

Exhibit 1. Updates on OPC-funded Sea Grant projects

California Sea Grant

| Year Approved | Project Title | Principal Investigator(s) | Objective(s) of Study | Summary to Date |
|----------------------|---|--|--|---|
| 2006 | Parasites as Indicators of Coastal Wetland Health | Kevin Lafferty, USGS Armand Kuris, UCSB | Help managers identify which animals are missing from wetland habitats and prioritize restoration projects that might attract these missing species. | Scientists are counting the number and diversity of parasites in common marsh snails to create a parasite field guide. |
| 2006 | Evaluating Current Ocean Management Systems to Facilitate the Development of Ecosystem-based Management | Oran Young, UCSB | Improve ocean health by streamlining and coordinating the regulations governing industries such as shipping, fishing and coastal development. | As of June 2008, scientists had completed compiling laws and regulations relevant to the California Current and, with the input of government personnel and other ocean stakeholders, begun identifying regulatory gaps and overlaps. |
| 2006 | Spiny Lobster Movement, Habitat Use and Abundance in Southern California: Bottom-up and Top-down Interactions in Kelp and Seagrass Habitats | Kevin Hovel, SDSU Christopher Lowe, CSULB | Track California spiny lobsters to better understand the animals' movement patterns and benthic habitats. | In the first year, biologists tagged 12 lobsters in San Diego and began scuba surveys to estimate lobster densities and community structures in different habitats. |

Exhibit 1. Updates on OPC-funded Sea Grant projects

California Sea Grant (continued)

| Year Approved | Project Title | Principal Investigator(s) | Objective(s) of Study | Summary to Date |
|----------------------|--|---|---|---|
| 2006 | Binational Studies Leading to Ecosystem-based Management of the Common Thresher Shark | Jeffrey Graham, UCSD/SIO Oscar Sosa-Nishizaki, CICESE Suzanne Kohin, NMFS | Assess the impact of fishing on shark populations in the Southern California Bight, which straddles both Mexico and Southern California, through a binational effort. | The scientists, working with graduate students in Baja California, have established a mini-observer program for the drift gillnet thresher shark fishery in Ensenada, Mexico. The biologists are also describing artisanal fisheries in Baja California and identifying essential habitat areas for juvenile thresher sharks. |
| 2006 | Assessing Changes in Life History Traits and Reproductive Function of California Sheephead Across its Range: Historical Comparisons and the Effects of Fishing | Jennifer Caselle, UCSB Christopher Lowe, CSULB Kelly Young, CSULB | Collect critical data to fill the gap identified in Department of Fish and Game's Nearshore Fishery Management Plan. | The scientists have evidence suggesting that fishing and/or the estrogenic effects of pollutants have altered the sizes and reproductive structure of California sheephead, a hermaphroditic species born female. |

Exhibit 1. Updates on OPC-funded Sea Grant projects

California Sea Grant (continued)

| Year Approved | Project Title | Principal Investigator(s) | Objective(s) of Study | Summary to Date |
|----------------------|--|---|---|---|
| 2007 | Ecology and Trophic Interactions of Jumbo Squid (<i>Dosidicus gigas</i>) in the California Current Ecosystem | William F. Gilly, HMS/SU John Field, NOAA/SWFSC | Learn more about the new invasive population of jumbo squid, and use the data to help explain why the squid have expanded their range and their possible impact on fisheries. | Biologists will count squid larvae in plankton, analyze squid stomach contents and track squid movements and foraging behaviors. |
| 2007 | Tackling Ecological Complexity and Climate Change: Matches and Mismatches in the Seasonal Cycle of California's Marine Flora and Fauna | William J. Sydeman, FIAER Steven J. Bograd, NOAA/NMFS | Understand the trophic interactions that regulate the number of top predators by studying predator needs and prey availability to support ecosystem-based fisheries management. | Scientists will analyze existing physical and biological data and conduct field studies to create a comprehensive dataset for the period from 1997 to 2009. |
| 2007 | Long-Term Faunal Changes in California Nudibranchs: Climate Change and Local Ocean Health | Jeffrey H.R. Goddard, UCSB John S. Pearse, UCSC Terrence M. Gosliner, CAS | Examine the response of nudibranchs to warm and cold phases of the Pacific Decadal Oscillation (PDO) over the course of several PDO cycles. | Researchers will resurvey three rocky intertidal sites in Central California with historical records of nudibranch populations dating back to the 1930s. |

Exhibit 1. Updates on OPC-funded Sea Grant projects

USC Sea Grant

| Year Approved | Project Title | Principal Investigator(s) | Objective(s) of Study | Summary to Date |
|----------------------|---|----------------------------------|---|---|
| 2006 | Site Fidelity and Depth Preference of Nearshore Reef Fishes on San Pedro Shelf Offshore Petroleum Platforms | Christopher Lowe, CSULB | Assess the site fidelity of nearshore reef fishes to petroleum platforms on the San Pedro Shelf, assess the depth preference of the same species relative to environmental conditions, and compare the site fidelity between petroleum platforms in the San Pedro Basin and the Santa Barbara Channel to suggest the most applicable decommissioning strategy. | To date, 63 acoustic transmitters have been implanted into individuals from four fish species. Research efforts are currently focusing on data retrieval and analysis. |
| 2006 | The Effects of Urban Stormwater Runoff on Phytoplankton Dynamics in Santa Monica Bay | Rebecca Shipe, UCLA | Quantify the physical and chemical characteristics of stormwater plumes and effects of runoff from Ballona and Malibu Creeks to offer insight into the effects of urbanization on ecosystem structure and function in the Southern California Bight, and to provide managers with relationships between nutrients or environmental conditions associated with runoff and phytoplankton responses. | Field cruises were conducted after two discrete rain events in 2007 where physical, chemical and biological samples were collected. All samples except those reserved for cell enumeration have been processed and analyzed; processing of the biological samples is still in progress. |

Exhibit 1. Updates on OPC-funded Sea Grant projects

USC Sea Grant (continued)

| Year Approved | Project Title | Principal Investigator(s) | Objective(s) of Study | Summary to Date |
|----------------------|---|---|---|--|
| 2007 | Proteomics to Develop Relevant Phenotypic Biomarkers of Environmental Impacts in Wild Marine Fishes of Southern California | Kevin M. Kelley, CSULB Andrew Mason, CSULB | Develop new biomarkers and protein expression profiles (PEPs) for use as a screening tool to identify/classify chemical exposures and their impacts in wild marine fish in the urban ocean setting. | In collaboration with the Orange County Sanitation District Environmental Assessment Division, 20-25 wild English sole have been collected per study site. Blood, liver and other tissue samples were collected for analysis and results indicate substantial differences in hepatic proteins. |
| 2007 | Distributions, Abundances and Feeding Interactions with Native Consumers of Non-Indigenous Seaweeds on Urban Southern California Shores | Steven N. Murray, CSU Fullerton Jayson R. Smith, CSU Fullerton | Study the distributions of established non-indigenous species of seaweeds and their roles as food for consumers on urban southern California shores to develop and implement effective ecosystem-based management strategies. | Consumption rate experiments were conducted from 5/2007-7/2008 to examine if macroalgae eat native seaweeds at faster rates than non-native seaweeds. Completing research started in 9/2007 to examine if macroalgal consumers preferentially feed on native seaweeds over NIS of seaweeds. |