage in specialized marine research that would not otherwise be possible through independent organizations, and to maximize the use of resources as well as collaborate on projects. SCMI is in the heart of the Port of Los Angeles on Terminal Island. Our facility is a full functioning marine research institute equipped with offices, laboratories, classrooms, a seawater filtration system, machine and wood shops, and a warehouse. There is ample docking space for small boats from various universities and organizations, as well as the research vessel R/V Yellowfin.

Director's Message

Recently I was out on the wharf and low and behold all of the boats were out, Dr. Mike Franklin had his class out on the R/V Yellowfin, the dive locker was running full speed and everyone was back at work. The Yellowfin is booked every day. What a great feeling! I know it has been tough, but our staff has kept SCMI safe and sound and they have done the hard work to get our facility back open. Obviously, we continue to remain vigilant and work tirelessly to provide a safe experience for everyone.

Unfortunately, with the good news comes the bad, I'm really sad to report that we have lost our first director Lon McClanahan. I recall sitting with Lon, Larry Allen, John Stephens and Don Newman and shaking hands on the new plan to establish SCMI back in the early 90's. I was also fortunate to get to know Lon really well on trips to Baja with Larry, truly a great guy. He would be happy to see the incredible progress SCMI continues to make. Our support of our partners has really established the institute as a leader in coastal research, restoration and education. Our work with the Bay Foundation has been fundamental in their efforts to restore endangered and protected abalone on our coast. They are also leading the effort to restore subtidal eelgrass. These innovative programs run parallel with SCMI's partnership with the Vantuna Research Group at Occidental College to restore lost reef habitat on the PV Shelf. Recent monitoring of the Palos Verdes Restoration Reef demonstrates not only high abundances and biomass of commercial taxa, but it is also growing kelp! The reef is currently being studied by Occidental College, UCLA, Cal Poly Pomona and CSUN. Welcome back everyone!

Introduction

The Southern California Marine Institute (SCMI) continued to offer support to all our consortium members and fulfill our mission to foster marine research and education this year. SCMI assisted in research collaborations with USC Earth Sciences, CSU Northridge, and Occidental College. Construction on the Palos Verdes Restoration reef completed this year and SCMI staff got a first-row seats to the construction stationed on the rock barge as Marine Mammal Observers. This Fall 2020 and 2021 CSU Marine Biology Semester on Catalina Island was canceled due to the COVID-19 pandemic but, we are hopeful we will be able to offer the Fall 2022 semester safely. Safety has always been SCMI highest priority, and we are thankful for the guidance of our member campuses and institutions to safely provide services during the pandemic. SCMI broadened our collaborations with the marine research community by joining the Californian Cooperative Ecosystem Studies Unit (CA-CESU) in December 2020. SCMI continues to update our facility to better support research and educational activities this included the installation of fiber optic internet connection throughout the facility. 2020-2021 was a difficult year and we applaud our staff and consortium members for their adaptability to the ups and downs of this pandemic. We all embodied our mission to “adapt and become resilient to ongoing environmental stressors.”



What's New?

California Cooperative Ecosystem Studies Membership

The Southern California Marine Institute has joined the Californian Cooperative Ecosystem Studies Unit (CA-CESU) in December 2020. The CA-CESU provide research support to federal agencies with a mission “to provide research, technical assistance and education across the biological, physical, social and cultural sciences to address natural and cultural resource management issues at multiple scales and in an ecosystem context in California and nationally as appropriate.” SCMI joins the CA-CESU’s cooperative network of 12 Federal agencies and 19 public educational institutions in California as a non-government representative. SCMI is excited for this opportunity to build new collaborations with CA-CESU members to fulfil our mission to foster marine research and education.

More information about CA-CESU can be found on their website:

<https://ucanr.edu/sites/CCESU/>.



