MEMORANDUM

TO: California State Legislature

FROM: The California Ocean Protection Council and the California Department of Fish and Game

DATE: November 29, 2006

SUBJECT: Ocean Protection Council-Department of Fish and Game Joint Work Plan

Overview

California's 2006 Budget Act appropriated $8 million to the California Ocean Protection Council (OPC) for the implementation of the Marine Life Protection Act (MLPA, Stats. 1999, ch. 1015) and Marine Life Management Act (MLMA, Stats. 1998, ch. 1052). The Budget Act calls 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 have created a joint work plan that sets forth priorities for the complete $10 million. In accordance with the budget direction, the joint work plan is being submitted to the chairpersons of the fiscal committees in each house of the Legislature and to the Chairperson of the Joint Legislative Budget Committee.

The work plan budget is divided into four categories: A) data collection, B) data analysis, C) program support, and D) general infrastructure. The total expenditures for these categories are $7,775,000, $900,000, $250,000, and $1,075,000 respectively. Within the $10 million total expenditures, $600,000 is for activities related solely to MLPA and $750,000 is for activities related solely to MLMA. The remaining $8.65 million is for activities that will support implementation of both the MLPA and MLMA.

In addition, the DFG and OPC will consider dedicating funding from other sources to support the MLPA and MLMA. Primary among these proposed commitments are $2 million from OPC for a marine resource monitoring institution, which will coordinate data collection and dissemination, and $3 million to support sustainable fisheries through innovative approaches. The $2 million presented here for DFG is only a small portion of their budget dedicated to these two laws. Collectively, DFG and OPC will likely expend well over $15 million during the next two to three years to ensure proper execution of the MLPA and MLMA.

The Need for More Complete Data to Support Management

Good fisheries management has always relied on data about the health of targeted stocks. However, additional information is needed regarding marine ecology, essential habitats, and natural processes that affect fish populations, as well as the interactions between different species complexes and the fisheries that pursue them. Without substantial *fisheries dependent* data, uncertainties in the amount of fish caught annually can lead to premature fishery closure, or worse, unexpected and potentially significant declines in fish stocks. Without *fisheries*

independent data on both the status of populations and the habitats they depend upon, uncertainties in stock status and environmental impacts may lead to errors in management decisions. In addition, it is critical that management decisions are monitored for effectiveness, in particular on the ecological impacts of creating a network of marine protected areas (MPAs) through the MLPA.

It is a priority of both OPC and DFG that essential data are collected, analyzed, and applied to the decision making process. Therefore, much of this joint budget is focused on funding projects that focus on these aspects of implementing the MLPA and MLMA.

Budget Overview

Attached is the joint OPC-DFG budget that presents the data collection, data analysis, program support, and general infrastructure that will be supported by the $10 million in the FY '06/'07 budget. Details about the projects and how they address the goals of the MLPA and MLMA are included in the following sections and are numbered to correspond to the budget. OPC and DFG determined these projects to be the highest priority in the short term to accomplish our shared goals; the numbering and letter designation within the budget do not indicate further ranking. OPC and DFG will strive to find additional funding to increase the quality and quantity of essential data, either from their own budgets or from non-state sources (e.g., foundations, commercial fishers, recreational anglers, non-profit institutions, and the federal government).

As new information becomes available, it may be necessary for OPC and DFG to adjust the amount of funds allocated to specific projects listed in the budget. The attached budget shows the targeted amounts for each specific line item. OPC will not shift more than 20 percent of funds from one line item to another without submitting a revised plan.

Marine Life Protection Act

Background

The MLPA mandates "that there is a need to reexamine and redesign California's MPA system to increase its coherence and its effectiveness at protecting the state's marine life, habitat, and ecosystems" (Fish and Game Code §2853). The MLPA requires that DFG prepare and the California Fish and Game Commission (Commission) adopt a Master Plan to guide the implementation of a Marine Life Protection Program. DFG, as a preliminary step, prepared a Master Plan Framework, including most parts of the Master Plan but not specific recommendations on the location, type, and number of MPAs. In August 2005, the Commission adopted the Master Plan Framework prepared by DFG. The Master Plan Framework sets forth the tasks and processes required to fully implement the MLPA.

