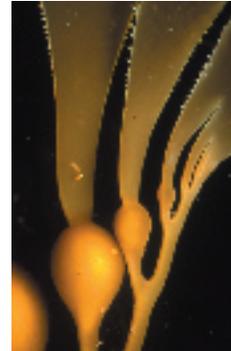




Channel Islands National Marine Sanctuary



Draft Management Plan/ Draft Environmental Impact Statement

Volume I of II:
Draft Management Plan



May 2006

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service
National Marine Sanctuary Program

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ABOUT THIS DOCUMENT

This document is the revised draft management plan for the Channel Islands National Marine Sanctuary (CINMS). When final, this plan will serve as the primary management document of the Sanctuary for the next five years.

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Staff of the Channel Islands National Marine Sanctuary (CINMS) and the National Marine Sanctuary Program (NMSP) are acknowledged for their contribution in the development of this draft management plan.

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EXECUTIVE SUMMARY

Overview

Designated in 1980, the Channel Islands National Marine Sanctuary (CINMS or Sanctuary) consists of an area of approximately 1243 square nautical miles (NM)¹ of coastal and ocean waters, and the submerged lands thereunder, off the southern coast of California. The Sanctuary boundary begins at the Mean High Water Line of and extends seaward to a distance of approximately six NM from the following islands and offshore rocks: San Miguel Island, Santa Cruz Island, Santa Rosa Island, Anacapa Island, Santa Barbara Island, Richardson Rock, and Castle Rock (the Islands).

Located offshore from Santa Barbara and Ventura Counties in southern California, the Sanctuary's primary objective is to conserve, protect, and enhance the biodiversity, ecological integrity, and cultural legacy of marine resources surrounding the Channel Islands for current and future generations. The significance of this objective is underscored by the Sanctuary's rich and diverse range of marine life and habitats, unique and productive oceanographic processes and ecosystems, and culturally significant resources.

This draft management plan is Volume I of a two-volume set. It contains information about the Sanctuary's environment and resources, staffing and administration, regulations and boundary, operational and programmatic costs, priority management issues and the actions proposed to address them, and performance measures. The draft management plan represents a major revision of the original 1983 management plan under which the Sanctuary currently operates. Upon completion of final revisions and clearance, this document will replace the original plan as the Sanctuary's current management plan.

The Draft Environmental Impact Statement (DEIS) is Volume II of the set. It has been developed in compliance with the National Environmental Policy Act (NEPA) (42 U.S.C. sec. 4321-4370 *et seq.*) and Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), contains detailed information on the greater Sanctuary region, presents a range of alternatives for modified and new Sanctuary regulations, and provides environmental and socioeconomic impact analyses of those alternatives.

The Draft Management Plan

History of the Management Plan Review Process

Although the first national marine sanctuary was designated in 1975, the initiation of the CINMS management plan review in 1998 marked the first formal management plan review of any sanctuary in the National Marine Sanctuary System. CINMS began this process with an internal review of the effectiveness of site programs and policies relative to the 1983 management plan's goals and objectives and the purposes and policies of the

¹ Since designation the area of CINMS has been described as approximately 1252.5 square nautical miles. However, adjusting for technical corrections and using updated technologies, the CINMS area is now calculated as approximately 1243 square nautical miles. The legal description of CINMS is proposed to be updated to reflect this change (see Vol. II, DEIS, Section 2.1.1). This update would not constitute a change in the geographic area of the sanctuary but rather an improvement in the estimate of its size

National Marine Sanctuaries Act (NMSA). Also in 1998, CINMS formed a Sanctuary Advisory Council (Advisory Council) as a forum through which Sanctuary constituents could provide advice to the Sanctuary Superintendent, including advice on the management plan review.

In the summer of 1999, Sanctuary staff held several public scoping meetings across San Luis Obispo, Santa Barbara, Ventura and Los Angeles counties (one meeting was also held in Washington, D.C.). During these meetings, numerous individuals raised a wide range of local, regional and national resource management issues. After reviewing and synthesizing these comments, CINMS and NMSP staff, working closely with the Advisory Council, identified a set of priority resource management issues to be addressed in the new management plan.

Developing the Draft Management Plan

In 2000, CINMS and NMSP headquarters staff began to draft the revised management plan. At the same time, Tetra Tech, Inc. was contracted to begin drafting the DEIS. Over the next few years, several revisions were made to the draft management plan with periodic input from the Advisory Council. Following public review, the document will undergo additional internal review and edits and will then be submitted as a final management plan.

The foundation of this draft management plan are the action plans, which detail the management actions (non-regulatory “strategies” and existing or proposed new/modified existing regulations) the Sanctuary will take to address the priority issues and meet the purposes and policies of the NMSA.²

Purpose of This Document

Based on purposes and policies set forward by the NMSA, all thirteen national marine sanctuaries engage in management plan review in order to:

- Evaluate substantive progress toward implementing the management plan and goals;
- Evaluate the effectiveness of site-specific management techniques and strategies;
- Determine necessary revisions to the management plan; and,
- Prioritize management objectives.

In addition, CINMS recognizes significant advances in science and technology, innovations in marine resource management techniques, and challenging new resource management issues have emerged and, as such, have rendered the original 1983 management plan obsolete. Thus, the management plan revision process is also a vehicle for the Sanctuary to integrate new tools and practices into site management.

With this in mind, the purpose of this management plan is twofold: 1) to inform Sanctuary constituents, including the general public, about the Sanctuary and the management actions CINMS has planned for the next five years, and 2) to guide site management toward achievement of the Sanctuary's goals with the best means available.

² The NMSA can be found in Appendix B of Volume II, Draft Environmental Impact Statement, or online at: <http://www.sanctuaries.nos.noaa.gov/natprogram/nplegislation/nplegislation.html>

Organization of this Document

The draft management plan is organized into four principal sections.

- **Section I** is an introduction presenting background information on the national marine sanctuaries and the management plan review process.
- **Section II provides** context by describing the Sanctuary setting. This section is divided into four sub-sections: II-A) The Physical Setting; II-B) The Biological Setting; II-C) The Human Setting; and II-D) The Operational Setting.
- **Section III** contains the action plans, which detail the management actions the Sanctuary will take to address priority issues and meet the purposes and policies of the NMSA.
- **Section IV** contains a number of appendices, which provide supporting information on various aspects of this draft management plan.

A summarized list of the management strategies (binned by action plan) found in this draft management plan is presented on the following page. A more detailed version of this list, which presents information on the status, funding source, level of partnership coordination, and levels of implementation for each strategy can be found in Appendix A1: Action Plan Overview.



