

CALIFORNIA OCEAN PROTECTION COUNCIL

Staff Recommendation
November 20-21, 2008

**Sea Grant Research to Support Improved Management of
Ocean and Coastal Resources**

File No.: 08-121-01
File No.: 08-122-01
Project Manager: Doug George

RECOMMENDED ACTION: Adopt the 2009 Ocean Protection Council/Sea Grant Research Priorities and authorize disbursement of up to \$1 million to the California Sea Grant Program and University of Southern California (USC) Sea Grant Program to fund ocean research consistent with these priorities.

LOCATION: Statewide

STRATEGIC PLAN OBJECTIVE: Research and Monitoring

EXHIBITS

Exhibit 1: [Updates on OPC-funded Sea Grant projects](#)

RESOLUTION AND FINDINGS:

Staff recommends that the Ocean Protection Council adopt the following resolution pursuant to Sections 35500 *et seq.* of the Public Resources Code:

“The Ocean Protection Council hereby (1) approves the 2009 Ocean Protection Council/Sea Grant Research Priorities and (2) authorizes the disbursement of an amount not to exceed \$1,000,000 to the two California Sea Grant programs, consisting of \$800,000 to the Regents of the University of California, California Sea Grant College Program and \$200,000 to the University of Southern California, USC Sea Grant Program, to allow the programs to solicit, review, and fund research projects that fulfill the research priorities.

This authorization is subject to the condition that each Sea Grant College program shall present projects selected through this review process to the council for final concurrence on the grant awards.”

Staff further recommends that the Council adopt the following findings:

“Based on the accompanying staff report and attached exhibits, the Council hereby finds that:

1. The proposed project is consistent with the purposes of Division 26.5 of the Public Resources Code, the Ocean Protection Act.
2. The proposed is consistent with the current Ocean Protection Council's project funding guidelines.”

PROJECT SUMMARY:

Staff is recommending that the council adopt the 2009 Ocean Protection Council Research Priorities, which were developed in coordination with the OPC Science Advisor and OPC Science Advisory Team. These priorities reflect a suite of topics that have broad applications for the health and management of California’s coastal and ocean resources. If the council adopts these priorities, they will guide OPC research funding during the next year, and in particular, define the scope of project that will be solicited and considered during the yearly grant round conducted in partnership with the University of California Sea Grant College Program (California Sea Grant) and the University of Southern California Sea Grant Program (USC Sea Grant).

The OPC has worked with both Sea Grant programs since 2005 to promote research projects that benefit state management needs and help inform policy development at the state level. The new authorization will continue these partnerships and disburse the following amounts: \$800,000 to California Sea Grant, and \$200,000 to USC Sea Grant. These funds will be used to solicit, review, and fund research projects that inform and improve management decisions affecting the ocean and coastal environment.

PROJECT DESCRIPTION:

Formulating Science Priorities

The Ocean Protection Council Science Advisory Team (OPC-SAT), coordinated by the California Ocean Science Trust, was tasked with convening working groups to develop research priorities to address critical management problems that will be emphasized during the request for proposals stage. This was the first time the OPC-SAT was asked to perform in this capacity and the team met in September 2008 to fulfill this task. The specific priorities for each Sea Grant Program are included below.

University of California Sea Grant College Program (California Sea Grant)

The proposed approach to funding research with the California Sea Grant program follows last year’s shift to support a single, focused Research and Outreach Initiative. Staff believes that enhancing connections between the project development and data collection stages will result in better products for decision-making by state resource managers. Further, encouraging collaboration among researchers from diverse scientific backgrounds allows a comprehensive, multifaceted analysis of a single issue, including how state resource managers can apply their findings. For example, the selected research for funding in 2008 was a project that will examine how ocean acidification could impact shellfish species with economic importance to California. The group conducting the study, consisting of researchers from four universities (CSU San Marcos, Scripps Institution of Oceanography, UCSB, Humboldt State University), a federal agency (NOAA), and a state agency (DFG), can delve into the physical and biological science

and the economics simultaneously – something possible because of the single, focused Research and Outreach Initiative design.