On August 15, 2006, the Commission selected a preferred alternative network of marine protected areas along the central coast of California. The next steps for implementing the MLPA are to: (1) finalize the designation process in the central coast region; (2) monitor, enforce, and manage the central coast MPA network; and (3) continue the MLPA implementation process in the other regions of California.

Finalizing Central Coast MLPA Process

Immediately after the August 15, 2006, Commission decision to select a preferred alternative for an MPA network along the central coast, DFG began preparing the documents required to adopt regulations necessary to implement that decision. DFG also initiated an environmental review pursuant to the California Environmental Quality Act (CEQA). DFG anticipates that both of these

processes will be completed by spring 2007. As of this writing, DFG expects to release the draft regulations, Initial Statement of Reasons for Regulatory Action, and draft CEQA environmental impact report (EIR) in mid-October and early-November. The Commission expects to take testimony on these documents in winter 2006 and to certify the CEQA document and adopt regulations in the winter or spring of 2007.

M*onitoring and Enforcement*

Once the establishment of the central coast MPA network is finalized, it will be necessary to monitor MPA effectiveness and enforce the new MPA restrictions.

Monitoring

OPC and DFG believe that it is critical to obtain information on ecology, habitat, and other natural processes, and on socioeconomic indicators as part of MLPA implementation. This information is necessary to determine over time if the selected MPA networks are fulfilling the goals envisioned in the MLPA.

The most pressing need is for baseline monitoring of MPAs along California's central coast. This baseline monitoring will provide a snapshot of conditions prior to the establishment of the MPAs. As monitoring continues, changes within the MPAs may be compared to this baseline information. The budget identifies $2.275 million for this baseline monitoring, an estimate based on the work of an MLPA baseline science monitoring panel established specifically for this purpose. The goal is to conduct this baseline monitoring concurrent with the expected implementation of the central coast MPA network.

After the baseline monitoring is completed, ongoing monitoring will also need to be conducted. Ongoing monitoring will not only help determine how well the selected MPA network is fulfilling the MLPA goals, it will inform the ongoing adaptive management process.

DFG Marine Region staff performs a variety of duties and are not specifically assigned to MLPA monitoring or other broad management frameworks like the MLMA. Rather, Marine Region staff is assigned to a variety of projects within a few broad programs. Overall, DFG has assigned 79 PYs to ongoing monitoring of marine resources. Of these 79 PYs, 32 are from the new PYs provided in the 2006/2007 budget and many of them will be involved in the future monitoring required for the central coast. However, it is possible that additional funds may be desirable to hire contractors to assist with this effort. In 2007, OPC and DFG will work closely with the federal government, academic and research institutions, commercial fishers, recreational anglers, and the NGO community to generate design options for an ongoing monitoring plan for the central coast.

OPC believes that it is important to establish a marine resource monitoring institution whose purpose will be to coordinate data collection between various state agencies, universities, volunteer groups, and others; analyze these data; and disseminate the information to California policymakers and others. While initially focused on monitoring within the central coast component of the statewide MPA network, it will grow to include all state MPAs as they are designated, and could become the clearinghouse for all marine monitoring data in California. This MPA monitoring institution will work closely with policymakers to present them with accurate information about the success of the MLPA and other management. OPC has dedicated an additional $2 million to establish this marine resource monitoring institution (not included in the attached budget). These funds will be used to hire a program manager and other core staff who will coordinate the data collection process and determine the best place to house this institution in the long term.

Enforcement

DFG's enforcement staff is charged with enforcing marine resource management laws and regulations over an area encompassing approximately 1,100 miles of coastline. DFG staff also provides enforcement of federal laws and regulations within state waters and in federal waters. Enforcement duties include all commercial and sport fishing statutes and regulations, all Fish and Game Code and Title 14, California Code of Regulations restrictions, marine water pollution incidents, homeland security, and general public safety. General fishing regulations and other restrictions apply within MPAs as well as specific MPA restrictions. DFG shares jurisdiction for federal regulations including the Magnuson-Stevens Fishery Conservation and Management Act, the Endangered Species Act, the Marine Mammal Protection Act, and the Lacey Act.

