



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 2011 Study Region North Central Coast

Project Title & Number Baseline Monitoring of Ecosystem and Socioeconomic Indicators for MPAs along the North Central Coast of California - Kelp Forest Ecosystem Surveys Grant #09-015, Project # R/MPA-12

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Project Goals & Objectives

The objective of the proposed surveys and analyses are to (1) produce a quantitative baseline characterization of the structure of kelp forest ecosystems in five of the marine protected areas (MPAs) recently established by the MLPA Initiative in the NCCSR, (2) provide a quantitative comparison between the kelp forest ecosystems in these MPAs and associated reference areas in the NCCSR, (3) analytically explore the baseline characterizations for potential indicators of the state of the kelp forest ecosystems (i.e. ecosystem indicators), and (4) integrate these assessments with other components of the baseline survey (e.g., rocky intertidal, ReefCheck, CDFG, collaborative fishing) to inform the role and design of those programs for a future monitoring and evaluation program.

Summary of Project Activities Completed to Date

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

During year two of the grant period we have made substantial progress toward the goals and objectives identified in the proposed MLPA Baseline monitoring program for kelp forest ecosystems in the North Central Coast Study Region. Field operations were completed for the second field season in October 2011. Fish and benthic surveys were completed at each of the 35 sampling sites (cells) proposed to meet our intended replication of 4 cells inside and 4 cells outside of each MPA (where possible).

Through our collaboration with ReefCheck California, size frequency surveys for red abalone and red urchins were completed at all 35 cells visited for benthic surveys. This represents a doubling of the sampling effort proposed for this project, and has resulted in a more thorough representation of population size structure for these species in the region.

Sampling protocols were modified during the field season in response to a major harmful algal bloom (HAB) and associated die-off of benthic invertebrates which occurred several weeks after the start of these surveys. Densities and size frequency of dead and dying red abalone and red sea urchins were recorded both on survey transects and in surrounding areas.

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

A significant highlight of the 2011 field season was the ability of our field team to respond rapidly to a major ecological event occurring in the region; the HAB occurring in early September and subsequent die-off of benthic invertebrates. Our surveys documented high mortalities up to 80% in some areas of ecologically and commercially important abalone and urchin species. By characterizing the intensity and geographic range of this mortality event as well as the size classes of organisms affected, the baseline characterization now includes data that will prove essential in understanding the impact of this event, which will most likely affect the region and the interpretation of MPA effectiveness for many years to come.

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

Field operations were held up during the first weeks of the field survey period (Sept. 2011) by unfavorable conditions (wind and swell) in the northern portion of the NCCSR. By working very long days and over weekends, our field team was able to make up for lost time and complete surveys at all of our targeted sites before the end of the field season. Use of our larger research vessel, RV Paragon, was interrupted once by an engine malfunction and once when structural damage was incurred in an accident during the field season. Both events resulted in the vessel being temporarily unavailable for fieldwork, but the vessel was repaired and University insurance covered the structural repair costs.

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

Following data collection in the fall, data entry was completed in December 2011. Data were then double checked for accuracy by having a pair of technicians read through all datasheets and data entry files. Currently, data are in Excel spreadsheets awaiting final quality control procedures and transfer of data to 1) the PISCO long-term database, and 2) the Monitoring Enterprise.

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.)
Reef Check California	Private NGO	Cooperated on data collection, abalone & urchin size surveys.

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