Proposed initiatives will only be considered for funding if they are comprised of a multidisciplinary research team that also includes a state resource manager or scientist. Teams will also be required to:

- Synthesize the current state of the knowledge on their research topic into a series of policy papers
- Produce applied tools or products (such as useful indicators or predictive models)
- Disseminate their results to policy makers and other interested communities.

Proposed Priorities for the California Sea Grant College Program

Staff suggests that the OPC approve the proposed priorities for ocean and coastal research for the 2009 California Sea Grant funding solicitations. The research project must satisfy one of following to be awarded grant funding:

Land-Ocean Interactions and Water Quality – Interactions between the land and ocean are complex and poorly understood. Coastal decision makers and managers currently face problems that require understanding biophysical as well as economic, political, social, and cultural interactions. Research is needed to advance the understanding of how pollutants (both biological and chemical) from land-based runoff impact human and ecosystem health. Top research priorities include:

1. identifying chemical and biological metrics and methods for rapid, scientifically-valid water quality assessments and identifying best indicators of harmful water quality conditions,
2. quantifying impacts on human and ecosystem health to help prioritize the most harmful pollutants, and
3. evaluating the effectiveness of Low Impact Development (LID) and other techniques in reducing polluted runoff and examining the potential application of LID-type principles at local and regional scales.

Harmful Algal Blooms (HABs) – Harmful algal blooms (HABs) are a growing problem in California waters but research on the topic remains sporadic and uncoordinated. Research is needed to advance the understanding of and predictive capabilities for the anthropogenic and natural drivers that influence HABs. Specific research needs include:

1. reviewing *in situ* and paleoclimate data to determine if HABs have occurred more frequently in the last decade,
2. collecting new *in situ* data that furthers analysis of where, when, and how HABs are initiated and how fast they are dispersed, and
3. producing improved predictive models of HABs.

Salmon-Ocean Conditions – Protecting and enhancing wild populations of salmon has long been a goal of California state government through the enactment of multiple policies and laws. Even so, salmon stocks have declined to record lows throughout the Pacific Northwest and California. One of the biggest data gaps related to the decrease in salmonid populations is understanding the effects of changing ocean conditions on salmon populations and the interactions between oceanic, freshwater, and terrestrial stressors. To address this data gap, priority research areas include:

1. analyzing (retrospectively and prospectively) salmon survival rates, particularly on prey

- availability for first year animals (smolts and juveniles),
2. modeling (statistical or numerical) the different effects of terrestrial, freshwater and ocean stressors on salmon populations,
3. evaluating the resilience of the terrestrial, and ocean systems to support salmon populations,
4. analyzing retrospectively the relationship between ocean conditions and salmon trends, and
5. integrating forecasting and ocean observing for salmon and integrating oceanographic information into predictive models.

Wave and Tidal Energy – Ocean energy technology, specifically wave and tidal energy conversion devices, is being considered as a viable contribution to California’s renewable energy goals. At the same time, much uncertainty exists about the environmental and socioeconomic impacts of these emerging technologies. Research is needed to advance the understanding of the relative costs and benefits of wave and tidal energy technologies. The most valuable information will be that which can be used to maximize the potential for clean energy generation while minimizing the potential for negative environmental consequences. To gather this data, research topics include:

1. developing comprehensive models that explore the interplay between physical and biological effects from the benthos to the littoral, and
2. evaluating the socioeconomic impacts of: a) conflicting uses and restricted access; and b) attenuating wave energy on coastal uses and risks of coastal and marine hazards.