DFG maintains a fleet of seven large patrol boats in the 54- to 65-foot class stationed at major ports throughout the state. These patrol boats are staffed by a cadre of 22 officers and 5 support personnel. DFG also has eight patrol boats in the 24- to 30-foot range, and another 15 patrol skiffs stationed at ports and harbors throughout the state. Overall, DFG has approximately 230 wardens in the field responsible for a combination of inland and marine patrols. Some of these wardens have a "marine emphasis" focusing primarily, but not exclusively, on ocean enforcement. DFG has a fleet of single- and twin-engine fixed wing aircraft that work in conjunction with both marine and land based wardens to help identify and investigate violations. Though seemingly impressive, when compared to the more than 5,000 square miles of California state waters and the federal waters beyond, as well as California's vast inland area, these numbers are quite small.

In the central California coast, for example, there are presently 30 to 40 wardens in the field. Of these, about 15 have a marine emphasis and are responsible for enforcing regulations over more than 1,100 square miles of state waters within the MLPA central coast study region (Table 1).

Table 1. Central coast enforcement personnel with marine emphasis (2005).

Pigeon Point to Big Sur		**Big Sur to Point Conception**		**Total**
Land Based	Patrol Boat	Land Based	Patrol Boat	
1 Lt. / 2 Wardens	1 Lt. / 2 Wardens 1 patrol boat	2 Wardens	2 Lt. / 4 Wardens 2 patrol boats	4 Lieutenants 10 Wardens

To adequately enforce MPA regulations, DFG will prioritize areas of particular concern or at particular risk and emphasize patrol of these areas. Given DFG's other broad mandates to enforce both state and federal marine resource regulations, current assets are not adequate to redirect to MPA specific patrols. The increased focus on MPAs suggested by the MLPA and the comprehensive network the Act mandates will require not only a detailed enforcement plan, but also additional enforcement assets.

MPAs will be patrolled by many techniques including large patrol boats, small patrol skiffs, aircraft, and by wardens on the coast. Each MPA has special needs requiring specialized patrol efforts. Areas closer to ports will require less effort to get to, but because of their proximity to population centers, will have a higher use than remote areas. Remote areas may get fewer users, but require more staff time and usually larger boats or aircraft to patrol.

Future MPA Networks

The adopted MLPA Master Plan recommends dividing the state into five regions to facilitate implementation. As discussed above, the Commission selected a preferred alternative for MPAs within the central coast on August 15, 2006. As of this writing, the Commission is considering which area of the state will be identified as the next study region.

The MLPA implementation planning process for each region of the state will require both DFG staff and contracted support for various technical and scientific roles. DFG has assigned 10 PYs to directly assist in this regional planning process. Almost all of the funds included in the work plan budget will help inform future Commission decisions as well as the planning process itself ($9.25 million).

Planned Advancement through the 06-07 Appropriation

A great deal of information and resources are needed to support the implementation of the MLPA on a statewide basis. The items proposed as part of this joint work plan will help DFG implement proposed new MPAs in the central California coast as well as continue MLPA implementation in the next study region. The following items are linked by letter and number designation to the attached budget spreadsheet:

A1 - Baseline Monitoring
- The MLPA specifically calls for monitoring and research within MPAs.
- Baseline data are necessary to determine whether MPAs are effective and to help support ongoing adaptive management of MPAs.
- Moving forward with an ecosystem approach to management, it is important to understand the effects of MPAs on the biology and ecology of the biota within and adjacent to the MPA boundaries.
- Reference reserves may over time help to reveal the effects of fishing on the ecosystem by providing a comparison of unfished to fished habitats.

A2 - Habitat Mapping
- Specific information on benthic zone (ocean bottom) habitats is necessary both to plan and design MPA networks and to monitor those networks once implemented. Benthic habitat mapping will provide the detailed data necessary to determine substrate types, depths, and complexity of habitats.
- An important early step in moving forward with ecosystem management is to identify, classify, and catalog existing habitat. In the absence of this information, it is difficult or impossible to determine how the ecosystem functions as a whole and what the overall impacts of fishing are to the ecosystem.

