MEMORANDUM

TO: Ocean Protection Council

FROM: Laura Engeman, Project Manager

DATE: June 24, 2010

RE: Department of Fish and Game WorkPlan Projects

BACKGROUND:
California's 2006 Budget Act appropriated $8 million to the California Ocean Protection Council for the implementation of the Marine Life Protection Act (MLPA) and Marine Life Management Act (MLMA). The Budget Act called for these funds to be expended "pursuant to a work plan developed jointly by the OPC and the Department of Fish and Game (DFG)." An additional $2 million was appropriated to DFG to fulfill these same goals. To maximize the effectiveness of these associated appropriations, OPC and DFG created a joint work plan that set forth priorities for the complete $10 million.

The OPC-DFG Joint Work Plan was aimed at collecting, analyzing, and applying data essential to the implementation of the MLPA and the MLMA. Work plan projects focused on three activities: (1) improving methods and collection of fishery-dependent and fishery-independent data; (2) monitoring to inform the management of marine protected areas (MPAs); and (3) equipment improvements to ensure capacity to collect and manage data. Data and results collected as part of this effort will support MPA monitoring and evaluation, which is being led by the MPA Monitoring Enterprise in collaboration with DFG.

HIGHLIGHTS FROM THE WORK PLAN PROJECTS:
With the OPC-DFG Joint Work Plan coming to a close, the following is a summary of some of the valuable outcomes of these projects and their contributions to improving the management of California's marine resources.

1416 Ninth Street, Suite 1311, Sacramento, CA 95814
Website: www.opc.ca.gov
Phone: (916) 653-5656
Email: COPCpublic@resources.ca.gov

Baseline monitoring of California's Central Coast marine protected areas
$2,275,000 was provided for socioeconomic and ecological baseline data collection inside and outside MPAs established in the MLPA Central Coast Study Region. These MPAs were the first state MPAs designated in California under the MLPA, and the funding allowed time-sensitive data to be collected at, and immediately following, MPA implementation. These data are necessary for future evaluations of ecosystem and socioeconomic changes inside and outside MPAs.

Following a competitive process led by OPC, DFG, and California Sea Grant, six research projects were funded to implement a program of baseline data collection. Five of these projects collectively monitored key biological habitats and species and one project surveyed the consumptive and recreational human uses of the Central Coast region to provide a socio-economic baseline context. The following are several highlights from these projects:

- Pete Raimondi of University of California, Santa Cruz led surveys of rocky intertidal habitats for two years in cooperation with surveys conducted by Minerals Management Service (MMS) and the University of California, Santa Barbara Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO). The group photographed and counted rocky intertidal species including mussels, barnacles, anemones, algal species, abalone, and sea stars.

- Mark Carr of University of California, Santa Cruz in collaboration with Reef Check California led scuba surveys of 100 shallow water rocky-reef sites with a team of 21 divers. Over two years of data collection, the dive team conducted a combined total of 585 diver days in MPA sites and reference sites outside of MPAs, gathering data on fish, invertebrates, kelp species, algae, and physical characteristics of the benthic habitats. Data were collected using methods consistent with those of PISCO kelp forest monitoring in order to provide additional value as a long-term data set.

- John Petterson of Impact Assessment, Inc. conducted surveys on both consumptive and non-consumptive use patterns in and adjacent to the MPAs and described historical patterns in regional human uses, demographics and economics.

- Rick Starr of Moss Landing Marine Laboratory and Mary Yoklavich of National Marine Fisheries Service led manned submersible surveys of fishes and structure-forming invertebrates in deepwater rock and sandy habitats. The submersible surveyed 8 MPAs and 8 reference sites in 2007 and again in 2008. These data also provide an opportunity to ground-truth seafloor mapping that had been previously conducted in the region.

- University of California Cooperative Extension Advisory Rick Starr of Moss Landing Marine Laboratory and Dean Wendt of California Polytechnic State University, San Luis Obispo, worked with volunteer anglers of Half Moon Bay, Monterey, Morro Bay, and Port San Luis to collect baseline information for four MPAs. A total of 48 fishing trips were completed during the two years of data collection, during which anglers fished with standardized gear for a specified amount of time to collect data on almost 10,000 fishes.

Seafloor and marine habitat maps for the MLPA North Central Coast Study Region
The Monterey Bay Sanctuary Foundation granted $2,510,000 (of which $1,510,000 was funded by OPC and $1,000,000 from DFG) to California State University Monterey Bay (CSUMB) and Fugro Pelagos for fieldwork, and CSUMB, Moss Landing Marine Lab and the U.S. Geological Survey (USGS) for data interpretation and data products. Together, these efforts resulted in accurate benthic habitat maps that were critical to the selection, design, and analysis of the newly designated marine protected areas in the central coast and north central coast regions as part of the Marine Life Protection Act Initiative. The success of this pilot effort led to the full implementation of the California Seafloor Mapping Program, which has now collected data for roughly 85% of CA state waters.