Climate Change – Compelling evidence exists that the negative impacts to ocean and coastal resources from climate change will be substantial. Information and research is needed to understand how the climate is changing and how these changes will impact ocean processes, ecosystems, and ecosystem services, as well state and local economies in California. Managers need improved understanding of the impacts of climate change on California’s ocean and coastal ecosystems. Research areas include:

1. identifying interactions between climate change and other stressors that are the target of management efforts such as fishing, introduced species, and harmful algal blooms,
2. identifying characteristics or factors that determine ecosystem vulnerability and resilience to climate change,
3. identifying bellwether or critical indicators of ecosystem response to climate change,
4. evaluating effects of natural cycles (Pacific Decadal Oscillation (PDO), El Nino-Southern Oscillation (ENSO)) and those of anthropogenic change and identifying the interactions and synergisms between the two, and
5. predicting and forecasting likely impacts of climate change, including sea level rise, on beach loss, coastal flooding, and infrastructure (airports, highways, bridges, ports, etc).

The USC Sea Grant Program

The smaller size of the USC Sea Grant program (\$200,000) prevents developing a single, large-scale initiative. Therefore, funding for the USC program will be allocated as it has in past years, with a focus on urban water quality. Staff suggests the proposals be required to illustrate a strong connection to management by specifying outreach mechanisms to integrate results with state resource management needs.

Proposed Priority for the USC Sea Grant College Program

The USC program focus is urban water quality. Identical to the Land-Ocean Interactions and Water Quality priority for the California Sea Grant program, this research directive seeks proposals that aim to understand how pollutants (both biological and chemical) from land-based runoff impact human and ecosystem health. Research priorities include:

1. identifying chemical and biological metrics and methods for rapid, scientifically-valid water quality assessments and identify best indicators of harmful water quality conditions,
2. quantifying impacts on human and ecosystem health to help prioritize the most harmful pollutants, and
3. evaluating the effectiveness of Low Impact Development (LID) and other techniques in reducing polluted runoff and examine the potential application of LID-type principles at local and regional scales.

Proposal Review Process for both programs

Proposals will undergo the same review process as all other California Sea Grant proposal submissions, including review by the Resources Agency Sea Grant Advisory Panel (RASGAP), which will look for consistency with OPC priorities and relevance to state management. All proposals are also reviewed by an independent scientific peer review team to judge technical merit. OPC staff will be involved in all stages of the review process, including the technical review and final decision-making. At the discretion of the OPC staff, additional review may be requested by likely user groups of the research findings or coordination between research proposals may be suggested for complimentary proposals. Projects selected through this process will be brought back to the council for concurrence at the Fall 2009 meeting.

Each Sea Grant program will provide all post-award grant administration, including reporting and financial accounting on the grants chosen for funding.

PROJECT GRANTEEES:

The two Sea Grant programs are natural partners for this endeavor because they have an established, well-respected process for evaluating, prioritizing, and administering research grants related to coastal and ocean resources. Nationally, the Sea Grant College Network consists of 30 university-based programs funded primarily by the National Oceanic and Atmospheric Administration (NOAA) and dedicated to the understanding, conservation and sustainable use of coastal and marine resources. The California Sea Grant College Program, the largest of the 30 Sea Grant programs, is administered by the University of California and based at Scripps Institution of Oceanography in San Diego. The USC Sea Grant Program is administered by the University of Southern California and focuses primarily on the state's southern coastal metropolitan region, with particular emphasis on topics related to the interface between urban areas and the ocean.

The two Sea Grant programs review projects and administer grant awards according to the same national standard. The programs' annual solicitation and review occurs concurrently with the proposed OPC process, which results in minimal extra effort and low overhead costs. Sea Grant's credible review process and compatible mission makes it an obvious partner to review and select research projects that address the priorities of the council.

PROJECT HISTORY:

For the past three years, the OPC has approved grants of \$1 million per year to the state’s two Sea Grant programs. The shared priorities and existing relationship between Sea Grant and the council make coordinating OPC research projects with the Sea Grant review process practical and cost effective. Continuing this partnership for a fourth cycle of research grants provides the ability to collaboratively tackle issues deemed a priority for the OPC and Sea Grant. This is particularly critical as Sea Grant works with the states of California, Oregon, and Washington to finalize a regional research plan to support the West Coast Governors’ Agreement on Ocean Health.