Figure 1: California brown pelican (Shane Anderson)

Management Strategies By Action Plan

Public Awareness and Understanding Action Plan

- | | |
|---|--|
| AU.1 – Education Program Development | AU.6 – Education & Outreach Tools & Products |
| AU.2 – Community Involvement | AU.7 – Visitor Center Support & Development |
| AU.3 - Team OCEAN | AU.8 – Marine Reserves Education |
| AU.4 – Developing Outreach Technology | AU.9 – Multicultural Education |
| AU.5 – Greater Southern California Outreach | |

Conservation Science Action Plan

- | | |
|---|--|
| CS.1 – SAMSAP | CS.4 – Collaborative Marine Research Project |
| CS.2 – Comprehensive Data Management | CS.5 – Research Interpretation |
| CS.3 – Site Characterization & Monitoring | CS.6 – Marine Reserves Monitoring |

Boundary Evaluation Action Plan

- BE.1 – Completing the NCCOS Biogeographic Study
- BE.2 – Final Determination on Boundary Issue

Marine Zoning Action Plan

- MZ.1 – General Marine Zoning
- MZ.2 – Consideration of Federal Marine Reserves

Water Quality Action Plan

- WQ.1 – Offshore Water Quality Monitoring
- WQ.2 – Water Quality Protection Planning

Emergency Response and Enforcement Action Plan

- EE.1 – Improving Emergency Response Planning & Implementation
- EE.2 – Expanding Enforcement Efforts

Maritime Heritage Resources Action Plan

- | | |
|--|--|
| MHR.1 – The Shipwreck Reconnaissance Program | MHR.5 – Upgrading the MHR Website |
| MHR.2 – MHR Volunteer Program | MHR.6 – Promoting Public Education of Chumash
Native American History |
| MHR.3 – Partnering with the Maritime Museum | |
| MHR.4 – MHR Protection Outreach Effort | |

Emerging Issues Action Plan

- EI.1 – Identifying & Assessing Emerging Issues
- EI.2 – Responding to Identified Issues

Operations Action Plan

- | | |
|--|-----------------------------------|
| OP.1 – Sanctuary Advisory Council Operations | OP.5 – Administrative Initiatives |
| OP.2 – Permitting and Activity Tracking | OP.6 – Human Resources |
| OP.3 – Relationships with Other Authorities | OP.7 – Office Space Expansion |
| OP.4 – Vehicle, Boat & Aircraft Operations | |

Performance Evaluation Action Plan

- EV.1 – Measuring Sanctuary Performance Over Time

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SECTION I: INTRODUCTION

SECTION I: INTRODUCTION



Figure 2: Breaching humpback whales may be seen at the Channel Islands during their seasonal migrations through the Santa Barbara Channel. (David O. James)

This section provides background on the National Marine Sanctuary Program, the Channel Islands National Marine Sanctuary, and the management plan review process. It describes the organic act establishing the National Marine Sanctuary Program and the administrative hierarchy within which the program resides. Next, it details the history, goals, and accomplishments of the Channel Islands National Marine Sanctuary. Finally, this section introduces the fundamental steps of the management plan review process and explains how this process has been carried out at the Channel Islands concluding with development of this revised draft management plan.

Overview of the National Marine Sanctuary Program

The National Marine Sanctuary Program (NMSP) serves as the trustee for a system of 14 marine protected areas³, encompassing more than 150,000 square miles of marine and Great Lakes waters from Washington State to the Florida Keys, and from Lake Huron to American Samoa. The system includes: 13 national marine sanctuaries and the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve, which is being considered for sanctuary status. The NMSP is part of the National Oceanic and Atmospheric Administration (NOAA), which manages sanctuaries by working cooperatively with the public to protect sanctuaries while allowing compatible recreation and commercial activities. The NMSP works to enhance public awareness of our marine resources and marine heritage through scientific research, monitoring, exploration, educational programs and outreach.

Figure 3: The System of National Marine Sanctuaries



³ Ex. Ord. No. 13158, May 26, 2000, 65 F.R. 34909 Sec. 2. (a) defines a "marine protected area" as, "...any area of the marine environment that has been reserved by Federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein."

The national marine sanctuaries embrace part of our collective riches as a nation. Within their protected waters, giant humpback whales breed and calve their young, coral colonies flourish, and shipwrecks tell stories of our maritime history. Sanctuary habitats include beautiful rocky reefs, lush kelp forests, whale migrations corridors, spectacular deep-sea canyons, and underwater archaeological sites. Our nation's sanctuaries can provide a safe habitat for species close to extinction or protect historically significant shipwrecks. Ranging in size from one-quarter square mile in American Samoa's Fagatele Bay to the more than 5,300 square miles of Monterey Bay, California - one of the largest marine protected areas in the world - each sanctuary is a unique place needing special protection. Together, these sanctuaries protect nearly 18,000 square miles of coastal, open ocean and Great Lake waters and habitats. Natural classrooms, cherished recreational spots, and valuable commercial industries – marine sanctuaries represent many things to many people.

The National Oceanic and Atmospheric Administration (NOAA)

The National Oceanic and Atmospheric Administration (NOAA) conducts research and gathers data about the global oceans, atmosphere, space, and sun, and applies this knowledge to science and service that touch the lives of all Americans (www.noaa.gov). In doing so, NOAA warns of dangerous weather, charts our seas and skies, guides our use and protection of ocean and coastal resources, and conducts research to improve our understanding and stewardship of the environment that sustains us all.

A Commerce Department agency, NOAA provides these services through five major organizations: the National Weather Service, the National Ocean Service, the National Marine Fisheries Service, the National Environmental Satellite, Data and Information Service, and NOAA Research; and numerous special program units. In addition, NOAA research and operational activities are supported by the nation's seventh uniformed service, the NOAA Corps, a commissioned officer corps of men and women who operate NOAA ships and aircraft, and serve in scientific and administrative posts.

The NMSP provides oversight and coordination among the thirteen sanctuaries by setting priorities for addressing resource management issues and directing program and policy development. The NMSP also has responsibility for ensuring the management plan prepared for each Sanctuary is consistent with the NMSA and provides a general budget to estimate expenditures for program development, operating costs and staffing.

On an annual basis, the NMSP reviews and adjusts funding priorities and requirements to reflect resource management needs at each of the thirteen sanctuaries. The NMSP also monitors the effectiveness of the management plan, makes recommendations to promulgate regulatory changes where necessary and monitors intra- and inter-agency agreements.

The National Marine Sanctuaries Act

The National Marine Sanctuaries Act (16 U.S.C. 1431 et. seq.) is the organic legislation governing the NMSP.⁴ The NMSA authorizes the Secretary of Commerce to designate as national marine sanctuaries areas of the marine environment or Great Lakes with special national significance due to their

conservation, recreational, ecological, historical, scientific, cultural, archeological,

⁴ See Appendix B of Volume II, Draft Environmental Impact Statement, or online at: <http://www.sanctuaries.nos.noaa.gov/natprogram/nplegislation/nplegislation.html>

educational, or aesthetic qualities. In addition, the NMSA established the NMSP as the Federal program charged with managing national marine sanctuaries. The primary objective of the NMSA is to protect marine resources. The NMSA also directs the NMSP to facilitate all public and private uses of those resources compatible with the primary objective of resource protection.