In Memoriam: Lon McClanahan SCMI's First Director

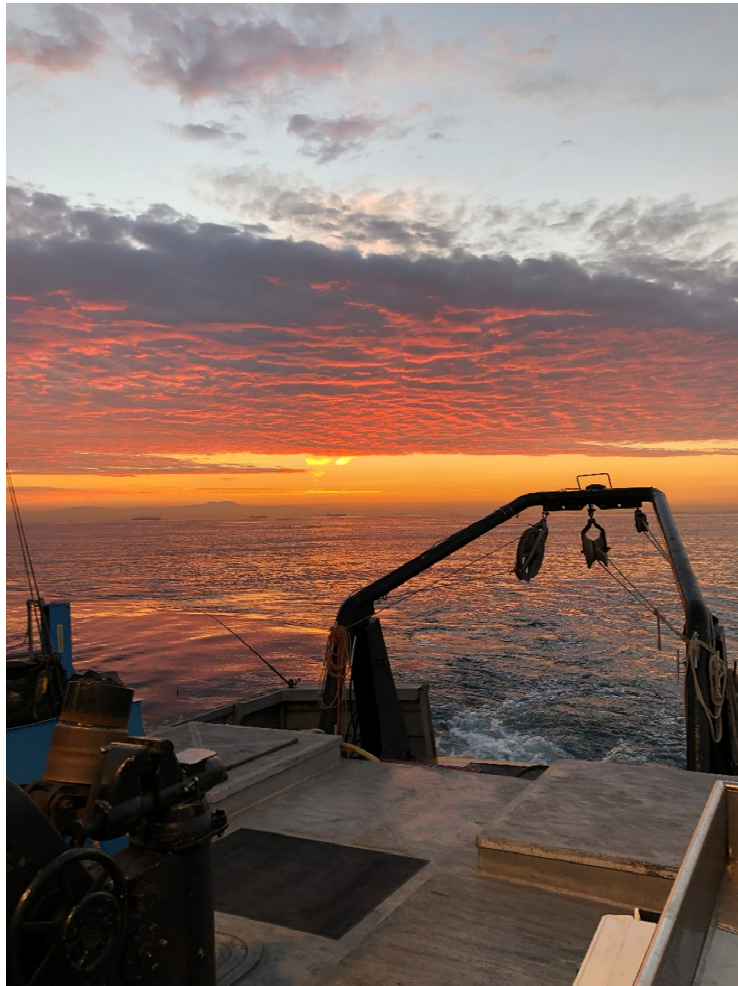


(Dr. Lon McClanahan, January 23, 1937- May 21, 2021)

Lon was instrumental in the creation of SCMI back in 1993 when he was Director of the California State University Ocean Studies Institute. Lon proposed creating a regional laboratory at Fish Harbor in Terminal Island to maximize resources between local universities and colleges. SCMI held its first Board of Directors meeting on November 17, 1994. Lon was SCMI's first Director and continued the post till June 1998. During that time Lon expanded university education and research on the Research Vessels Sea Watch and Yellowfin and expanded SCMI's mission to "helping advance the knowledge needed to provide and protect a healthy ocean, and to strengthen the education of our young people." Lon will be remembered for his incredible contributions to SCMI's formation and the education of 1000's of marine scientist.

COVID-19 Response

SCMI staff continue to work diligently to create a safe environment for our members and continue to provide support safety and remotely if necessary. Our staff follow all the safety procedures for our administrative campus, CSU Long Beach. Masks are required to be worn throughout the facility and all visitors and staff must fill out a COVID-19 symptom questionnaire before arriving at the facility. We developed COVID-19 safety protocols for the facility, vessels, dive locker, and dive and boat safety programs. We added hand sanitizer dispensers throughout the facility and stencils ground markers for students/researcher to line up and social distance while waiting to board their vessel. We applaud the SCMI staff for their fast action and adaptation to this new work environment. Creating and following the COVID-19 Safety protocols allowed our facility to continue to run and provide needed research support for our members. No one in our community has been infected.



Service Goals

Facility Improvements

This year SCMI has worked hard to meet the service goal to provide and grow the facility for our member institutions to carry out their educational and research activities. Safety has been our highest priority for our staff and visiting members. Along with the safety improvements for COVID-19 SCMI has continued to improve the building and facility.

Since the start of SCMI, connecting to the world wide web has been an effort. Something about being on an island, and not enough local infrastructure to support it. Anyone who has used SCMI's internet connection (from ISDN lines, to dial up campus modems, to line-of-sight antennae, and then satellite) has ground their teeth at our spectacularly slow speeds. Now we have joined the 21st century! Recently a fiber optic line became available, and we now have a 500MB connection to the world. This was aided by CSULB IT and Telecommunication departments who were able to get a Covid remote connectivity grant to install a network here at SCMI that is under the CSULB domain, and to install Wi-Fi hotspots throughout the entire complex. We now advise our university cohorts to log into our Wi-Fi via "Eduroam" with their own university credentials. This should have reciprocity with almost all our academic consortium members. There is also a guest Wi-Fi for those without academic logins. As you can imagine, this new connection has made both remote and on-site work so much more efficient at SCMI.

CSULB also acquired for us six new laptops to assist in remote work and improve connectivity. All desk telephones have been replaced with soft phone accounts that can run on any computer, tablet, or smartphone. All our SCMI phone numbers were exchanged for CSULB phone numbers, and we no longer have the expense of so many phone lines. Many thanks to Auralynn Adams, Craig Kleen and Marianne Hata for their help and support making this project possible.

