

March 27, 2008

Summaries of Central Coast Marine Protected Area
Monitoring Activities Completed in 2007

by

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MLPA – Shallow-water Monitoring Update

*Central Coast MPA Baseline Data Collection: Surveys of Shallow-water Rocky Reef
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*Baseline Data Collection For Rocky Intertidal Marine Protected Areas In The Central
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UC Sea Grant and Moss Landing Marine Labs, NOAA Fisheries

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MLPA – Shallow-water Monitoring Update:
Central Coast MPA Baseline Data Collection: Surveys of Shallow-water Rocky Reef Communities

Field operations were completed for this project in November 2007. Of the 102 sites required to meet our intended replication of 4 sites inside and 4 sites outside of each of the Central Coast Study Region (CCSR) marine protected areas (MPAs), where possible, fish surveys were completed in full at 86 sites and benthic surveys were completed in full at 91 sites. Fish surveys designed to estimate the density and size distribution of populations and assemblage structure were fully completed at 72 sites, partially completed at 14 sites and not conducted at 16 sites. The 14 partially completed sites include those in which 2 of the 3 transects within any depth stratum were not sampled. For fish surveys, partial completion of sites was always the result of insufficient underwater visibility to meet our minimum threshold (3m horizontal vis.) necessary to accurately estimate fish density or sizes, or because of rough sea conditions in the shallowest depth stratum. Multiple attempts were made in many cases to revisit these sites, however there were not enough days of favorable sea conditions to complete these surveys. The 16 sites at which we were unable to conduct fish surveys were centered around Natural Bridges SMR (an intertidal reserve) in the north and Vandenberg SMR in the south. Factors that prevented us from sampling these sites for fishes were poor sea conditions and chronic poor visibility (e.g., Natural Bridges), and because our field crews were delayed in reaching sites at the southern end of the CCSR (e.g. Vandenberg SMR) by the long delay* in availability of our field Nitrox compressor for filling scuba tanks in the field. Benthic surveys, designed to estimate the density and size distribution of invertebrate and algae populations and assemblage structure, were fully completed at 91 sites, partially completed at 3 sites and not conducted at 6 sites in and around Vandenberg SMR.

Since the completion of diving operations in mid-November, our team of technicians have been entering and checking survey data into the PISCO database. As of this writing, data entry for all sites and all survey types has been completed. Data have been double checked and all database QA/QC procedures have been done.

The surveys quantified the size distribution of all non-cryptic fishes, including all those species identified to be quantified by the baseline monitoring guidelines, as well as many of the algae and invertebrates associated with kelp forests, including all of those identified by the baseline monitoring guidelines of the MLPA Master Plan. These surveys will characterize the fish, invertebrate and algal assemblages that constitute kelp forest ecosystems inside MPAs and their control sites of comparable habitat. The surveys also quantitatively characterize reef geomorphology for comparisons of habitat comparability in MPA and paired control sites. Thermistors deployed at 25 sites describe the local water temperature climate at MPAs and paired control sites.

* Funds were not available for purchase of the Nitrox compressor until late June. It was ordered in mid-July, delivered in mid-September while we were conducting surveys, installed in a trailer and made ready for use in late October.

MLPA – Intertidal Monitoring Update:
Baseline Data Collection For Rocky Intertidal Marine Protected Areas In The Central Coast Of California

We proposed to set up two distinctly different monitoring programs along the central coast. First, we proposed to set up long-term monitoring sites employing methodologies consistent with MARINE (Multiagency rocky intertidal network) protocols, (www.marine.gov), which assured data consistency with the established long-term monitoring program along the west coast of North America. Second, we proposed to set up biodiversity assessment sites (in the same general locations as the long-term sites) using the methods of the Coastal Biodiversity program (<http://cbsurveys.ucsc.edu>). These surveys completely characterize the biodiversity at a site. Together the surveys allow robust characterization of **both** change and ecosystem function of a site that is unachievable under any single approach. Including both MPA and reference sites we projected assessment of 84 sites (42 for each monitoring program). Our progress has been as projected in the proposal and all sites have been sampled or are scheduled for sampling before the end of the May. One early result is particularly intriguing and perhaps very important. We have seen dramatic shifts in human use and extraction patterns that may represent a focusing of activity on “open” sites. This will be important to document and assess over time.

Data and metadata are being integrated into existing data tools as we await instructions from the MLPA Monitoring Enterprise as to the desired structure of the data packages. In addition, as proposed, we are in the process of producing data visualization tools to aid in the depiction of our results.