The purposes and policies of the NMSA are:

- (1) To identify and designate as national marine sanctuaries areas of the marine environment which are of special national significance and to manage these areas as the National Marine Sanctuary System;
- (2) To provide authority for comprehensive and coordinated conservation and management of these marine areas, and activities affecting them, in a manner which complements existing regulatory authorities;

NOAA Ocean Service

As the nation's principal advocate for coastal and ocean stewardship, the NOAA Ocean Service (www.nos.noaa.gov) develops the national foundation for coastal and ocean science, management, response, restoration, and navigation. NOS maintains a leadership role in coastal stewardship by bridging the gap between science, management, and public policy in the areas of healthy coasts, navigation, coastal and ocean science, and coastal hazards. Ten program offices are located within NOS:

- *The National Marine Sanctuary Program*
- *Center for Operational Oceanographic Products and Services (CO-OPS)*
- *National Centers for Coastal Ocean Science (NCCOS)*
- *Coastal Services Center (CSC)*
- *Office of Coast Survey (OCS)*
- *Office of Ocean and Coastal Resource Management (OCRM)*
- *Office of Response and Restoration (OR&R)*
- *National Geodetic Survey (NGS)*
- *International Program Office (IPO)*
- *Management and Budget Office (MBO)*

- (3) To maintain the natural biological communities in the national marine sanctuaries, and to protect, and, where appropriate, restore and enhance natural habitats, populations, and ecological processes;

- (4) To enhance public awareness, understanding, appreciation, and wise and sustainable use of the marine environment, and the natural, historical, cultural, and archeological resources of the National Marine Sanctuary System;

- (5) To support, promote, and coordinate scientific research on, and long-term monitoring of, the resources of these marine areas;

- (6) To facilitate to the extent compatible with the primary

objective of resource protection, all public and private uses of the resources of these marine areas not prohibited pursuant to other authorities;

- (7) To develop and implement coordinated plans for the protection and management of these areas with appropriate Federal agencies, state and local governments, Native American tribes and organizations, international

organizations, and other public and private interests concerned with the continuing health and resilience of these marine areas;

(8) To create models of, and incentives for, ways to conserve and manage these areas, including the application of innovative management techniques; and

(9) To cooperate with global programs encouraging conservation of marine resources.

The NMSA and Ecosystem-Based Management

Various authors have defined the term “ecosystem management” in various contexts. Much of the current literature on ecosystem management cites the definition offered by Grumbine (1994):

Ecosystem management integrates scientific knowledge of ecological relationships within a complex sociopolitical and value framework toward the general goal of protecting native ecosystem integrity over the long term.

Marine ecosystem-based management relies on the best available scientific information from both the natural and social sciences. It requires an understanding of oceanographic processes, habitat distribution and health, ecological services, and specific information on the abundance and distribution of marine life. In addition, ecosystem-based management requires adapting and learning from new culturally based and socioeconomic information (Agardy 1999). Given ecosystems span diverse geographic, administrative, political and economic boundaries, the need for strong partnerships among resource agencies, non-governmental interests, members of the public and scientific community, user groups and conservationists is essential.

These ideas are supported by the NMSA, which states the NMSP is to “maintain the natural biological communities, and to protect, and, where appropriate, restore and enhance natural habitats populations, and ecological processes” (16 U.S.C. 1431 (b)(3)) and “while the need to control the effects of particular activities has led to enactment of resource-specific legislation, these laws cannot in all cases provide a coordinated and comprehensive approach to the conservation and management of the marine environment” (16 U.S.C. 1431 (a)(3)).

As such, the 13 national marine sanctuaries subscribe to a broad and comprehensive management approach in keeping with the NMSA’s primary objective of resource protection. This approach is unique in that it differs from the various national and local agencies and laws directed at managing single or limited numbers of species or specific human activities within the ocean. As such, for CINMS, ecosystem-based management serves as a framework for addressing long term protection of a wide range of living and non-living marine resources, while allowing multiple uses of the Sanctuary compatible with resource protection.

Overview of the Channel Islands National Marine Sanctuary

Background

Designated in 1980, the Channel Islands National Marine Sanctuary consists of an area of

approximately 1243 square nautical miles NM⁵ of coastal and ocean waters, and the submerged lands thereunder, off the southern coast of California. The Sanctuary boundary begins at the Mean High Water Line of and extends seaward to a distance of approximately six NM from the following islands and offshore rocks: San Miguel Island, Santa Cruz Island, Santa Rosa Island, Anacapa Island, Santa Barbara Island, Richardson Rock, and Castle Rock (the Islands) (Figure 4).

San Miguel, Santa Rosa, Santa Cruz and Anacapa Islands are parallel to the east-west trend of the California coast and vary in distance from 12 to 29 nautical miles offshore. Santa Barbara Island lies about 40 nautical miles south of Point Mugu, California.

Figure 4: The Channel Islands National Marine Sanctuary



The Sanctuary supports a rich and diverse range of marine life and habitats, unique and productive oceanographic processes and ecosystems, and culturally significant resources such as hundreds of shipwrecks and submerged Chumash cultural artifacts. The physical, biological, and cultural characteristics of the Sanctuary combined provide outstanding opportunities for scientific research, education, recreation, and commerce. Examples of

⁵ Since designation the area of CINMS has been described as approximately 1252.5 square nautical miles. However, adjusting for technical corrections and using updated technologies, the CINMS area is now calculated as approximately 1243 square nautical miles. The legal description of CINMS is proposed to be updated to reflect this change (see Vol. II, DEIS, Section 2.1.1). This update would not constitute a change in the geographic area of the sanctuary but rather an improvement in the estimate of its size.

these include commercial and recreational fisheries, marine wildlife viewing, sailing, boating, kayaking and other recreational activities, and maritime shipping. A description of the Sanctuary setting is discussed in Section II of this document.

Sanctuary Goals

CINMS has several management goals. These goals directly reflect the overarching mission of the NMSP and are derived from the purposes and policies of the NMSA:

- 1) Protect the natural habitats, ecological systems and biological communities of all living resources inhabiting these areas, and the area's cultural and archaeological resources, for future generations;
- 2) Enhance public awareness, understanding, and appreciation of the marine environment and the natural, historical, cultural and archaeological resources of the National Marine Sanctuary System;
- 3) Where appropriate, restore and enhance natural habitats, populations and ecological systems;
- 4) Provide comprehensive and coordinated conservation and management of these marine areas, as well as the activities affecting them, in a manner complementing existing regulatory authorities;
- 5) Create models and incentives for ways to conserve and manage these areas, including the application of innovative management techniques;
- 6) Allow to the extent compatible with the primary objective of resource protection, public and private uses of the resources; and
- 7) Cooperate with national and international programs encouraging conservation of marine resources.

These goals are carried out by CINMS in its ecosystem-based approach to management, using the best available natural and social science information.

Accomplishments

Relative to these goals, CINMS has had many major accomplishments since Sanctuary designation in 1980. The following bullets highlight some of these achievements by thematic area.

