

CALIFORNIA OCEAN
PROTECTION COUNCIL

Staff Recommendation
January 13, 2005

California Coastal and Marine Mapping Initiative

Developed By: **Marina Cazorla and Rebecca Pollock**

RECOMMENDED ACTION: Consideration of the California Coastal and Marine Mapping Initiative project, involving data acquisition for near- and offshore substrate and marine habitat mapping, and possible 1) determination that it is a high priority project and 2) authorization for the Secretary to take actions needed to provide up to \$1,200,000 for its planning or implementation.

OCEAN or COASTAL LOCATION: Statewide

AGENCY OR ENTITY RECOMMENDING PROJECT: State Coastal Conservancy, California Resources Agency, Monterey Bay Sanctuary Foundation, National Marine Sanctuary Program

EXHIBITS

Exhibit 1: California Marine Habitat Task Force Final Report,
2000 Strategic Planning Meeting

Exhibit 2: 2003 National Marine Sanctuary Seafloor Habitat Desktop
Study

Exhibit 3: Letters of Support

RESOLUTION:

“The Ocean Protection Council finds pursuant to Sections 35600, *et seq.* of the Public Resources Code that the California Coastal and Marine Mapping Initiative, as herein described, is of high priority for ocean conservation and authorizes the Secretary to take actions necessary for its planning or implementation, including the allocation of up to \$1,200,000 for the purposes of this project.”

PROJECT DESCRIPTION:

Staff recommends that the Ocean Protection Council (Council) authorize an initiative for mapping the state’s coastal seafloor. The proposed project anticipates a grant of \$1,200,000 to the Monterey Bay Sanctuary Foundation (MBSF) to undertake a

collaborative data acquisition effort for the northern Central Coast between Moss Landing and Bodega Bay. Data will be collected using various geo-referenced mapping technologies as appropriate, including side-scan sonar, multi-beam, and light detection and ranging (LiDAR). The collaborative effort will deliver processed data and map products for data users and resource managers. \$100,000 of the total grant will be applied to acquisition of mapping equipment.

Background

The California Ocean Protection Act (SB1319) and subsequent adopted documents of the Ocean Protection Council emphasize that it is state policy to implement ecosystem-based approaches to manage coastal and marine resources using sound science. Implementation of ecosystem-based management strategies requires consideration of interactions between species, their habitats, and human activities. Many of these interactions are not well understood, and significant data and information gaps hinder achievement of effective ecosystem-based management. Statewide, California's resource managers and scientists must often make decisions based on a patchy picture of the habitats that lie offshore.

Accurate statewide mapping of seafloor substrate, marine habitat types, and bathymetry (underwater topography) of California's coastal and nearshore waters is a crucial component necessary to guide multiple ocean management decisions. Designating marine reserves, understanding sediment transport systems, ensuring shipping safety, identifying dredging and dumping sites, regulation of offshore coastal development, and illuminating the dynamics of fisheries and other marine species, are just a few of the applications that would benefit from coastal and marine mapping data and products. Although small sections of the coast, including some adjacent federal waters, have been mapped to varying extents and resolutions, a comprehensive and seamless map of the state's near- and offshore benthic and marine resources does not currently exist.

Past Mapping Efforts at the State Level

Previous mapping planning and prioritization efforts at the state level exemplify the importance and timeliness of a marine mapping initiative supported by the Ocean Protection Council. In 2000, the California Marine Habitat Task Force, led by the Department of Fish and Game and coordinated by the California State University Monterey Bay (CSUMB) Seafloor Mapping Lab, convened a workshop to share existing data and prioritize areas for mapping along the state's coast based on common needs of stakeholders (Exhibit 1). Additional mapping according to the Task Force's 2000 priorities has since been completed, but significant stretches of the coast remain unmapped.

In October 2005, members of the benthic habitat mapping community, including coastal and marine geologists, seafloor mapping experts, resource managers, and end users of the maps and data, held an initial meeting for a Consortium for Coastal Geologic and Benthic Habitat Mapping. The group's objectives are to organize a public forum on current mapping efforts, needs, and data gaps; to identify multi-institutional and multi-disciplinary mapping priorities and funding sources; to generate and publish geologic

and habitat maps online; and to participate in the creation of data standards for data acquisition, analysis, and display. This group, coordinated by Guy Cochrane at the U.S. Geological Survey and Gary Green of Moss Landing Marine Laboratory, and other institutions across the state, identified the need to pursue a comprehensive, high quality, collaborative statewide mapping effort.

Leveraging Federal Funds

In addition to this momentum to map the substrates and benthic habitats in state waters, three of the four California National Marine Sanctuaries (part of the National Oceanic and Atmospheric Administration's National Marine Sanctuary Program) recently identified benthic and seafloor mapping as a top priority in their Draft Management Plans. The Channel Islands National Marine Sanctuary (NMS), Cordell Bank NMS, and the Monterey Bay NMS, all of which have boundaries extending partially or wholly within state waters, specifically indicated that managing resources and protecting ecosystems required undersea habitat maps.