OSI AAUS Research Dive and Boating Program

Dive Operations: We currently have 92 Scientific Divers on our roster. Only 33 divers logged dives, totaling 1120 dives for fiscal 2020/21 . No AAUS Scientific Diver courses were offered due to COVID lockdown. The first 2021 Summer course, normally conducted during June, approved and offered, was canceled – the consensus among faculty was the need for more MOTCs was greater. One AAUS course was offered in August, at the beginning of fiscal 2021/2022 and there were eight attendees (maximum allowable under COVID-19 mitigation protocols) from CSUN, CSULB, CPP, and Occidental colleges. The next planned AAUS course will be January 3 – 15, 2022.



Boat Operations: Motorboat Operator Training Courses (MOTC) normally conducted during Spring Break were canceled due to ongoing COVID restrictions. During Summer, in lieu of the regularly scheduled AAUS course, we conducted four MOTCs for a total of eighteen participants. Cohorts were comprised of candidates from CSULB, CSUF, CSUN, CPP, and UCLA. Due to COVID lockdown no MOTCs were conducted for the California Department of Fish and Wildlife, or the Cabrillo Marine Aquarium. We do not expect CDFW to renew their contract as they have plans to take the training in-house. We have one training session pending this Fall for CMA. The next scheduled MOTCs will be during Spring Break 2022.



Educational Goals

CSU Marine Biology Semester on Catalina Island

The Catalina Semester provides a unique opportunity for CSU students to experience hands-on marine biology and guide them to careers in marine science. The 15-week program is based at the Wrigley Marine Science Center (WMSC), located on Santa Catalina Island, 26 miles from Los Angeles, CA. Unfortunately, the Fall 2020 and 2021 semesters were canceled due to the COVID-19 pandemic. There was a total of 17 students that applied from four different CSUs. The semester was going to be instructed by CSUN professors. Dr. Peter Edmunds was going to instruct Marine Invertebrate Zoology, Dr. Nyssa Silbiger and Dr. Larry Allen were going to instruct Marine Ecology, and Dr. Kerry Nickols was going to instruct Marine Conservation Biology. Despite the dynamic COVID-19 situation SCMI is working with USC Wrigley and the CSUs to develop a safety protocol and layout for the next 2022 Fall Catalina Semester.



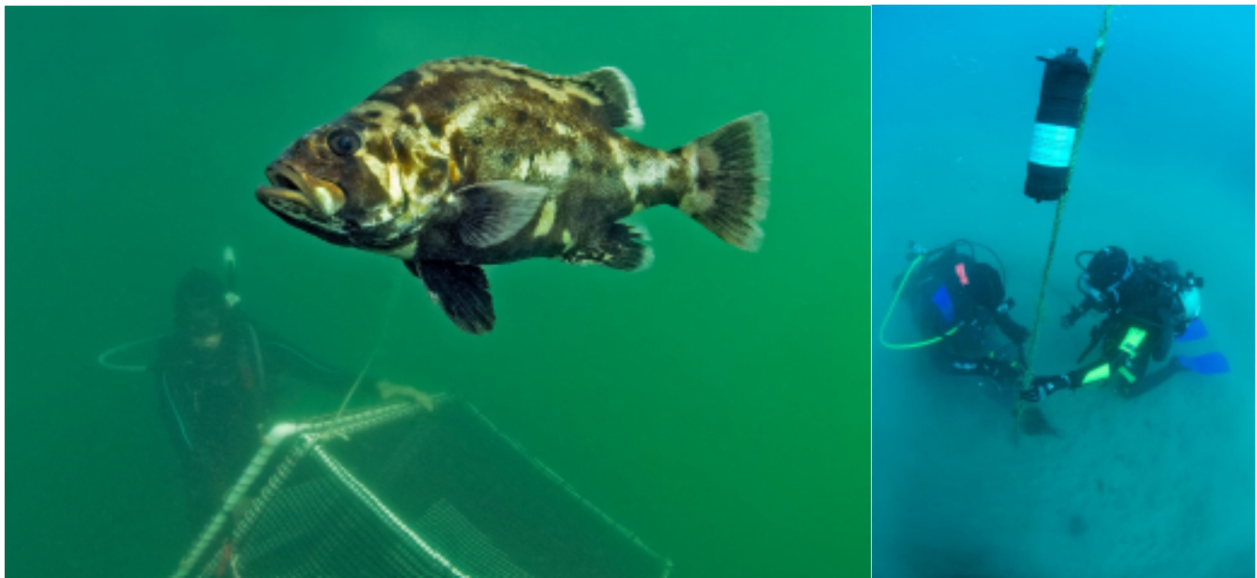
Demonstration R/V Yellowfin Cruises

Our Yellowfin demonstration cruises have continued to be a valuable resource for students to experience hands on marine science. With the help of our Captain, Vessel Engineer, and the on-board Demonstration Techs we can offer classes a unique experience using real-world equipment and techniques such as VanVeen grabs, plankton tows, biological dredges, otter trawls, and handheld CTD. This year we were not able to offer demonstration cruises to college and university students due to the COVID-19 pandemic. During the Fall 2020 semester we could only accommodate three person cruises aboard the R/V Yellowfin which

allowed ongoing research and graduate level research to continue. Professors from CSULB and CSULA were able to film a demonstration cruise that they were able to show their class virtually. Coming into the Fall 2021 semester we have been approved to offer demonstration cruises at 75% capacity with a maximum of 30 students.