Education and Outreach

- Promotion of community involvement in Sanctuary management through the formation of the Sanctuary Advisory Council and several working groups;
- Development of a network of marine reserves through a fair and open community-based process that brought together key stakeholders and the best available scientific and socioeconomic data;
- Assistance in development of the Santa Barbara Sea Center and the Outdoor Santa Barbara Visitor Center;
- Development of "Los Marineros," an acclaimed 5th grade marine education program now reaching numerous classes and thousands of students per year throughout Santa Barbara County;
- Ongoing educational outreach efforts reaching more than 80,000 people per year through the distribution of publications and other products (such as the Alolkoy newsletter, Sanctuary brochures, special reports, posters, educational resource directories), as well as active participation in public programs, lectures, and events;
- Production of a state-of-the-art, content-rich web site enabling public access to a

wealth of information about the Sanctuary (such as marine life, research projects, management issues, public meetings, maps and weather) and receives over 8,000 visits per month;

- Expanding regional awareness and understanding of the Sanctuary through opening of an office in Ventura County;

Conservation Science

- Holding of monitoring workshop on marine reserves in the CINMS with over 100 experts and stakeholders and development of Draft Ecological and Socioeconomic Monitoring Recommendations;
- Increasing knowledge of CINMS and the surrounding environment by providing the scientific community with appropriate opportunities to use Sanctuary research vessels and aircraft;
- Development of a state-of-the-art Geographic Information System, allowing visual characterization of Sanctuary features to improve management decision making and enhance educational opportunities;
- Hosting of the Sustainable Seas Expeditions in 1999 and 2000 to conduct unique surveys (1-person submersible dives to 2000 feet) within and near the Sanctuary, including geologic and fish assessments, sidescan sonar, and characterization of the Santa Barbara Channel eddy;
- Ongoing vessel and staff support for long-term environmental monitoring programs, such as the University of California Santa Barbara's Plumes and Blooms oceanographic study (monitoring ocean color variation in the Santa Barbara Channel through water sampling and satellite data comparison) and Bight '98 and Bight '03 (regional marine monitoring surveys of marine life and water quality along the Southern California Coast);
- Collection of tens of thousands of data points on marine mammals and vessel use within CINMS through the Sanctuary's aerial monitoring program; and
- Procurement of state-of-the-art research vessel *Shearwater*

Resource Threat Reduction

- Establishment of a permanent prohibition on new oil and gas development within 6 miles of the Channel Islands since 1980;
- Reduction in air traffic disturbance to wildlife;
- Establishment of vessel traffic restrictions to help prevent large cargo vessel groundings at the islands;
- Prohibition of pollutant discharges into Sanctuary waters to preserve and protect water quality;
- Protection of hundreds of Chumash artifacts and over 150 known shipwrecks;

Community Involvement and Support

- Providing opportunities for approximately 20 interns per year and hundreds of volunteers to learn about the Sanctuary, help protect its resources, and gain valuable career experience;
- Consultation with local mariners to develop ethnographic data about Sanctuary resources and uses, providing for enhanced management decision-making;
- Providing public access internet weather kiosks (with over 40 online regional weather links) at local harbors and visitor centers; and
- Annual training and deployment of a base of 80–100 volunteers to provide

naturalist interpretive services on whale-watching boats and island hikes (Channel Islands Naturalist Corps).

Although these accomplishments constitute major successes for the Sanctuary, new management issues have emerged, existing management issues have changed, and CINMS continues to adapt its management actions to build on these successes and best protect the Sanctuary's resources while allowing compatible resource use. This is accomplished through the management plan review process.

CINMS Management Plan Review

The Management Plan Review Process

Management plan review, which is required by the NMSA (16 U.S.C. 1434(e)) for all national marine sanctuaries, is conducted to ensure each site conserves and protects its living and cultural resources. Management plans are sanctuary-specific documents describing regulations and boundaries, outline staffing and budget needs, present management actions and performance measures, and guide development of future budgets and management activities.

The management plan review process is based on three fundamental steps: 1) public scoping meetings; 2) the prioritization of issues and development of action plans; and 3) the preparation of draft and final management plans and the relevant NEPA documentation (such as an Environmental Impact Statement or Environmental Assessment). Formal public hearings on the draft plan help staff revise the document into a final management plan, which, once approved, will outline the Sanctuary's priorities for the next five to ten years.

Revising the Existing Management Plan

The existing management plan for CINMS was published in 1983. Since then, many things have changed at the Sanctuary. Whereas the population of southern California⁶ was approximately 13.5 million in 1980 (U.S. Census Bureau 1995), population levels now reach nearly 20 million, including over 1.1 million in Santa Barbara and Ventura counties (U.S. Census Bureau 2000a). This represents a regional increase in population of approximately 43%. Coupled with population growth continuing urbanization of the region has increased pressures on CINMS marine resources. Increasing, shifting, and new uses of the marine environment have made Sanctuary management more complex and challenging.

Advances in resource management techniques and tools have also occurred over the last 20 years. As such, CINMS has developed a more sophisticated understanding of the Sanctuary's natural and human environment while coming to the realization much of the existing management plan is outdated. As such, the Sanctuary began the review of its management plan by initiating the scoping process and soliciting the views of a wide variety of regional interests to determine the most current, relevant, and high-priority resource management issues for the Sanctuary.

⁶ Defined for purposes of deriving U.S. census population estimates contained within this draft management plan as the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, Santa Barbara, and Ventura.

The Sanctuary Advisory Council

In December 1998, CINMS convened a 20-member Sanctuary Advisory Council to provide guidance and offer advice to the Sanctuary Superintendent. The Advisory Council includes 10 government agency seats and 10 community stakeholder seats (with an alternate for each seat) and provides a platform for public input into the management of the Sanctuary. Throughout the entire management plan revision process, this partnership with the Advisory Council has allowed CINMS to build on and use unique knowledge and resources the private sector and other agencies have to offer. The Advisory Council has participated in every step of the management plan review process, including the public scoping meetings. The Advisory Council has also been an effective body for drawing in public participation and building a shared understanding of Sanctuary management through open discussion and collaborative efforts.

Scoping

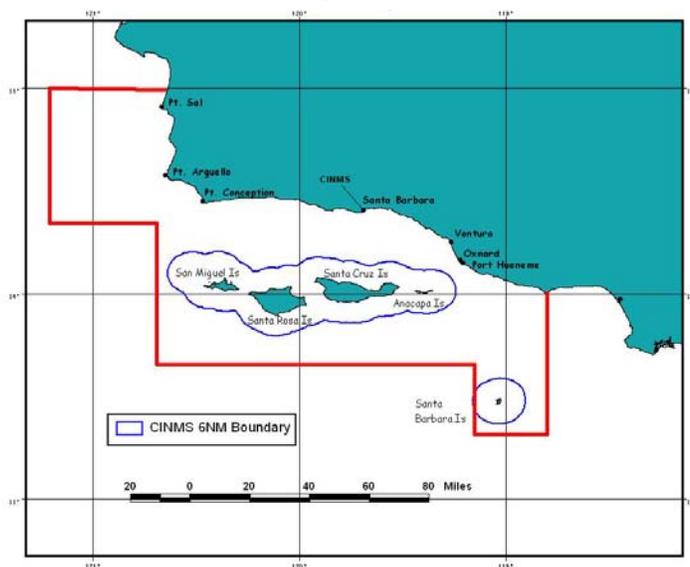
CINMS began review of its existing management plan in 1998. Seven public scoping meetings were held throughout the region, from San Luis Obispo in the north to Long Beach in the south (one meeting was also held in Washington, D.C.). A wide range of local, regional and national resource management issues were raised and out of these emerged several general issue categories. These issue categories were further analyzed and refined as staff worked with the Sanctuary Advisory Council to identify specific resource management issues. These issues and concerns are addressed in the action plans and in the Draft Environmental Impact Statement.