Independent surveys of the Channel Islands marine reserves
The Channel Islands Marine Reserves reached their five-year anniversary in 2008. At that time the Fish and Game Commission required a 5-year review of the MPAs, providing an opportunity to report on monitoring conducted to assess the initial progress of the reserves in meeting their goals. OPC awarded $2,100,000 for several surveys throughout the Channel Islands to investigate changes in habitats, the abundances and sizes of various fish and invertebrate species, and other ecological characteristics inside and outside MPAs, as well as monitoring of human activities including consumptive and non-consumptive uses. Specific projects included:

- University of California, Santa Barbara (UCSB) PISCO and the National Park Service Kelp Forest Monitoring (KFM) program conducted collaborative fish and benthic surveys in 2007 and 2008. This work extended existing long-term monitoring programs by both groups. Using methods consistent with PISCO and KFM long-term monitoring of these reserves, this study recorded density and size structure of fishes, invertebrates, and algae inside and outside of numerous reserves. The data were incorporated into the existing datasets and made available through the PISCO data catalogue to support future MPA management and fisheries stock assessments.

- Lobster and finfish surveys were conducted in 2007, 2008, and 2009 as part of a collaborative effort between UCSB and local fishermen. The data demonstrate that overall size and abundance of lobsters increased within MPAs over the first five years, but outside of MPAs there was not a significant change in either abundance or size. Information useful for management was collected, including: detailed growth rates, natural mortality estimates, population size structure, and movement rates. These data already have been used to inform spatially explicit harvest models that use MPAs as reference populations and will continue to be useful for these types of MPA analyses, and potentially stock assessments. The project also developed agreements and possible approaches for future collaborative fisheries research with the fishing community.

- Marine Applied Research and Exploration (MARE) conducted deep-water ocean surveys at various monitoring sites within the Channel Islands National Marine Sanctuary in collaboration with Pacific States Marine Fisheries Commission (PSFMC) and DFG. The surveys provided useful data on numerous fish stocks of interest including relative abundance of adults and juveniles, species interactions and associations, and habitat

preference and distribution. Data collected will be available to state, federal, and others to support future MPA and fisheries management.

- University of California, San Diego synthesized data on California Current and nearshore ichthyoplankton populations based on historic and recent data from California Cooperative Oceanic Fisheries Investigations (CalCOFI) and other ichthyoplankton monitoring programs, including expanded coastal sampling as part of the Southern California Coastal Ocean Observing System (SCCOOS). The research provides a valuable baseline picture of ichythoplankton populations, and for informing stock assessments for species such as the California lobster. UCSD is also producing a web-accessible database, to inform future studies of changes in fish populations.

Collection of socio-economic information for the MLPA North Central Coast Study Region
$200,000 was awarded to Ecotrust to collect baseline socioeconomic data collection for the MLPA North Central Coast Study Region. Ecotrust developed and deployed an interactive computer tool to collect georeferenced information about the extent and relative importance of commercial and recreational fisheries in the North Central Coast Study Region. The tool provided an opportunity for the fishing community to identify areas and fisheries based on a scale of importance. The data were compiled and aggregated into a geographic information system (GIS) that was delivered to the MLPA Initiative staff for integration into a central geodatabase. The MLPA Initiative leads the public process to develop MPA proposals for the MLPA study regions, and requires both ecological and socioeconomic information. Ecotrust also analyzed the fishery data in combination with additional DFG data to estimate maximum potential impacts of proposed MPA networks developed in the MLPA Initiative process.

Improving management of California coastal fisheries
Many of California's nearshore fisheries are data-poor making it difficult to conduct stock assessments or develop management strategies for these populations. To improve this situation, Quantitative Resources Assessment, LLC. (QRA) was awarded $150,000 to conduct an evaluation of alternative management strategies that can be applied to data-poor California fisheries. QRA has provided an introductory description of a management strategy approach and is now working on specific case studies. A final report will be completed by the end of the year. As part of this project, QRA is developing a stock assessment for California halibut, which was ranked as the highest priority finfish species for fishery management plan (FMP) development. QRA has completed a stock assessment data report, preliminary stock assessment will be available by mid-summer and a final will be released by the end of the year.

Upgrades to DFG equipment, vessels, and fishery data management systems
The work plan provided $325,000 for upgrades to DFG remotely operated vehicles (ROVs), research vessels, and other DFG marine equipment. In addition, PSMFC was funded $445,000 to develop a comprehensive and integrated electronic data collection and reporting system for commercial and recreational fishery-dependent data. At this time, PC Data Solutions has developed database frameworks for almost all of the 15 fishery logbooks, and data clerks are working with DFG to incorporate data from old logbooks. As a final step, these individual logbooks will be centralized into one database accessible from various locations to ease data entry and access.