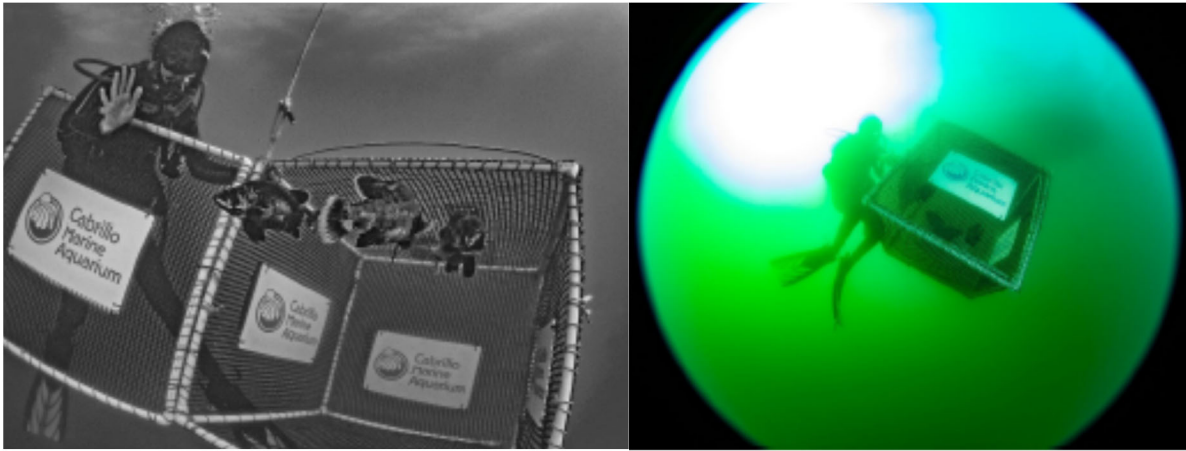
Research Goals

SCMI continues to provide outstanding vessel support, equipment, and expertise to researchers from member and non-member institutions in southern California. This year SCMI has assisted researchers from University of Southern California, Occidental College, California State University, Northridge, Long Beach, and Los Angeles, NOAA, Ports of Los Angeles, and Los Angeles Natural History Museum.



Ocean Studies Institute Research

A recent example of OSI research is a continuing investigation into the life history of juvenile giant sea bass raised in captivity by Dr. Larry Allen, professor of Biology at CSU Northridge in association with the Cabrillo Marine Aquarium. Despite the on-going COVID-19 crisis, Dr. Allen, and his students in cooperation with Dr. Chris of the CSU Long Beach's Shark Lab are inserting acoustic tags into 10, two-year old giants in order to track their movements for up to one year after release. The young fish will be tracked using an array of acoustic receivers near the Los Angeles Harbor's Federal Breakwater.



The Bay Foundation Abalone Lab

The Bay Foundation (TBF) has gladly been an SCMI consortium member for over 6 years. SCMI's facilities and location have allowed TBF to continue culturing and propagating abalone, while simultaneously providing accessibility for kelp forest and eelgrass restoration efforts. They are grateful for the resources and support that SCMI has provided over the years, especially in the wake of the COVID-19 pandemic.

TBF's abalone restoration project has continued to be implemented throughout the pandemic. This project aims to implement a multifaceted approach to restoring and developing abalone populations, and ultimately rocky reef habitats, throughout the Santa Monica Bay and greater coastal waters. TBF maintains two abalone aquaculture facilities at SCMI where they advance research on captive and wild abalone husbandry, spawning, and larval cultivation techniques. Since 2019, TBF and project partners (CDFW, NOAA, Paua Marine Research Group, UC Davis Bodega Bay Marine Lab, and the Aquarium of the Pacific) have outplanted over 3500 federally endangered white abalone to the rocky reefs of Palos Verdes. Additionally, over 2500 red abalone have been outplanted to these same reefs with another 6000+ red and white abalone outplanted to the coastal waters of Point Loma.

Moving forward, TBF and project partners will continue to perform scheduled outplanting and monitoring events, ultimately helping to inform the success of the project.