The Draft Environmental Impact Statement (DEIS)

The basic elements of an environmental impact statement include: the purpose and need for the proposed action, a description of alternatives including the proposed action, the affected environment and the environmental consequences of the alternatives (the alternatives analysis). In the case of the CINMS draft management plan, the requirement to prepare a DEIS was triggered by the process of proposing revisions to the terms of designation of the Sanctuary.

When a Federal agency prepares a DEIS, it must first define its study area - a geographic range within which resources, uses and management issues are analyzed. In the fall of 1999, the Sanctuary contracted with Dr. Michael McGinnis to recommend a study area for the management plan review. In preparation for this recommendation, CINMS staff conducted a review of the various components making up the Sanctuary ecosystems, such as the range of species found within the Sanctuary, the distribution of habitats, oceanographic processes,

Figure 5: CINMS Management Plan Revision Study Area



and the geographic scope of human threats to Sanctuary resources.

This review revealed that many key species and habitats, as well as important ecosystem processes (e.g., upwelling areas, currents, and gyres) extend beyond the boundaries of the Sanctuary. Given the geographic range of these resources, and the scope of human activities occurring throughout the Santa Barbara Channel, a study area was established in 2000 for the management plan review extending beyond the existing Sanctuary boundaries.⁷ Determination of this study area was made in consultation and with the support of the Sanctuary Advisory Council. The study area, which extends from Pt. Sal to Pt. Dume, encompasses portions of all three bioregions of the northern Southern California Bight and includes additional ecosystem qualities and attributes providing support services to Sanctuary resources. (Figure 5).

The Center produced their findings "A Recommended Study Area for the CINMS Management Planning Process: Ecological Linkages in the Marine Ecology from Point Sal to Point Mugu" in January 2000. At the January 20, 2000 Advisory Council meeting, the Sanctuary announced it had selected Tetra Tech, Inc. to develop the DEIS based on the study developed and approved by the Advisory Council. Through the Advisory Council, CINMS has regularly updated the public on the progress and development of the DEIS.

Applying Science, Socioeconomics, and Local Knowledge

Once the study area was defined, CINMS focused its evaluation of the natural resources and human activities associated within this defined area. In addition to input from the general public and the Sanctuary Advisory Council, Sanctuary staff relied on three strategic tools to assist in the development of actions for the revised management plan: science, socioeconomics, and local knowledge.

- ***Science:*** Scientific research and monitoring programs provide information for the Sanctuary to better understand and evaluate the effectiveness of management programs and policies. As a result, science has helped CINMS better measure, understand and predict change in the Sanctuary ecosystem. CINMS has collected data from individual researchers and institutions throughout the region, and, where possible, integrated it into a geographic information system (GIS) to help more clearly identify Sanctuary marine resources, habitats, and physical and geological features.
- ***Socioeconomics:*** Recognizing ecosystem sustainability and economic health are mutually beneficial, CINMS staff considered both the potential negative impacts that may be caused by management restrictions on income-generating activities, net economic user values, and the potential public benefits derived from long-term protection of nationally significant resources. A socioeconomic analysis considering impacts to user groups from proposed actions in this revised management plan is contained in the DEIS (Volume II, Section 4.5).
- ***Local Knowledge:*** CINMS recognizes local citizens' understanding and respect of the regional environment. Many of the community partners involved in the development of this management plan have been in and on the waters of the Sanctuary for up to a half-century and their knowledge can be more extensive than

⁷ A similarly sized study area was also developed during the 1980 Sanctuary designation process.

available scientific research. In addition, community voices represent local interests, issues and concerns. As such, the local mariners interviewed in 2000 for a CINMS Ethnographic Data Survey (Kronman 2000a), the general public and the Advisory Council have all provided invaluable information used to develop this revised management plan.

Developing the Action Plans

Action plans are the means by which the NMSP identifies and organizes the wide variety of management tools it employs to manage and protect its marine resources. Action plans allow the NMSP to articulate the programs, projects and regulations it uses to address the resource issues identified for this management plan and to fulfill the purposes and policies of the NMSA. The action plans in this document were developed by the CINMS staff with input from the Advisory Council and the general public. In general, they are designed to address:

- The management issues identified during the management plan review process;
- The goals and objectives of the NMSA;
- Extensive comments, input and ideas from the Sanctuary Advisory Council;
- The scientific, socioeconomic and local knowledge gathered about the status of Sanctuary resources and resource management issues;
- The unique, non-duplicative, and beneficial services CINMS can offer to improve resource management; and
- The need for determining Sanctuary effectiveness over time.

The action plans are in Section III of this document. Section II: The Sanctuary setting, which follows, describes various aspects of the CINMS regional ecosystems and human uses of the Sanctuary.⁸ It also provides information on Sanctuary administration and management organization.

⁸ For an in-depth analysis of many of these features, see Section 3.0 in the Draft Environmental Impact Statement.

SECTION II: THE SANCTUARY SETTING

SECTION II: THE SANCTUARY SETTING



Figure 6: San Miguel Island (Glenn Allen)

This section describes the Channel Islands National Marine Sanctuary setting in four parts:

- *Part II-A: The Physical Setting* describes the sanctuary's geology, meteorology, oceanography, watersheds, bioregions and habitats;
- *Part II-B: The Biological Setting* describes marine plant and animal life;
- *Part II-C: The Human Setting* describes human activities occurring in and near the Sanctuary; and
- *Part II-D: The Operational Setting* the Sanctuary's administrative structure, infrastructure, intra and inter-agency relationships, tools for formalizing relationships, funding mechanisms, and enforcement and permitting procedures.

A description of the Sanctuary environment is also located in the DEIS (Vol. II, Section 3.0).

