MPA Baseline Program

Annual Progress Report

Principal Investigators - please use this form to submit your MPA Baseline Program project annual report, including an update on activities completed over the past year and those planned for the upcoming year. This information will be used by the MPA Baseline Program Management Team to track the progress of individual projects, and will be provided to all MPA Baseline Program PIs and co-PIs prior to the Annual PIs workshop to facilitate discussion of project integration. Please submit this form to California Sea Grant when complete (sgreport@ucsd.edu, Subject [Award Number, project number, PI, "Annual Report"].)

Project Information

Project Year	2	**Study Region**	South Coast
Project Title & Number	R/MPA-27B South coast kelp and shallow rock ecosystems: baseline data collection and long-term trends using historical data		

PI name	Jennifer Caselle	**Co-PI name**	Dan Pondella, Jeremy Claisse

PI Contact Info **Co- PI Contact Info**

(please list additional PIs and contact info in the "Project Personnel" section if necessary)

Address	Marine Science Institute University of California, Santa Barbara, CA 93106	**Address**	Vantuna Research Group Moore Laboratory of Zoology 1600 Campus Road M-3 Los Angeles, CA 90041
Email	caselle@msi.ucsb.edu	**Email**	
Phone	805-893-5144	**Phone**	

Project Goals & Objectives

The *overall goal* of this project is to describe the ecological conditions of kelp and shallow rock ecosystems inside and outside of MPAs in the South Coast Study Region (SCSR) using data collected on SCUBA and to utilize these baseline surveys together with historical data to measure changes in conditions over both short and long time scales.

The *specific objectives* of the proposed surveys and analyses are to: (1) produce a quantitative baseline characterization of the structure of kelp and shallow rock ecosystems in all MPAs in the SCSR, (2) provide quantitative comparisons inside and outside of MPAs, (3) develop easily interpretable ecosystem indicators for assessing the health and status of this ecosystem, (4) inform future monitoring methods while optimizing integration of existing longterm data sets with future monitoring data, and (5) integrate data from the proposed baseline survey with existing long-term data to describe the current trajectory of ecosystem trends.

Summary of Project Activities Completed to Date

Overview of Project Year _1_ Activities, including progress towards meeting goals & objectives

This report describes the activities conducted by the University of California Santa Barbara team (PI Jennifer Caselle) as part of the overall project "South coast kelp and shallow rock ecosystems: baseline data collection and long-term trends using historical data". Note that our partner VRG (co-PI Dan Pondella and Jeremy Claisse) is surveying the southern part of the study region and will provide a separate complementary progress report.

In year 2, we successfully completed the second year of baseline monitoring of kelp forests and rocky reefs. We focused on a) enumerating all the common kelp forest fishes, invertebrates and algae inside and outside of south coast MPAs using methods previously developed by PISCO, b) organizing and synthesizing historical data gathered since 1999 by PISCO, and c) combining all PISCO data (historical and recent) with VRG data to create long-term datasets for synthesis of south coast conditions over time.

Field program: In 2012 we completed the second year of kelp forest surveys at 70 sites inside and outside of all proposed MPAs in the northern part of the Southern California Bight. All sites surveyed in 2011 were resurveyed in 2012. Many of these sites have been continuously surveyd since 1999. With additional funding from the Gordon and Betty Moore Foundation and BOEM we exceeded the number of sites proposed as part of the South Coast Baseline project. Our field season kicked off in June 2012 when we conducted our annual 2-week training program which includes intensive classroom and field training, ensuring consistent and high quality field data collection. Training is a critical part of this program. In addition to the standard PISCO-style surveys of kelp forest organisms, we gathered a second year of targeted size frequency surveys on a variety of invertebrate species identified as potentially important to south coast MPAs.

Data entry and quality control: All data gathered in 2012 were entered throughout the dive season. Data entry was completed three weeks following the last surveys (Dec. 2012). As part of the PISCO program, we have developed thorough QA/QC procedures to ensure data quality. SAS code for these procedures is available by request from the PI. All QA/QC was completed by February 2013. Datasets are documented in eml (ecological markup language) and will be made available to the public on the PISCO web-based datserver (http://osu.piscoweb.org/DataCatalogAccess/DataCatalogAccess.html). Due to major structural overhauls to the PISCO data server as well as the transition to the DATAONE system as part of NCEAS, 2011-12 data are not yet accessible on the site. We anticipate these data being made public on the PISCO/NCEAS data server by winter 2014. All baseline data from 2011-2012 will be made public through Ocean Spaces.

Historical Data Integration: Historical data (dating back to 1999) from PISCO are available and ready to analyze. During 2012, we continued to work with Co-PIs Pondella and Claisse to create a single dataset combining data from the CRANE 2004 program, the BIGHT08 program and our own 2011-12 MLPA South Coast baseline data into a single 'historical' dataset. We have also written a detailed outline and are continuing analyses for a paper utilizing this dataset as a means to characterize baseline conditions in Southern California rocky reefs. We have also completed a Master taxonomic lookup table that contains taxonomic code information for the following surveys and survey programs: PISCO, Santa Barbara Coastal LTER, Vantuna Research group, CRANE, and Reef Check. This lookup table will greatly facilitate joint analysis by providing logical groupings of species and species groups across programs.