The proposed project also benefits from an existing relationship between the Resources Agency and Sea Grant. RASGAP was formed through legislation to give the state a role in the review of scientific proposals submitted to Sea Grant and reviews project proposals to determine their benefit to the management of the state’s ocean and coastal resources. RASGAP is chaired by the Assistant Secretary for Ocean and Coastal Policy and consists of representatives from state government, the state legislature, state universities, and industries related to the ocean and coastal environment.

PROJECT FINANCING:

Ocean Protection Council to California Sea Grant College Program	\$800,000
Ocean Protection Council to USC Sea Grant Program	<u>\$200,000</u>
Total Project Cost	\$1,000,000

The anticipated source of funds will be the fiscal year FY 07/08 appropriation from the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84). Proposition 84 authorizes the use of these funds for the protection of beaches, bays coastal waters and watersheds consistent with Section 35650 of the Public Resources Code, establishing the California Ocean Protection Trust Fund (Pub. Res. Code § 75060(g)). Under Section 35650(b), Ocean Protection Trust Fund monies may be expended for projects authorized by the OPC that are identified as appropriate Trust Fund purposes. The project is consistent with the Trust Fund purposes as discussed in the following section.

This project is also appropriate for prioritization under the selection criteria set forth in Sections 75060(g). Section 75060(g) identifies as a priority for Proposition 84 funding projects which develop scientific data needed to adaptively manage the marine resources and reserves of the state.

OPC research proposals funded through this partnership require a 50 percent match. In addition, the agreements with the Sea Grant program will place a cap of 25 percent on university overhead for proposed projects.

CONSISTENCY WITH CALIFORNIA OCEAN PROTECTION ACT:

This project is consistent with the Ocean Protection Act, Division 26.5 of the Public Resources Code, in the following respects:

The Ocean Protection Act identifies trust fund allowable projects in PRC Section 35650 (b)(2)(F), as including projects that “improve management, conservation, and protection of coastal waters and ocean ecosystems,” and Section 35650 (b)(2)(G), as including projects that “provide monitoring and scientific data to improve state efforts to protect and conserve ocean resources.”

Research funded through the Sea Grant programs will meet these directives because the projects chosen will directly focus on collecting and disseminating information that will inform current data gaps for managers.

CONSISTENCY WITH OPC'S STRATEGIC PLAN GOAL(S) & OBJECTIVE(S):

B. Research and Monitoring, Objective 1b: “Work with the California Sea Grant Programs to review and award grants that meet the OPC guidelines and priorities. Support or collaborate with the research activities by agencies, universities, and programs that seek to provide a better scientific understanding of impacts to ocean and coastal ecosystems.”

By working with the two Sea Grant programs, the OPC fulfills this section of the Five-Year Strategic Plan. Furthering scientific understanding of the ocean and coastal ecosystems has the potential to improve management of the ocean and coastal resources. The proposed project has been designed explicitly to meet this objective by creating research priorities that address the needs of the state and that are a priority to the OPC.

CONSISTENCY WITH OPC'S PROJECT FUNDING GUIDELINES:

The proposed project is consistent with the OPC Project Funding Guidelines adopted June 14, 2007, in the following respects:

Required Criteria

1. **Directly relate to the ocean and coast:** The research projects chosen will improve the State’s understanding of ocean and coastal resources and may lead to improved ocean and coastal resource management.
2. **Support of the Public:** Public support of the Sea Grant Research Program can be determined by the broad representation in the review panel. RASGAP consists of representatives from the Department of Boating and Waterways, the Department of Conservation, the Department of Fish and Game, the fishing industry, the aquaculture industry, the ocean engineering industry, the University of California, the California State University, a private California institution of higher education that is participating in the National Sea Grant Program, the State Lands Commission, the Office of Environmental Health Hazard Assessment, the State Water Resources Control Board, the Office of Oil Spill Prevention and Response in the Department of Fish and Game, and the Executive Director of the California Coastal Commission. Additionally, Californians supplied more than 1,500 comments during the public comment period (May 2007 – January 2008) to the Sea Grant Regional Marine