Mapping efforts have been conducted previously by the Sanctuaries. The Channel Islands NMS in conjunction with the U.S. Geological Survey has conducted ongoing seafloor surveys since 1997 to characterize benthic habitats in and around state and federal waters of the Sanctuary, and a third of this mapping is complete. As of 2003, small sonar mapping efforts were completed in the Gulf of the Farallones NMS and Cordell Bank NMS. These efforts were inventoried in the NMS's 2003 Seafloor Desktop Habitat Study (Exhibit 2).

NOAA's National Marine Sanctuary Program (NMSP) is acquiring a new research vessel in May 2006, which will be capable of data collection using multibeam, sidescan sonar, and other mapping equipment. NMSP has committed to be a federal partner for this proposed marine mapping initiative, providing use of the new research vessel Fulmar for a significant amount of time during the upcoming field season, as well as staff and crew time. This is a major contribution and partnership for the proposed project, as vessel and equipment rental are among the most costly components of any marine mapping effort.

The California Coastal and Marine Mapping Workshop

The California Coastal and Marine Mapping Workshop was held December 12-13 2005, organized by California State University Monterey Bay's Seafloor Mapping Lab. The Coastal Conservancy funded this workshop using tidelands funds allocated for ocean protection purposes under the authority delegated to the Executive Officer at the Council's October 27, 2005 meeting. The objectives of the Workshop were to (1) update the state mapping priorities defined in 2000 by the California Marine Habitat Task Force based on existing data, data needs, and end-user applications; and (2) draft a strategic plan for statewide coastal and marine mapping that leverages resources of federal and state agencies, academia, and private sector interests.

The workshop convened major stakeholders, scientists, and end-users of mapping products, including academic institutions, management agencies, and other mapping

data consumers. By involving these key participants, the resulting draft strategic plan is a transparent and inclusive document that integrates diverse application needs and leverages multiple funding and support sources for a coordinated effort. The Workshop Preliminary Report and Marine Mapping Strategic Plan (Workshop Report and Plan) addresses the following issues:

- Prioritization of areas for new fieldwork and data acquisition efforts statewide, with special emphasis on the northern portion of the Central Coast;
- Collection, management, and storage of both existing and newly acquired data;
- Agreed-upon standards and protocols for data collection, post-processing, and interpretation of data;
- Selection of various mapping products appropriate for resource management applications (e.g., hard copy maps, interactive GIS-based online maps, etc.), and
- Dissemination of mapping data and information to end-users and the public.

One of the primary purposes of the Workshop Report and Plan is to ensure that Council, state and other funding sources for mapping will be used strategically and efficiently, and that mapping data interpretation and mapping products are useful and relevant to the greatest possible number of resource managers and end-users. A copy of the Workshop Report and Plan will be provided to the Ocean Protection Council at the January 13 meeting.

Applications of Marine Mapping Data and Products

Coastal and fishery resource managers must frequently make decisions about development projects or uses of the coastal zone without sufficient knowledge of the marine habitat types that the proposed projects impact. Development projects, such as aquaculture, wind farms, pipeline and cable installations, construction of docks, piers, sewage outfalls, and discharge of pollutants (e.g. nutrients and heavy metals), can disrupt and degrade the habitat functions and values of the marine environment. Productive habitats for commercially and ecologically valuable species are located throughout the coastal zone and are potentially impacted by these activities.

Benthic habitat maps are a vital tool to allow managers to visualize the distribution, diversity and extent of marine communities under their jurisdiction. Recent advances in acoustic mapping systems, such as sidescan sonar and multibeam sonar, has made it possible to obtain high-resolution information about the seafloor, and has made benthic mapping feasible for large areas of the seafloor. Benthic habitat maps can be used to aid in siting and reviewing the environmental impacts of a wide variety of development projects on the seafloor. They can also be used as a planning tool to insure future protection efforts (fishery closures, marine protected areas, ocean use allocation) are habitat based and representative of all regional habitat types. Managers have a critical need to monitor the individual and cumulative impacts of human activity in the marine environment, which will be greatly facilitated when the spatial distribution of various benthic habitat types are known.

Implementation of the Mapping Initiative

The proposed \$1.2 million grant to MBSF will fund the acquisition of new mapping data on the Central Coast through various collection techniques including side-scan sonar, multi-beam, and LiDAR, and serve up processed data and map products for end-user access. Through a Request for Proposals, MBSF in cooperation with the National Marine Sanctuary Program will solicit collaborative, multi-institution proposals to collect, process, and interpret mapping data in the first target area, the exact location of which was determined during the December mapping workshop. The Request for Proposal will also require cash or in-kind matches or contributions from proposers, in order to maximize leverage of this effort. \$100,000 of the total will be applied to mapping equipment acquisition.

The Monterey Bay Sanctuary Foundation

The mission of the Monterey Bay Sanctuary Foundation (MBSF) is to advance the understanding and protection of the Monterey Bay National Marine Sanctuary and other coastal and ocean resources in California. MBSF oversees the Sanctuary Integrated Monitoring Network (SIMoN) which monitors and reports on the health of the ocean ecosystem; promotes ocean conservation education for underserved communities; promotes water quality; supports Marine Protected Area efforts; and serves as fiscal sponsor for a variety of federal and state grants and contracts. MBSF is experienced at managing large contracts and grants, and offers a reasonable overhead of 10 percent for administration. MBSF also has excellent knowledge of and familiarity with the staff of California marine sanctuaries and the state's scientific community. Lastly, MBSF's science panel for SIMoN provides a pre-existing resource of scientific expertise for review and assessment of proposals and respondents for the proposed mapping block grant, although a new, grant-specific scientific review panel will be appointed by MBSF for proposal review.