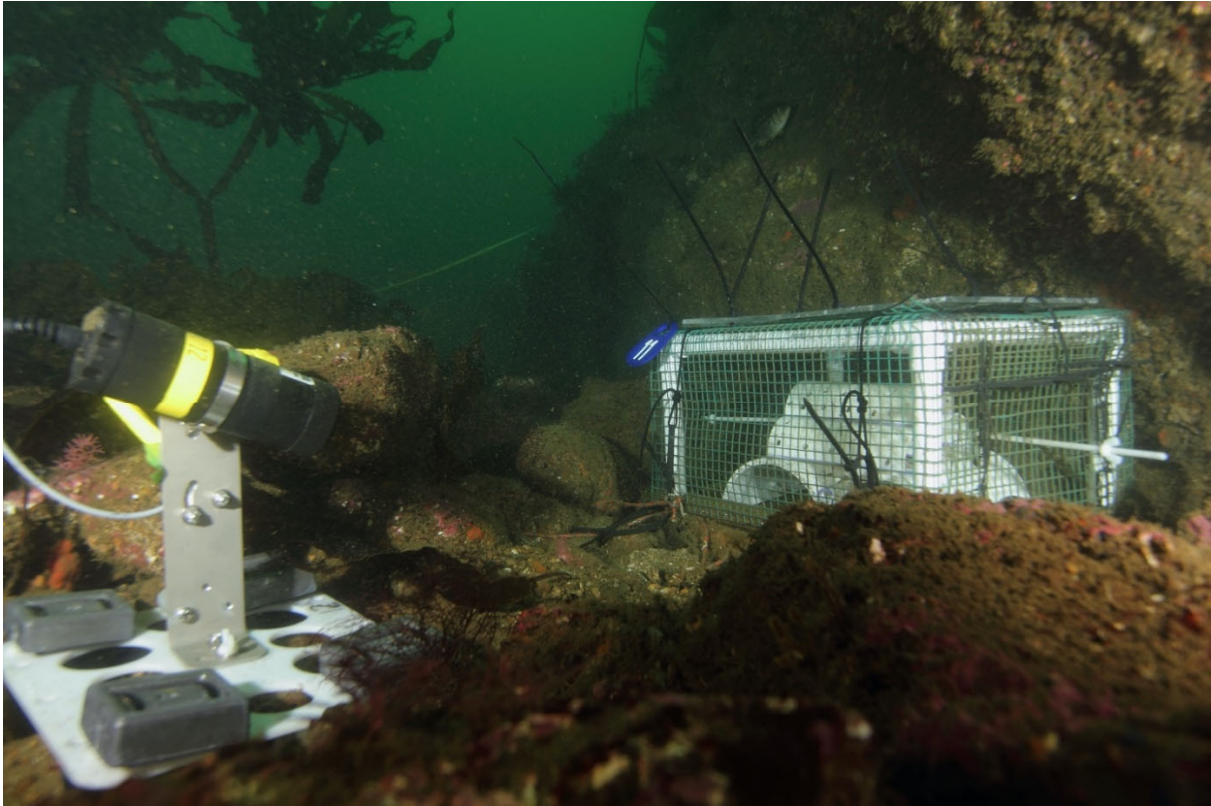


Figure 1: Time Lapse Cameras monitor outplanted abalone and predator movement. Photo Credit: Dave Witting (NOAA)