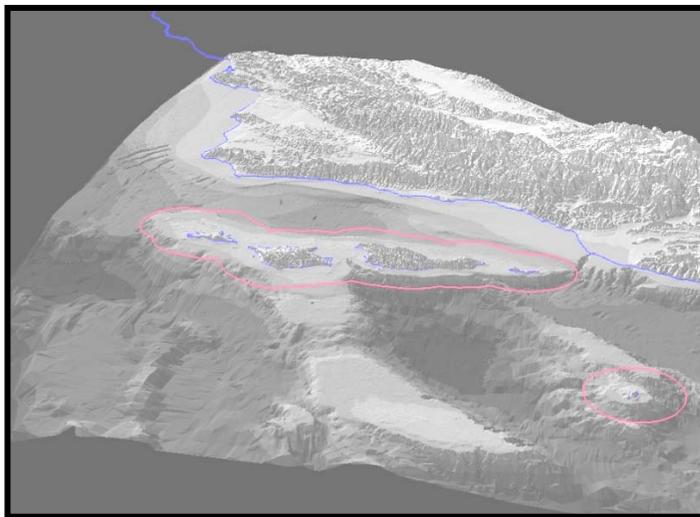
PART II-A: THE PHYSICAL SETTING

The Sanctuary boundary begins at the Mean High Water Line of and extends seaward to a distance of approximately six NM from the following islands and offshore rocks: San Miguel Island, Santa Cruz Island, Santa Rosa Island, Anacapa Island, Santa Barbara Island, Richardson Rock, and Castle Rock (the Islands). The Sanctuary resides within the upper portion of the Southern California Bight (SCB), which is formed by a transition in the California coastline wherein the north-south trending coast begins to trend east to west. The SCB stretches from Point Conception in the north to Punta Eugenia (Mexico) in the south (Dailey *et al.* 1993).

Geology

Geologic features usually consist of formational, depositional and volcanic rocks, unique landforms, tectonic features and fossils. In coastal and marine settings, sediments are also considered part of the geology.

Figure 7: Bathymetric Map of The Channel Islands



The Channel Islands are all located within a unique, 300-mile long oceanographic region known as the “Continental Borderland” (Norris and Webb 1990). Unlike most wide continental shelves, which are gently sloping platforms interrupted by low banks and occasional canyons, the Continental Borderland is a region of basins and elevated ridges. The Channel Islands are the ridge portions rising above sea level. The highest point in the Channel Islands is the 2,450 foot Picacho Diablo on Santa Cruz Island.

Lying parallel between the California coast and the Channel Islands is the 1,950-foot deep Santa Barbara Basin. Other

regional basins range in depth from 1,650 to 8,250 feet. The seaward edge of the Continental Borderland (known as the Patton Escarpment) descends 13,200 feet to the deep ocean floor (Norris and Webb 1990).

Oil and Natural Gas

More than 20 oil fields and several natural gas fields lie beneath the Santa Barbara Channel. Most are close to the mainland and several are accessed from offshore oil and gas platforms (Norris and Webb 1990). There are more than 40 naturally occurring oil and gas seeps in the Santa Barbara Channel (Norris and Webb 1990; Washburn and Clark 1998). The rate of oil seepage from the South Ellwood anticline (located about 1.62

nautical miles offshore in the Santa Barbara Channel) is one of the highest in the world.⁹ Plumes of dissolved hydrocarbons are transported hundreds of nautical miles westward with the prevailing currents (Washburn and Clark 1998).

Meteorology

The Channel Islands region has a Mediterranean climate characterized by mild winters (when most rainfall occurs) and warm, dry summers. The climate is dominated by a strong and persistent high-pressure system frequently off the Pacific coast (generally referred to as the “Pacific High”). The Pacific High shifts northward or southward in response to seasonal changes or the presence of cyclonic storms. In its usual position to the west of Santa Barbara County, the Pacific High produces an elevated temperature inversion. Coastal areas are characterized by early morning southeast winds, which generally shift northwest later in the day. Transport of cool, humid marine air onshore by these northwest winds produces frequent fog and low clouds near the coast, particularly during nighttime and morning hours in the late spring and early summer months. The most important climatic and meteorological characteristics influencing air quality in the region are the relatively consistent temperature and the predominance of onshore winds, topography and solar irradiance.

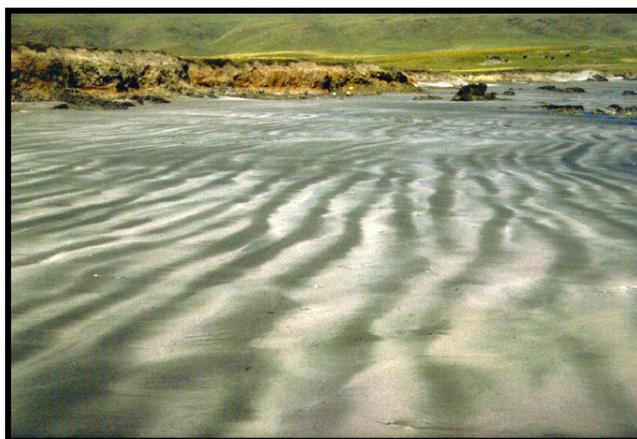


Figure 8: Forney's Cove, Santa Cruz Island
(Adrian M. Wenner)

Oceanography

Offshore circulation results from the interaction of large-scale ocean currents, local geography, and the unique basin and ridge topography of the ocean bottom in the Southern California Bight. The California Current is the major ocean current moving through the Sanctuary region. Year round, this current brings cold, water from upwelling centers along the California coast.

At Point Conception, where the coastline turns east, the California Current moves farther offshore as it continues its southward flow. Near the U.S.- Mexican border the California Current turns east and then north, and flows back up along the coast bringing warm water into the Santa Barbara Channel. This directional shift creates a large eddy known as the Southern California Countercurrent or the Southern California Eddy (Hickey 2000a). At the eastern end of the Channel Islands, the Southern California Countercurrent separates into two parts. One part flows northwestward through the Santa Barbara Channel; the other part flows westward south of the Channel Islands. The California Current and

⁹ Ongoing research conducted by the Minerals Management Service (MMS) suggests that 6 tons of liquid oil and 24 tons of hydrocarbon gases are released daily from the South Ellwood anticline (Washburn and Clark 1998).

Southern California Countercurrent are both strongest in the summer (Hickey 1993). During the spring, the countercurrent disappears and surface flow throughout the SCB tends to be southward (Hickey 1993).

Upwelling (circulation patterns in which deep, cold, nutrient-laden water moves towards the surface) often occurs where these currents meet. Upwelling currents influence circulation in the Sanctuary region. These currents are the result of prevailing winds and the orientation of the coastline. Along the north-south oriented coast of California, winds blowing from the north move surface water westward, away from the coastline, and create upwelling currents that bring colder water to the surface.

Point Conception is the southernmost major upwelling center on the west coast of the United States, and marks a transition zone between cool surface waters to the north and warm waters to the south (Love *et al.* 1999). However, upwelled water from regions north of the SCB appears to enter the western end of the Santa Barbara Channel and move eastward along its southern boundary (Hickey 2000a).

Watersheds

A watershed is the area of land where all water under it or draining off of it goes into the same place. There are a number of watersheds located on the northern Channel Islands, contributing a small amount of fresh water into the Sanctuary. Most fresh water entering the Sanctuary region, however, comes from the streams and rivers along the mainland coast, such as the Santa Clara and Ventura which provide the majority of the freshwater and sediments into the Santa Barbara Channel. The Santa Ynez and Santa Maria rivers provide major drainages north of Point Conception. These major rivers have been shown to transport sediment plumes that reach the Sanctuary.