Kelp Forest Indicators of Ecosystem Health: Over the past year, PIs Caselle and Pondella worked with Ken Schiff of SCCWRP to develop a proposal and outline for a workshop to develop a series of data-driven, quantitative indicators of rocky reef health. We have support of SCWRRP and had planned on holding the workshop in the Fall of 2012 but postponed it due to overlap in both timing, topic and potential invitees with the Marine Protected Area Monitoring Enterprise Expert Judgement workshops. SCCWRP has assigned a staff member to assisting and we are assembling the list of invitees and will have information out in the Fall of 2013.

Highlights from project progress so far, such as successes achieved or interesting stories from the past year

2012 was characterized by realtively calm weather. Storms were infrequent and our surveys were conducted without problems. This alone serves as a highlight when conducitng subtidal research over such a large and variable region.

In 2012, the water temperature was "average to warm" likely due to ENSO (El Nino Southern Oscillation)-neutral conditions. As such, we have no out of the ordinary observations in kelp forests to report.

One important success is that we now have a complete, two-year dataset on the size distributions of many large invertebrate species in our kelp forests. This is the first dataset to our knowledge on these important species, many of which are subject to emerging fisheries in California. This dataset will provide a very solid baseline form which to measure changes in MPAs and changes in fished areas. Size structure is a critical variable for many of the new data-poor stock assessment methods being developed here in California.

Description of any unforeseen events and substantial challenges, and resulting effect on data collection

There were no substantial challenges in 2012. Work was completed on time and all data collection was performed.

Data status (i.e., paper/raw format or digitized; if digitized, what format?)

All of our data from 2012 are entered, quality checked and available for analysis. The metadata is in EML format and is publically accessible on the PISCO web based server while the raw data have not yet been made available at that location due to major upgrades to our data servers over the past year. We anticipate all data being made publically available by winter 2014 on Ocean Spaces as well as the PISCO data server.

Additionally, data from the multiple proposed existing long-term datasets has been processed and integrated into the single long-term database which is now ready for analysis.

Finally, we made great progress on collecting oceanographic data to contextualize the baseline characterization of the south coast. Specifically, we have created R code for pulling satellite data compiled by the California Current Coastal LTER project (http://spg.ucsd.edu/Satellite_data/California_Current/). This code allows the user to specify their own geographic coordinates as well as the time frame of interest to download both chlrophyll and sea surface temperature data. Currently, we have created 15-day averages fro both variables at all of the Rocky Reef subtidal sites in Southern California. We have also obtained the Santa Barbara coastal LTER data on kelp biomass from SPOT stellite imagery. All of these datasets (and code creating custom datasets) are available to SCSR PIs for use in the synthetic products and analyses

Activities Planned for following Project Year _2_ (if applicable) – *Please describe remaining work and approximate timelines for completing that work, including any anticipated budget variances necessary to complete the project.*

While data collection and data QA/QC has proceeded on schedule, a 1 year no-cost extension is requested due to delays in complementary data availability from other SCSR synergistic projects (data from multiple projects data will not be available due to their sampling and processing timetables until early 2014, and the particularly valuable EcoTrust socio-economic fisheries data is not likely going to be available until July 2014). We were informed of the delay at the Synergistic Projects PI Meeting this past spring and after discussions with the MPA Monitoring Enterprise, we think that moving forward it makes the most sense from an efficiency standpoint to delay proceeding with data analysis until we have access to all explanatory variables and complementary datasets.

Therefore, we are requesting a 1 yr extension from the originally proposed timeline to complete the analyses and report generation for our project. The SCSR Synergistic Projects conference calls and workshops have been an extremely valuable process and discussions which have occurred to date have helped to improve the scope of the planned analyses that should be beneficial to all projects involved.

Therefore the revised timeline for our project now is:
Data synthesis and analysis relating to specific objectives 1-5 will be completed by December of 2014.
Development of monitoring recommendations (specific objective 4) will occur from October 2014 through January of 2015.
Final report writing will occur from October 2014 through March of 2015.
A formal No-Cost Extension request is also being submitted to Dr. James Eckman concurrent with this Annual Progress Report.

Project Personnel – *Please indicate additional project personnel involved in your MPA baseline project, including students and volunteers, or additional PI contact information if necessary.*

	Students Supported	*Student Volunteers*
K-12		
Undergraduate	*3*	*5*
Masters	*1*	
PhD		

Number of other Volunteers not counted above:

Additional PI contact info not listed on first page:

Cooperating Organizations and Individuals - *Please list organizations or individuals (e.g., federal or state agencies, fishermen, etc.) that provided financial, technical or other assistance to your project since its inception, including a description of the nature of their assistance.*

Name of Organization or Individual	*Sector (City, County, Fed, private, etc.)*	*Nature of cooperation (If financial, provide dollar amount.)*
PISCO funded by the Gordon and Betty Moore Foundation	private	Significant funding for fieldwork and personnel in 2012. See match report for exact amounts.
Bureau of Ocean Energy and Management (BOEM)	Federal	Funding for complementary surveys and analysis

Additional Information – *Please provide any other project-relevant information, such as descriptions of attached materials, media coverage your project has received, etc.*

The PISCO team was highlighted in the Ocean to Ocean campaign of Nautica company. This is an ocean awareness campaign that features the stories of people and places that inspire and highlights those who share the company's deep passion and commitment to the water.

The short piece can be found here:
http://nauticaocean2ocean.com/story/the-marine-science-institute-students/