A3-6, D1, D3, and D6 - Fishery-Independent Surveys
- Systematic surveys such as the SCUBA, ROV, and fish trapping proposals provide adult and juvenile information on relative abundance, species interactions and associations, habitat preference, distribution, and size composition of numerous stocks. When tracked over time, this kind of information may provide managers with an indication of whether stocks are increasing or decreasing, and whether the management measures that have been employed are achieving their intended conservation objectives. These surveys help provide information on the status of populations and species composition in specific areas needed for MLPA implementation and planning.
- Another type of proposed fishery-independent survey is for ichthyoplankton, which measures the spawning output from many different species at the same time. This provides information on growth and survival at the youngest life stages, and also provides an indication of the abundance of the female spawning biomass that produced the planktonic offspring. As with the case of adult and juvenile survey data, the ichthyoplankton survey data may be used to help determine MPA effectiveness.

A7, B2, and B3 - Fishery-Dependent Data Collection
- Better access to data from logbooks and data system evaluation will help to provide more accurate, precise, and timely data on fishing activities, which is crucial to effective fishery management. This information is critical to the MLPA

implementation process to help determine both impacts to fisheries from MPAs and to determine locations where stocks may have been impacted by fishing and benefit from MPA protection.
    - The proposed funding will help eliminate bottlenecks in capturing, editing, and disseminating a large volume of fishery data from existing sources, especially logbooks.

A8 - MLPA Socioeconomic Data Collection

- The funds will support preliminary socioeconomic data collection for the MLPA process in the next study region so that these data may be taken into account while planning the next regional network.

D2 - Research Vessel Operations

- Fishery-independent surveys can only be accomplished with vessel operations that are dedicated to scientific research. Therefore, it is crucial that vessels be available to provide suitable platforms to accomplish these activities. The proposed funding for research vessel operations will help insure that the needed maintenance is performed and equipment is procured to allow the survey work to take place. These surveys are a cornerstone of MPA monitoring.

C1, C2, D4, D5, and D7 - Programmatic Support and Infrastructure

- Proposed support and infrastructure expenditures will provide the necessary expertise and physical equipment to address the MLPA implementation and planning needs along with the objective of monitoring and evaluating MPAs. In addition, the proposed funding for computers and other equipment will enhance DFG's capability to acquire necessary data, maintain databases, and provide input into both stakeholder and Commission processes.

Marine Life Management Act

Background

The Marine Life Management Act (MLMA), which became law on January 1, 1999, opened a new era in the management and conservation of California's marine living resources. In fashioning the MLMA, which was introduced as AB 1241 by Assemblyman Fred Keeley, the Legislature drew upon years of experience in California and elsewhere in the United States and the world.

The Act includes a number of innovative features:

- The MLMA applies not only to fish and shellfish taken by commercial fishers and recreational anglers, but to all marine wildlife.
- Rather than assuming that exploitation should continue until damage has become clear, the MLMA shifts the burden of proof toward demonstrating that fisheries and other activities are sustainable.
- Through the MLMA, the Legislature delegates greater management authority to the Fish and Game Commission and the Department of Fish and Game.
- Rather than focusing on single fisheries management, the MLMA requires an ecosystem perspective including the whole environment.
- The MLMA strongly emphasizes science-based management developed with the help of all those interested in California's marine resources.

A central tenet of the MLMA is that management decisions are to be based on sound science and other relevant information. To accomplish the MLMA guiding principle of employing an

ecosystem approach to achieving sustainable fisheries, the MLMA identifies the acquisition of essential fishery information (EFI) as the way that the best available scientific information will be developed and brought into the process of making management decisions. EFI includes the biology of the fish, population status and trends, fishing effort, catch levels, impacts of fishing, ecological relationships, habitat information, and other environmental information. The MLMA calls on DFG to collect EFI for all fisheries that are managed by the state. Consequently, the MLMA promotes general research on marine ecosystems for use in management decisions.

The MLMA also mandates that the state initiate a comprehensive, ecosystem-based approach to fisheries management through the development of fishery management plans (FMPs). The ultimate goal, as mandated by the MLMA, is to create FMPs for all essential stocks. The Act further mandates that in the absence of strong supporting data, a precautionary approach should be used to manage our state marine fisheries. However, the adoption of new FMPs is not a prerequisite for implementing the general approach to science-based management that is required by the MLMA.