The regional coastal mainland also includes the San Antonio Creek watershed and 41 small coastal watersheds on the south side of the Santa Ynez Mountain Range. The creeks of these watersheds provide important nutrients to the marine environment (as well as pollution from agricultural and urban runoff).

Bioregions

The confluence of the California Current and Southern California Countercurrent creates three distinct bioregions in and around the Sanctuary: 1) the cold Oregonian Province; 2) the warm Californian Province; and 3) the transition zone between the two. These provinces often overlap within the Sanctuary, which results in a high diversity of marine life as cold water species at the southern end of their range co-exist with warm water species at the north end of their range. Waters north of Point Conception and offshore and south of the Channel Islands are cool and have marine life characteristic of northern and central California.

San Miguel Island lies in the cold waters of the Oregonian Province while Anacapa and Santa Barbara Islands are in the warmer Californian Province. The eastern sides of Santa Rosa and Santa Cruz islands are in the transition zone between the two provinces (Horn and Allen 1978). Point Conception is recognized as the transition zone between the Oregonian and Californian Provinces (Horn and Allen 1978; Murray and Bray 1993; Murray and Littler 1981).

Habitats

There are a wide variety of marine habitats in the Sanctuary. Some of the key habitats are summarized here, while complete details and a comprehensive list of habitats are found in the DEIS (Vol. II, Chapter 3) and in CDFG (2002).

Kelp Forest Habitat

Giant kelp, a keystone species, forms extensive underwater beds on rocky substrates (except *M. angustifolia* which coast occurs on sand) at shallow subtidal depths (9.9 to 99 feet) throughout the Sanctuary region. These impressive, underwater forests are conspicuous features of the Sanctuary and important not only to the regional ecology, but to recreational and commercial interests as well. Individual kelp fronds live only about 6 months (during which they may grow 99 feet or more in length), but new fronds are continually produced during the several year life span of the plant (Rosenthal et al. 1974).

Kelp beds in the Sanctuary are productive habitats that provide food, attachment sites, and shelter for a myriad of invertebrates and fishes. The dense thicket of kelp in the water column and at the surface is particularly important as a nursery habitat for juvenile fishes (Carr 1989). Locations supporting kelp generally have been consistent through time, but the extent of these beds has varied considerably based on environmental conditions such as water temperature and natural predation. Greater habitat heterogeneity at the Islands has resulted in increased kelp forest species diversity compared to mainland kelp beds (Murray and Bray 1993).

Surfgrass and Eelgrass Habitat

The two types of marine flowering plants found in the Sanctuary, surfgrass and eelgrass, form dense beds on different substrate and in different conditions. Surfgrass beds are highly productive and complex microhabitats that support a wide variety of marine species. Eelgrass beds are also known to be ecologically important for primary production, nutrient cycling, and substrate stabilization (Phillips 1984). Eelgrass provides habitat and food for a unique assemblage of plants, invertebrates, and fishes (den Hartog 1970; McConnaughey and McRoy 1979; Phillips 1984). The diversity of conspicuous plant, invertebrate, and fish species was nearly twice as high within eelgrass beds as on surrounding sand habitats (Engle et al. unpublished data).

The largest beds of eelgrass in the Sanctuary occur at Smugglers Cove, Canada del Agua, and Prisoners Harbor on Santa Cruz Island and at Bechers Bay on Santa Rosa Island.

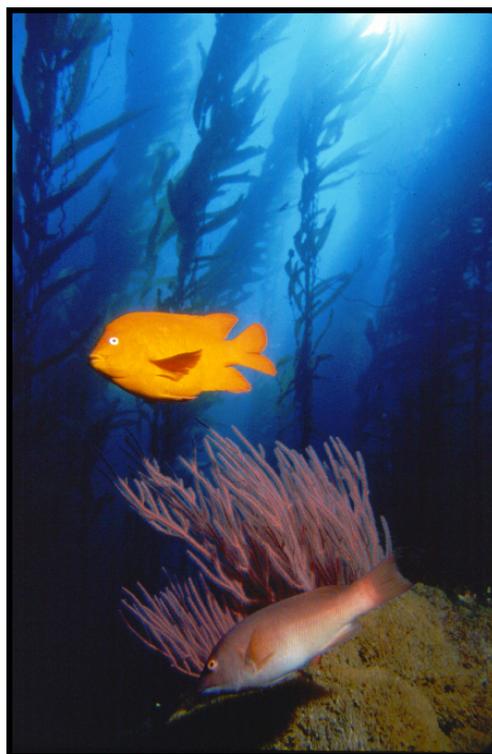


Figure 9: *Kelp Forest Habitat*
(Dean DePhillipo)

Moderate beds are found at Scorpion and Forney coves on Santa Cruz Island and at Johnsons Lee on Santa Rosa Island. A few small patches of eelgrass exist at Cathedral Cove and Cat Rock on Anacapa Island and at Yellowbanks Anchorage on Santa Cruz Island. The single patch at Cathedral Cove is the only known remnant of once widespread beds scattered along the north side of Anacapa Island.

Intertidal Zone Habitats

Intertidal zones consist of a variety of coastal habitats periodically covered and uncovered by waves and tides. This transition zone between sea and land is the strip of shore ranging from the uppermost surfaces wetted during high tides to the lowermost areas exposed to air during low tides. Tidal heights within the Channel Islands can be as high as 9.9 feet during full or new moon periods. On surf-swept rocky cliffs, the wave splash can extend water upward of another 17 feet or more.

Intertidal habitat within the Sanctuary is composed of approximately 94.5 miles of rocky coastline interspersed with approximately 47 miles of sandy beaches (California Resources Agency, CDFG 2002). Rocky shores support a rich assortment of plants and animals, including numerous green, brown, and red algae, as well as beds of surfgrass. A wide variety of sedentary invertebrates, including barnacles, limpets, and mussels compete for space with the plants in the intertidal zone. Mobile invertebrates, such as snails and crabs, often hide in crevices or under rocks, then emerge to graze on plants or prey on other animals. These intertidal organisms withstand varying degrees of wave shock, dramatic temperature changes, desiccation, and attacks from terrestrial predators.

Fishes in intertidal habitats are limited to tidepools or passing through the intertidal zone at high tide. Seabirds forage in the intertidal at low tide while some roost in aggregations on cliffs just above the shore. Seals and sea lions depend on many of the Sanctuary's intertidal shores for hauling out, especially at San Miguel and Santa Rosa Islands.

Nearshore Subtidal Habitat

Subtidal habitats include those marine habitats ranging from the lower limit of the intertidal zone down to 99 feet. Nearshore subtidal habitats include mud, sand, gravel, cobble, and bedrock substrates are subject to dynamic physical processes, including wave exposure, coastal currents, upwelling, suspended sediments and variability in temperature, salinity and nutrients.