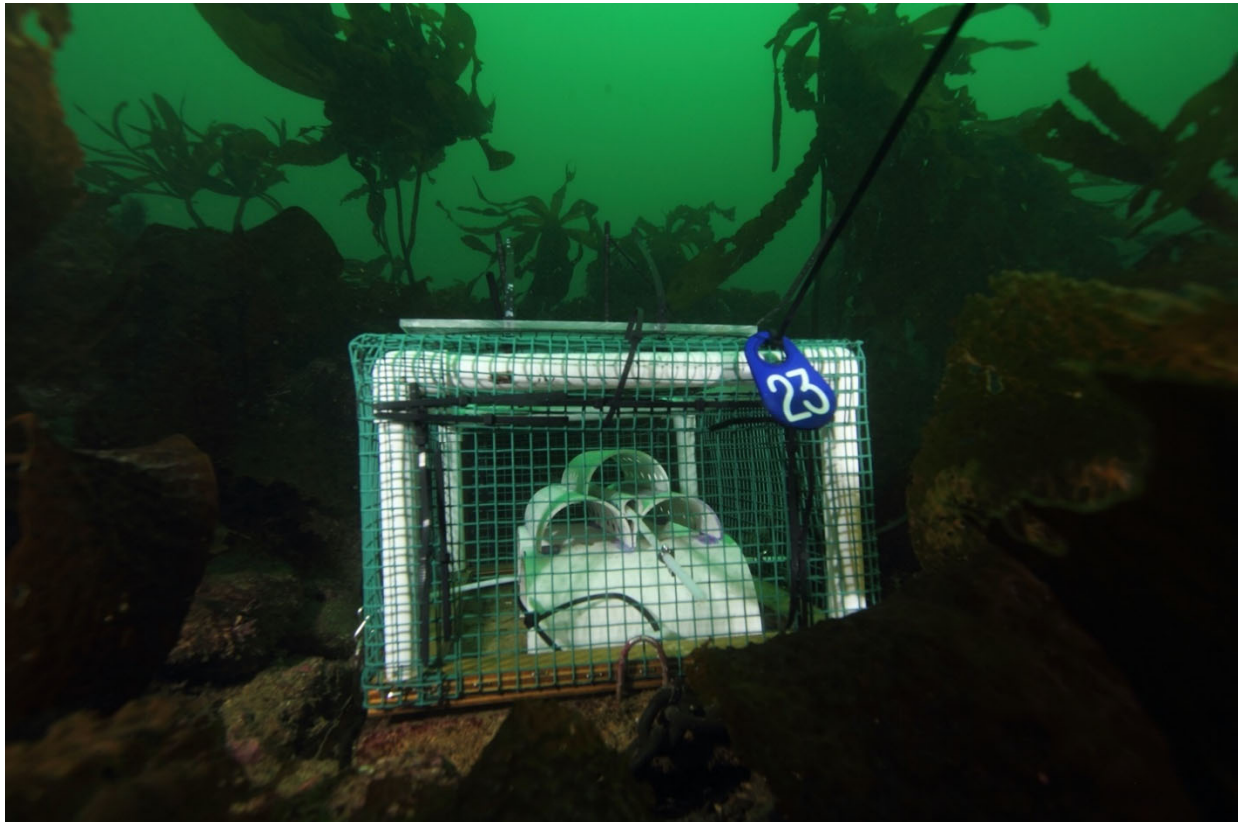
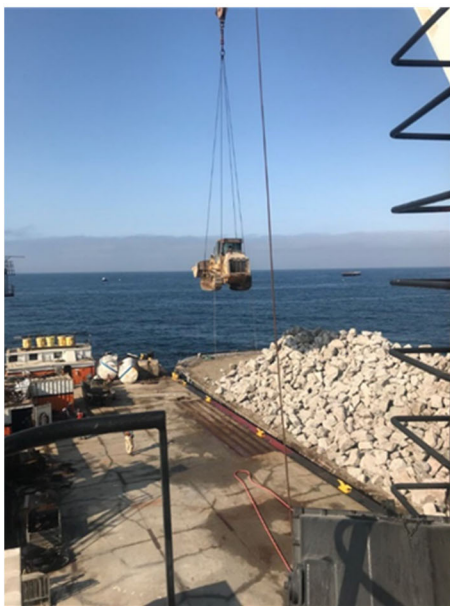
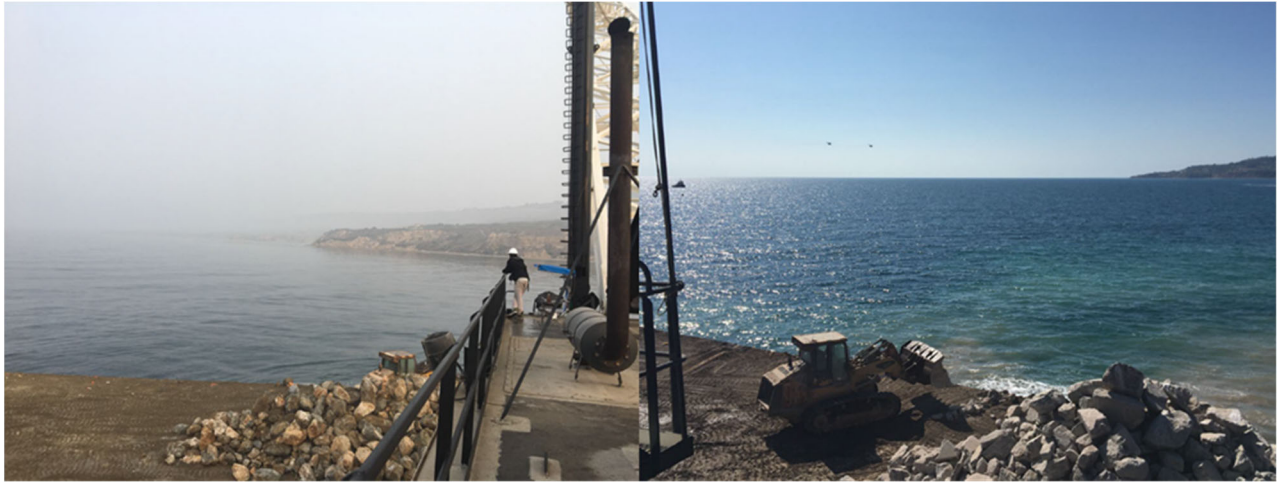