The MLMA directs DFG to collect and analyze fishery data for use in implementing management strategies. To accomplish this broad and overarching mandate, very few of the actions included in this work plan are directed toward completing any particular FMP. To avoid duplication of effort and achieve the maximum return on research activities, rarely are data collection projects species specific, especially when they are designed according to the ecosystem-based approach to management that is prescribed by the MLMA. Consequently, this work plan focuses on collecting much needed baseline data for a number of stocks and habitats, which will directly enable the state to move forward with developing the necessary EFI, improving the scientific basis for management decisions. Activities outlined in this work plan will also make significant progress towards fulfilling the research and data needs of existing and future FMPs.

Progress toward Implementing the MLMA

The fishery management system established by the MLMA is being implemented stepwise for four sets of fisheries. Following is a summary of actions taken by DFG to implement the MLMA for each of these groups.

1. The nearshore finfish fishery and the white seabass fishery were specified in the MLMA as the first to have FMPs developed and adopted for management.

    - DFG prepared a Nearshore FMP which was adopted by the Commission in August, 2002. Since that time, the Commission and Pacific Fishery Management Council (PFMC) have used it to provide a framework for managing California's nearshore fisheries.
    - The pre-existing white seabass FMP was amended to comply with the MLMA, and the Commission adopted the revised FMP in 2001. The WSFMP uses a framework plan approach for managing the white seabass fishery. This enables the adjustment of management measures, within the scope and criteria established by the FMP and implementing regulations, without the need for amending the FMP.

2. Fisheries for which the Commission held some management authority before January 1, 1999.

    - The MLMA Master Plan, adopted in 2001, sets priorities for the next fisheries for which FMPs will be drafted.

- A Market Squid FMP was adopted in 2004.
- An Abalone Recovery and Management Plan (ARMP) was adopted in 2005.

3. Emerging and growing fisheries that are not currently subject to specific regulation.

    - The Marine Region recently reorganized to establish a new project that deals specifically with emerging fisheries managed by the state, such as Tanner crab.

4. Commercial fisheries for which there is no statutory delegation of authority to the Commission and DFG. (In the case of these fisheries, DFG may prepare, and the Commission may adopt, an FMP, but that plan cannot be implemented without a further delegation of authority through the legislative process.)

    - These fisheries have reduced a priority for DFG action because of the lack of delegated authorities.

Planned Advancement through the 06-07 Appropriation

A great deal of information and resources are needed to support the completion of EFI for science-based management, as well as to address the data gaps highlighted in the already-completed FMPs for nearshore, white seabass, squid, and abalone. The data collection proposed as part of this joint work plan will help DFG make significant progress to directly address EFI needs. This will allow DFG to not have to wait for, or rely upon, other agency or academic scientists to provide the underlying research and analyses. Proposed work plan activities will enhance EFI in several key areas, which in turn will help to insure that California's fisheries are managed for long-term sustainability. The following items are linked by letter and number designation to the attached budget spreadsheet:

A3-6, D1, D3, and D6 - Fishery-Independent Surveys

- Systematic surveys such as the SCUBA, ROV, and fish trapping proposals provide adult and juvenile information on relative abundance, species interactions and associations, habitat preference, distribution, and size composition of numerous stocks. When tracked over time, this kind of information may provide managers with an indication of whether stocks are increasing or decreasing, and whether the management measures that have been employed are achieving their intended conservation objectives. These surveys are one source of information on the effects of fishing on habitat, which is an MLMA objective. Fishery-independent time series data for adults and juveniles are also important for standard stock assessment models for individual species.
- Another type of proposed fishery-independent survey is for ichthyoplankton, which measures the spawning output from many different species at the same time. This provides information on growth and survival at the youngest life stages, and also provides an indication of the abundance of the female spawning biomass that produced the planktonic offspring. As with the case of adult and juvenile survey data, the ichthyoplankton survey data are often used as inputs for integrated stock assessment models.

A1 - Baseline Monitoring

- In order to move forward with an ecosystem approach to management, it is important to understand the biological and ecological effects of MPAs on the biota within and adjacent to the MPA boundaries.
- Reference reserves may, over time, help to reveal the effects of fishing on the ecosystem by providing a comparison of unfished-to-fished habitats.

- Baseline data will also provide information on individual species—both exploited and unexploited—so that future activities may be more effectively evaluated, such as the possible development of a new fishery.
- Baseline data may also help to provide the inputs for future stock assessments of currently unassessed species.
- Finally, the MLMA calls for socioeconomic considerations in decision-making, and the baseline socioeconomic data on MPAs will help address this issue.