PROJECT FINANCING

Funding Sources:

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| Ocean Protection Council (Coastal Conservancy) | \$1,200,000 |
| Monterey Bay Marine Sanctuary In-Kind Contribution (est.) | \$ 550,000 |
| Total Project Cost | \$1,750,000 |

Staff anticipates using \$1,200,000 of the Ocean Protection Council's Tidelands Oil funds appropriated to the Secretary of Resources in FY 04/05 for projects authorized pursuant to the Ocean Protection Act. The Resources Agency has entered into an interagency agreement with the Conservancy to administer these funds on behalf of the Council and recommend projects for funding. These funds are to be expended by the Conservancy in concert with the Council for programs and projects that the Council finds to be of high priority. If authorized by the Council, Conservancy staff will recommend a grant of \$1,200,000 to MBSF for consideration at the Conservancy's next public meeting on February 8, 2006.

In addition, an unknown but likely significant contribution of matching funds and/or in-kind resources will come from respondents to the MBSF's request for proposals from the state's scientific and academic institutions.

CONSISTENCY WITH CALIFORNIA’S OCEAN ACTION STRATEGY: The project is consistent with Action Item 10, which states California should “pursue, support, implement and establish long-term funding for coordinated ecosystem management approaches at the federal, state and local levels to guide and improve the stewardship of ocean and coastal resources.” It is also consistent with Action Item 13, which states that the State should identify and prioritize issues that may benefit from additional coordination by the California Ocean Council, including issues arising in the context of protection of marine resources and economic uses of the ocean.

CONSISTENCY WITH OCEAN PROTECTION COUNCIL’S INTERIM PROJECT SELECTION CRITERIA & GUIDELINES:

Mandatory Criteria

1. **Furtheres the following statutory purposes and policies of the Ocean Protection Act:**
 - **Improves management, conservation, and protection of coastal waters and ocean ecosystems:** This project will provide essential data and mapping of coastal water and marine ecosystems, which will support management and conservation of these resources.
 - **Improve monitoring, data gathering, and advances in scientific understanding of the ocean and coastal environment:** The main objective of this project is to acquire data needed for scientific research to manage and conserve the ocean and coastal environment.
 - **Improves the health of fish and fosters sustainable fisheries in ocean and coastal waters:** This project will support sustainable fisheries management by improving scientific understanding of the locations of different types of potential fish habitat so that fisheries can be managed or conserved more effectively.
 - **Helps to coordinate the collection and sharing of scientific data:** This project will benefit from and support coordination, collection, and sharing of scientific and mapping data by promoting multi-institutional scientific cooperation, protocol standardization, and sharing of scientific equipment. .
2. **Consistent with the purposes of the funding source:** See Project Financing Section above.
3. **Has demonstrable support from the public:** This project has support from the Monterey Bay National Marine Sanctuary, the Gulf of the Farallones National Marine Sanctuary, and Cordell Bank National Marine Sanctuary. See Exhibit 3 for letters of support.
4. **Relates directly to the ocean, coast, associated estuaries, and coastal-draining watersheds:** This project will promote ocean and coastal marine resource management and conservation by improving the quality and quantity of seafloor substrate and habitat mapping data.
5. **Has greater-than-local interest:** This project will promote regional and statewide marine resource scientific research, conservation, and management by providing a model for future statewide mapping efforts.

Additional Criteria

Helps implement the California Ocean and Coastal Information, Research, and Outreach Strategy (IRO): This project will implement the “cross-cutting need” for seafloor mapping identified in the IRO. As such, the project will help to address multiple IRO recommendations related to scientific research, ocean observing, identification of federal support for California research needs, and improvement of access to and coordination of ocean and coastal information in California.

The project would not occur without Council participation: This project would not occur without Council funding and support because there is currently no statewide entity coordinating statewide mapping efforts, or with the resources to fund large mapping projects..

The project helps resolve more than one issue: This project will support scientific research, marine resource management, and regulation of coastal and offshore development.

The project includes a contribution of funds or services by other entities: This project includes a significant in-kind contribution of vessel time from the R/V Fulmar, a new NOAA research vessel dedicated to research in the northern California marine sanctuaries. Additional significant matching funds or in-kind services are expected from respondents to the competitive RFP process that the MBSF will oversee.

The project is ready to implement (grantee or contractor will start and finish the project in a timely manner): The Monterey Bay Sanctuary Foundation is ready to begin implementing the proposed project as soon as funds are available.

The project involves a combination of local, state, or federal agencies or is a public/private partnership: This project involves a significant partnership of California state agencies and NOAA’s National Marine Sanctuary Program. Respondents to the proposed block grant are also expected to bring in other project partners.