Figure 2: SAFE outplanting modules are used to house white abalone prior to abalone being released into wild. This allows abalone to acclimatize to ocean conditions free from predation. Photo Credit: Dave Witting (NOAA)

Palos Verdes Restoration Reef



Construction on the Palos Verdes restoration reef began in late April 2020. Four of SCMI's staff completed certifications in marine mammal observation and were stationed marine mammal observers on the rock barge during construction. Marine Mammal Observation is yet another skill we can provide our members to support their research endeavors. SCMI staff also conducted weekly water quality monitoring around the reef construction using our handheld CTD and small vessels. It was quite a sight to see the large 250-foot work barge with a crew of 12 operating anchor cables, bulldozers, cranes, and tugboats to construct the 24 modules of the reef. Construction was conducted in two phases over the spring and summer. The last day of construction was September 22, 2020.



SCMI working with the Vantuna Research Group at Occidental College has permitted and is the lease holder for the construction of the first offshore restoration rocky reef in California's history. The peninsula has suffered from historic anthropogenic stressors that have resulted in significant and well documented losses and of rocky-reef and kelp bed habitat. This loss of habitat and associated ecosystem services has reduced socioeconomic benefits to the region. This project will restore critical habitat for important fish and invertebrate fishery species that have been impacted from historical watershed mismanagement. Stretches of the rocky reefs and kelp forests that surround the Palos Verdes Peninsula in Los Angeles County have been impacted from chronic sedimentation that are at least partially the result of human caused landslides and urban runoff over the past 70 years. While many of the sources of the sedimentation have been ameliorated, over 200 acres of reef habitat have been lost to sedimentation, continued reef scour and burial. However, some smaller areas of reef

along this coastline that are naturally high relief (extend vertically up from the seafloor) remain some of the most productive in southern California for commercially and recreationally important fish and invertebrates. This restoration project will use a peer reviewed published design based on the best available science that mimics the productive characteristics of these existing natural reefs to restore the productivity of these sediment impacted areas by creating high relief quarry rock reef modules that will extend up from the seafloor above the moving sediment.



Not only will this project restore an enormous amount of lost reef habitat, but we have also embedded into it a repeated statistical design that will allow a variety of research project to be conducted in a replicated manner. As you can imagine, this unique opportunity has sparked a lot of interest. Please contact Dr. Pondella if you have any questions.