B1 - Stock Assessments

- Integrated stock assessments for individual species provide valuable information to managers on the current abundance of a stock and the amount of fishing that the stock can safely support. This is an established and accepted way to provide for sustainable fisheries, and the proposed work will significantly add to the number of assessed stocks in California waters. These assessments are based on computer models that simultaneously analyze all available information on a population to provide the best single answer on how the stock abundance has changed through time in response to fishing pressure. This kind of information informs many fishery management decisions at both the state and federal levels.

A2 - Habitat Mapping

- An important early step in moving forward with ecosystem management is to identify, classify, and catalog existing habitat. In the absence of this information, it is difficult or impossible to determine how the ecosystem functions as a whole and what the overall impacts of fishing are to the ecosystem.

A7, B2, and B3 - Fishery-Dependent Data Collection

- Better access to data from logbooks and data system evaluation will help to provide more accurate, precise, and timely data on fishing activities, which is crucial to effective fishery management. This information allows managers to insure that key regulations, such as overall catch limits, are being observed and enforced. Also, the MLMA calls for monitoring the level of bycatch and it's effect on other fisheries, which can only be accomplished through effective fishery data collection and the availability of data from sources other than landings, such as from logbooks. Finally, important biological information on the size, age, and sex composition of the catch is provided through these proposed activities.
- The proposed funding will help eliminate bottlenecks in capturing, editing, and disseminating a large volume of fishery data from existing sources, especially logbooks.
- Improved field data collection will provide better geographic and temporal coverage of fishing activities, ultimately providing managers with insights into poorly-sampled secondary and tertiary activities such as night-time fishing and trips that originate from private marinas. These activities currently are significant sources of uncertainty and imprecision in the overall catch estimates.

D2 - Research Vessel Operations

- Fishery-independent surveys can only be accomplished with vessel operations that are dedicated to scientific research. Therefore, it is crucial that vessels be available to provide suitable platforms to accomplish these activities. The proposed funding for research vessel operations will help insure that the needed maintenance is performed and equipment is procured to allow the survey work to take place.

C1, C2, D4, D5, and D7 - Programmatic Support and Infrastructure

- Proposed support and infrastructure expenditures will provide the necessary staff expertise and physical equipment to address the MLMA objective of monitoring and evaluating management actions. The proposed funding for computers and other equipment will enhance DFG's capability to acquire EFI, maintain

databases, and conduct sophisticated modeling analyses such as stock assessments.

The proposed work plan activities and expenditures will directly address some of the EFI research and data needs that have been identified in the existing nearshore, white seabass, and market squid FMPs, as well as the Abalone Recovery and Management Plan.

- Nearshore FMP research and data needs addressed by the proposed work plan:
    - Nearshore habitat mapping, ROV video transects, and novel imaging technologies for spatially specific information on habitat
    - Geo-referenced databases
    - ROV, scuba, and experimental fishing studies to acquire spatially specific information on biomass, density, abundance, age structure, recruitment, life history, and ecological information
    - Improved port sampling protocols for more accurate sport and commercial catch information
    - Improved CPFV and commercial logbook systems for more useful information on catch composition and location
    - Socioeconomic studies to determine resource demand, costs-of-production, and the contribution of the commercial and recreational fisheries to local economies
- White seabass FMP research and data needs addressed by the proposed work plan:
    - Determine accurate estimates of bycatch
    - Move toward ecosystem-based management approach
    - Expand socioeconomic data collection and analyses
- Market squid FMP research and data needs addressed by the proposed work plan:
    - Maintain and improve the market squid logbook program for more timely data reporting
    - Maintain the port sampling program and improve the estimates of bycatch
    - Use of fishery-independent surveys to evaluate stock structure, distribution, and abundance which will provide the basis for future science-based management strategies
    - Utilize a ROV to characterize market squid spawning habitat, including the depth and temperature where egg cases are deposited as well as to develop an index of egg case abundance
- Abalone Recovery and Management Plan research and data needs addressed by the proposed work plan:
    - Collect management-related EFI through diver surveys
    - Collect recovery-related data through exploratory and recovery assessment survey