Research and Information Plan for the California Current Large Marine Ecosystem (CCLME), a collaborative project among the four West Coast Sea Grant programs (California – 2, Oregon and Washington – 1 each).

3. **Greater-than-local interest:** Projects to be funded will be conducted on a statewide basis and the findings will likely have statewide implications.

Additional Criteria

5. **Leverage:** The chosen researchers will be required to provide 50 percent matching funds to support these projects. See the “Project Financing” section above.
7. **Innovation:** Addressing research and management challenges will require coordinated, long-term, interdisciplinary research efforts across the state. By design, OPC research projects are innovative because they require researchers to directly link their work to management issues. In particular, building on the successful changes implemented for 2008, California Sea Grant again will fund a coordinated initiative team that requires scientists to organize themselves, include a resource manager/scientist in the project, and synthesize existing and new data into reports that policymakers can understand.
8. **Coordination:** The Sea Grant program is a unique collaboration between the University of California, University of Southern California, the national Sea Grant College Network, the State Resources Agency, the OPC and other state resource managers. The Sea Grant program allows the OPC to play a critical role in building bridges between scientific research, responsive policy development, and public education. Links are necessary between university natural and social scientists, state resource managers and policy makers to ensure research informs long-term policies that support the recovery and sustainability of the state’s coastal resources. The Sea Grant programs work closely with the grantees throughout the project. This allows the selected researchers access to Sea Grant outreach mechanisms as well as the Sea Grant Advisor network throughout the state.

CONSISTENCY WITH OPC’S 2007/2008 FUNDING PRIORITIES

The proposed research priorities fulfill four topic areas identified in the 2007/2008 Funding Priorities. The Funding Priorities emphasize specific subjects (climate change, polluted runoff, and salmon) and encourage research partnerships (high priority state needs).

1. ***Governance: Focus on Climate Change***

The Sea Grant programs are well positioned to encourage more research in support of understanding climate change and the substantial negative impacts that are predicted, such as sea level rise, ocean acidification, and ocean regime shifts. In particular, the California Sea Grant research program will be consistent with this funding priority should a project be selected that addresses the Climate Change research priority.

2. ***Research and Monitoring: Focus on High Priority State Needs***

By continuing the partnership between OPC the two California-based Sea Grant programs, these funds will be used to satisfy the highest priority and most useful research for state management needs, as determined by the Science Advisor to the OPC. All research projects

will be California-focused to ensure that state needs are addressed and that there is consistency with this funding priority.

3. *Ocean and Coastal Water Quality: Focus on Polluted Runoff*

Depending on which projects are selected for funding, the sponsored research could focus exclusively on improving our general knowledge of water quality and providing specific solutions to current water quality problems in California. The USC Sea Grant program in particular focuses on the “Urban Ocean” making projects selected by it consistent with this funding priority.

4. *Ocean and Coastal Ecosystems: Focus on Salmon Statewide and in the Klamath Basin*

Funding can be used to satisfy the research priority related to ocean conditions and salmon populations, which would also address this OPC funding priority.

COMPLIANCE WITH CEQA

The proposed project is categorically exempt from review under the California Environmental Quality Act (“CEQA”) pursuant to 14 Cal. Code of Regulations Section 15306 because the project involves only data collection, research and resource evaluation activities that will not result in a serious or major disturbance to an environmental resource. While the research may result in follow-up actions by public agencies, those actions, if any, have not yet been approved, adopted or funded. Staff will file a Notice of Exemption upon approval by the council.