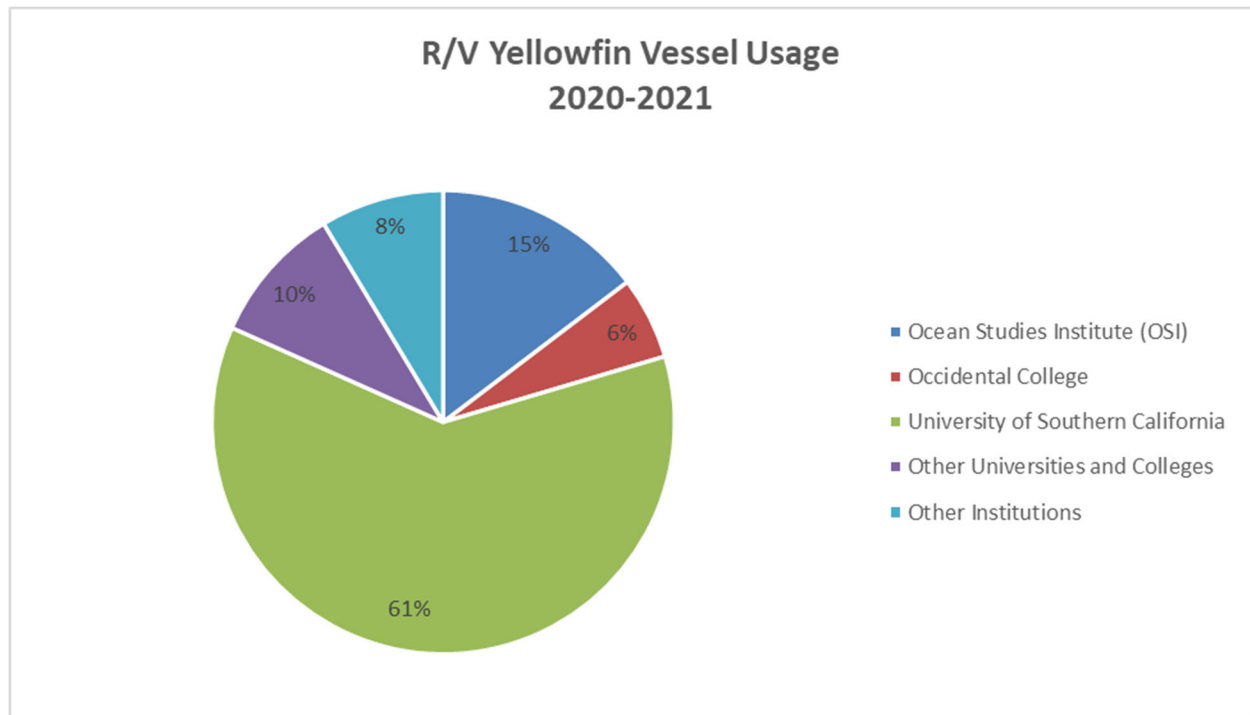
Vessel Use

R/V Yellowfin Usage by Institutions

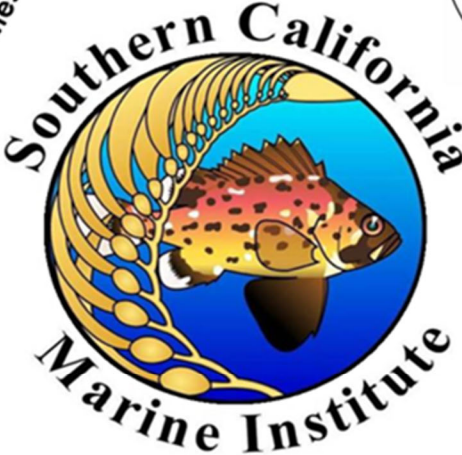
This year, the R/V Yellowfin logged approximately 191 hours of vessel use for a total of 24 cruises. The trips were significantly reduced due to the COVID-19 pandemic. During the Fall 2020 and Spring 2021 semesters we could only accommodate three person cruises aboard the R/V Yellowfin which allowed ongoing contract and graduate level

research to continue. The trips consisted of a combination of class laboratories, graduate and university research, and contracted research. SCMI continued to work CSULB, our administrative campus, and developed safety protocols to resume college and university trips on the R/V Yellowfin. Coming into the Fall 2021 semester we have been approved to offer demonstration cruises at 75% capacity with a maximum of 30 students. SCMI's goal is to continue increasing vessel usage among SCMI member institutions and to broaden vessel usage to other institutions and disciplines.

Institute Name	Total # of Students	Total # of Faculty/Researchers	Total Hours of Vessel Use	Total # of Cruises
Ocean Studies Institute (OSI)	11	9	28	5
Occidental College	0	3	11	1
University of Southern California	23	18	117	13
Other Universities and Colleges	0	3	18.5	2
Other Institutions	0	19	16.5	3
Yearly Total	34	52	191	24



SCMI Members



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John Heidelberg Ph.D. - SCMI Board President; USC

Tom Ford - SCMI Board Vice President; The Bay Foundation, Affiliate Member

Douglas E. Hammond Ph.D. - SCMI Board Secretary-Treasurer; USC

Christopher G. Lowe Ph.D. - CSULB

Curtis Bennett Ph.D. - CSULB

Daniel J. Pondella II Ph.D. – SCMI Director; Occidental College

Larry G. Allen Ph.D. – OSI Director; CSUN

Tina Treude Ph.D. – UCLA

Steve Murray Ph.D. – OSI Chancellor’s Office Liaison

George Leddy Ph.D. –Los Angeles Community College District, Affiliate Member

Penny Ruvelas –NOAA Fisheries West Coast Region, Affiliate Member

James Moffett Ph.D. –(USC Alternate)

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Academic

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Chancellor's Office Liaison

Steve Murray Ph.D.

CSU San Marcos

Academic

James Jancovich Ph.D.

Administrative

P. Wesley Schultz Ph.D.

SCMI Staff 2020-2021

Daniel J. Pondella II Ph.D. – Director

Carrie Wolfe – Research & Education and Operations Coordinator

Adriana Stowell – Budget and Research Coordinator

Darrell Montague – OSI Dive/Boat Safety Officer

Mark Loos – Aquarist & Instructional Support Technician

Dennis Dunn – Captain R/V Yellowfin

Denis Mahaffy – Vessel Engineer

Joel Ingram – Small Vessel Support Technician & Relief Captain

Jim Cvitanovich – OSI Dive Safety Officer

Sam Corder Lee – Demonstration Technician

Sam Soule – Demonstration Technician