Detailed Joint OPC-DFG Budget

	Description	MLPA applicable	MLMA applicable	OPC Funds	DFG Funds
A. Data Collection					
A1 - MLPA Central Coast Baseline Monitoring	Baseline biological, physical, and socioeconomic measurements for the newly created central coast MPAs.	Y	Y	$2,275,000	
A2 - Benthic Habitat Mapping - North Central Coast	Benthic habitat mapping for the offshore area between Bolinas and Point Arena.	Y	Y	$1,510,000	$1,000,000
A3 - SCUBA surveys of marine species/habitats	Scuba fish density studies (CRANE) along selected portions of the coast (primarily the Channel Islands and Southern California regions) to fill research gaps in current density studies. ($10k/site/yr*2 years*30 sites)	Y	Y	$600,000	
A4 - ROV surveys of marine species/habitats	ROV assessment of deep-water habitats and species within the Channel Islands. ($330k/yr*2 years)	Y	Y	$660,000	
A5 - Fish Trapping Studies	Fish trapping study to mark and release various species for Channel Islands and central coast marine protected areas monitoring. (200K/yr* 2 years)	Y	N	$400,000	
A6 - Ichthyoplankton Surveys of Marine Species	Ichthyoplankton assessment of nearshore habitats including evaluation of newly created central coast MPAs and established Channel Islands MPAs. (250K/yr* 2 years)	Y	Y	$500,000	
A7 - Field data collection	Fisheries technicians to support ongoing monitoring, management, and data collection efforts within 12 marine region projects. (21 technicians at 30K/year hired through an agreement with PSFMC)	Y	Y	$630,000	
A8 - MLPA socioeconomic data collection	Baseline socioeconomic data collection to support to the regional planning process in the next study region.	Y	N	$200,000	

	Description	MLPA applicable	MLMA applicable	OPC Funds	DFG Funds
B. Data Analysis					
B1 - Stock assessments	Complete stock assessments of species with existing data available. (75k/yr*2 years)	N	Y	$150,000	
B2 - Fishery data collection system evaluation	Evaluate all commercial and recreational fishery dependent data collection technology and system (market receipts, commercial logbooks, and CPFV logbooks) and develop a comprehensive and integrated electronic data collection, reporting, and compliance system. ($150k/yr/2 years) Unknown equipment and technologies needed for implementation.	Y	Y	$300,000	
B3 - Commercial Fishery logbook data management	Programmers to develop commercial fishery logbook data management systems to manage and report data contained in logbooks for more than 12 fisheries.	N	Y	$450,000	
C. Program Support					
C1 - Department staff development	Additional staff development training and coaching in how to use public involvement, project management, how to communicate with others including the public and FGC. ($50k/yr*2 years)	Y	Y		$100,000
C2 - Department marine research priority setting	Assistance to Department staff to identify priorities for marine research, including development of implementation budget, staffing and equipment needs, and evaluation processes. ($75k/yr*2 years)	N	Y		$150,000
D. General Infrastructure					
D1 - ROV Upgrade	Upgrade Remotely Operated Vehicle (ROV) for monitoring at depths divers can not access; upgrade the existing equipment and purchase supplies for maintaining equipment.	Y	Y	$100,000	

	Description	MLPA applicable	MLMA applicable	OPC Funds	DFG Funds
D2 - Research Vessel Operations	Operating for existing research and enforcement vessels for overhauls, new engine, winches, and upgrades. (100k/yr*2 years)	Y	Y	$200,000	
D3 - SCUBA Compressors	Three portable SCUBA compressors to support nearshore dive activities along with replacement parts and equipment for ongoing maintenance.	Y	Y		$30,000
D4 - Network Printers	New network printers for remote offices to replace out of date and non-functioning equipment.	Y	Y		$25,000
D5 - IT Hardware	Information technology hardware to support Marine Region capabilities for network access.	Y	Y		$345,000
D6 - SCUBA Equipment	Upgrade scuba gear for Marine Region divers and scuba equipment stock for new divers.	Y	Y	$25,000	
D7 - Computers	New computers and specialty software upgrades for all Marine Region staff whose computers do not meet the Department standards.	Y	Y		$350,000
Total				**$8,000,000**	**$2,000,000**