MLPA – Submersible Monitoring Update:
Baseline Surveys of Deep-water Demersal Communities In and Near Central California MPAs

We planned to conduct baseline surveys, using direct observations from a manned submersible, of demersal fishes, structure-forming invertebrates (e.g., deep sea coral communities), and associated habitats in and near eight of the new Central California MPAs. Our surveys were designed to collect quantitative information about the distribution and abundance of species in deep-water rocky communities, and will provide comprehensive data with which to evaluate temporal changes inside MPAs and differences between MPAs and reference areas.

During the Fall of 2007, we used a manned submersible to conducted baseline surveys of nearshore fishes and invertebrates inside Big Creek SMR, Big Creek SMCA, Point Sur SMR, Point Sur SMCA, Point Lobos SMR, Point Lobos SMCA, Portuguese Ledge SMCA, and Soquel Canyon SMCA. Additionally, we surveyed adjacent reference areas that contained similar habitats, depth zones, and oceanographic conditions.

At each sample site, we completed quantitative, visual strip transects using the 2-person *Delta* submersible to characterize seafloor habitats and to identify, count, and measure demersal fish and macro-invertebrate species. In 2007, we completed 170 submersible dives in waters ranging from 24 – 365 m deep. We completed more than 330 quantitative transects, and counted and measured more than 64,000 fishes, comprising 118 taxa (32 families, 43 genera, and 93 species), as well as more than 157,000 patch invertebrates and 13,000 structure forming invertebrates (e.g., sponges and corals) comprising 70 taxa. We have created and are error-checking a database (MS Access format) that includes this information. In addition to the database, we have created a GIS that contains spatial information such as maps, submersible track lines, habitats, and attribute information about the submersible dives. Also, we captured and catalogued approximately 600 hours of underwater video and more than 6000 underwater photographs. Additionally, we collected information about bottom type (habitats), and salinity and water temperature by depth at all sampling sites. These results provide the most complete survey available to date of the demersal ecosystems in central California MPAs.

We are now finishing the quality control of the database and generating summaries of the data. We are also working on a brochure that describes, using pictures, text, and graphs, each of the MPA and reference sites.

MLPA – Collaborative Fisheries Monitoring Update:
Collaborative Surveys of Nearshore Fishes In and Near Central California MPAs

We proposed to conduct a focused collaborative fisheries program in 2007 to monitor selected species in the nearshore rockfish assemblage inside and outside Central California Marine Protected Areas (MPAs). We worked with National Marine Fisheries Service (NMFS) and California Department of Fish and Game (DFG) scientists, and the fishing communities of Half Moon Bay, Monterey, Morro Bay, and Port San Luis to develop monitoring protocols. The protocols that were vetted and included the use of experienced volunteer anglers, fishing with rod and reel gear, on Commercial Passenger Fishing Vessels (CPFV). Our plan was to collect baseline information for three MPAs that were established on the Central California coast in September 2007. We also worked with NMFS and DFG scientists to ensure that the protocols we developed would provide useful information for fisheries stock assessment, if monitoring continues over time.

Four days were scheduled for sampling in each study area (Año Nuevo, Point Lobos, and Point Buchon) in August, September, and October (a total of 12 days in each area). Half of the days were to be spent in the Marine Protected Area (MPA) sites and the other half in the reference sites (alternating one after the other). Within each MPA and reference area, we used a stratified random sampling design to determine sampling locations. At each location, experienced volunteer anglers fished with standardized gear for a specified amount of time. Caught fishes were identified, measured, tagged with external T-bar anchor tags, and released at location of capture.

We completed a total of 34 fishing trips in the Fall of 2007 in the Año Nuevo, Point Lobos, and Point Buchon State Marine Reserves, and in corresponding reference sites. Poor weather in October precluded sampling two days at Año Nuevo. The recreational fishing community expressed a great deal of interest in our project. A total of 174 different volunteer anglers participated in this study; they donated a total of 366 volunteer days. Additionally, many of the anglers posted positive descriptions of our work on the website of the Coastside Fishing Club, a club with more than 13,000 members. Volunteers for the trips in Año Nuevo and Point Lobos came from 70 different cities in California, two cities in Utah, and one city in Texas. We worked with five different CPFV captains and ten different deckhands.

During the course of this study, we captured 7,928 fishes, comprising 27 different species of fishes from 10 genera. The majority (97%) of the caught fishes were rockfishes. We have created and error checked a database (MS Access format) of the data collected in fall 2007. The database includes angler information, drift locations, species, length, and condition information for all species caught, released, and retained, as well as oceanographic (water temperature, water clarity, wave height, wind speed, etc.) and habitat information. We have begun preliminary data analysis, and have estimates of species composition, catch per unit effort, catch per gear type, mean lengths, and length frequencies of fishes, all by sampling location and depth range.