Nearshore subtidal rocky habitats at the Islands are widespread, especially high relief volcanic reefs with walls, ledges, caves, and pinnacles. Typical shallow subtidal areas in the Sanctuary contain assemblages of plants, invertebrates, and fishes, with giant kelp dominating. However, many shallow reefs grazed by sea urchins have less giant kelp and greatly reduced species diversity. Deeper reefs have well developed invertebrate cover, including sponges, sea anemones, sea fans, plume worms, bryozoans, and tunicates. Some low-relief nearshore habitats in high current areas are dominated by large numbers of brittle stars or sea cucumbers. Low-relief sedimentary reefs exist as well, particularly on Santa Rosa Island.

Many sandy nearshore habitats in the Sanctuary have relatively steep slopes composed of coarse shelly debris. Stable sand habitats with fine grain sediments are generally limited to sheltered coves at canyon mouths, such as those found around Santa Cruz Island. A few of these locations have well-developed eelgrass meadows. Many other sandy habitats consist of patches of shelly sand between rock reefs, forming mosaics of hard and soft

substrata.

Deep Water Benthic Habitat

Beyond nearshore subtidal depths are deep-water habitats extending from 99 to greater than 660 feet deep. Well over 90 percent of deep-water benthic habitats in the Sanctuary consist of fine sands in shallower portions, grading into silt and clay-dominated sediments in deeper portions (Science Applications International Corporation 1986; Thompson et al. 1993). These soft-bottom particulates are derived from terrestrial runoff and decaying plankton. Coarse sediments occur near Point Conception, and north of San Miguel Island (Blake and Lissner 1993). Fine sediments occur on the sill at the western end of the Santa Barbara Channel, and in the Santa Barbara Basin.

Deep rock bottoms often are located offshore from major headlands and islands, and on the highest parts of undersea ridges, banks, and pinnacles. High relief pinnacles and ridges occur in some areas, such as off the northwest end of San Miguel Island.

Because light rapidly disappears below 165 foot depths, offshore benthic habitats do not support marine plants. Invertebrates can, however, be found in these habitats and include sponges, anemones, cup corals, sea fans, bryozoans, feather stars, brittle stars, sea stars, and lamp shells. Demersal fishes are common, especially various species of rockfishes.

Water Column Habitats

Water column, or pelagic, habitats consist of discrete portions of ocean waters categorized by variation among multiple factors, such as light penetration, temperature, oxygen concentration, and density. Based on variation among these factors the water column is divided into numerous vertical and horizontal sub-habitats.

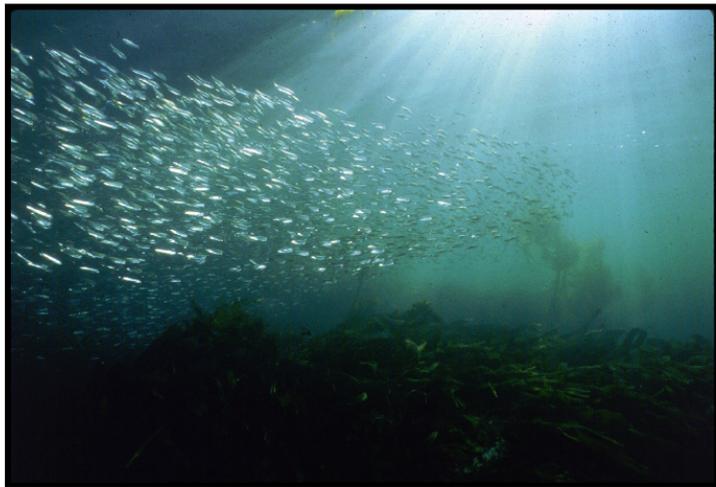


Figure 10: Schooling Fish Within The Photic Zone
(Stuart Westmorland)

Major vertical zones within the water column begin at the ocean surface with the microlayer, a fine film of organic molecules. Next, the photic zone, from the surface to a depth of approximately 660 feet, is the portion of the water column in which there is sufficient light for photosynthesis. Within the photic zone there is an important temperature and density gradient called the pycnocline that separates warm, mixed surface water from cool, dense water below. The surface water may reach depths between approximately 130 to 330 feet or more. Below the photic zone lies the mesopelagic zone, from approximately 660 to 3,300

feet, and the bathypelagic zone, from approximately 3,300 to 11,500 feet. Water column

habitats within the majority of the Sanctuary do not extend deeper than the mesopelagic zone, though the southern reaches of the Sanctuary boundary near the mouth of Santa Cruz Canyon (a submarine canyon between and offshore from southeastern Santa Rosa Island and southwestern Santa Cruz Island) approach bathypelagic depths. In general, horizontal variation in water column habitats occurs from the coast to the open ocean, within currents, at differing latitudes, and among gyres.¹⁰ (Thorne-Miller 1999).

Pelagic organisms are highly diverse and many have interesting and unique traits. Pelagic organisms living in the water column are classified as either plankton (passive drifters moving with the water) or nekton (actively swimming organisms). Some of these organisms are found exclusively in the microlayer, while some occupy it only for a part of their life history (e.g., as eggs and larvae), and others are found in the microlayer and other water column zones. The photic zone represents the range limit of phytoplankton, microscopic marine plants requiring light to synthesize their food. Many of the organisms living in the mesopelagic and bathypelagic zones produce light biochemically for such purposes as attracting prey, or disorienting predators. In general, the mesopelagic zone has the greatest species diversity of pelagic fish. (Thorne-Miller 1999).

¹⁰ Circular motions of water that occur in each of the major ocean basins and are centered on subtropical high-pressure regions. Gyres rotate clockwise in the northern hemisphere and counterclockwise in the southern hemisphere.

PART II-B: THE BIOLOGICAL SETTING

The waters swirling around the five islands within CINMS combine warm and cool currents to create an exceptional breeding ground for many species of plants and animals. Forests of giant kelp are home to numerous populations of fish and invertebrates. Every year over 27 species of whales and dolphins visit or inhabit the Sanctuary including the rare blue, humpback and sei whales. On the islands, seabird colonies and pinniped rookeries flourish while overhead brown pelicans and Western gulls search the water for food. This part of Section II describes some of the species of marine plants and animals inhabiting the Sanctuary; for a more complete description, see DEIS (Vol. II, Section 3.0 - Affected Environment).

Plankton

Plankton, single celled marine plants (phytoplankton) and animals (zooplankton), form the base of the food web. Many species of plankton inhabit the Sanctuary and marine life is highly dependent on their growth and productivity. Their numbers, biomass, and production vary greatly both spatially and temporally.

Marine Plants

Marine plants of the Sanctuary are made up of algae and seagrasses. Diversity of marine plants is greater in the SCB and the Channel Islands than along coastal central California. In the SCB, there are at least 492 species of algae and 4 species of seagrasses known to occur of the 673 species described for California (Abbott and Hollenberg 1976; Murray and Bray 1993).

The Channel Islands are transitional, with each island having its own ratio of southern to northern species of marine plants. Although conditions are dynamic, a general pattern emerges: Santa Barbara Island is inhabited by southern species, Anacapa and Santa Cruz islands are intermediate with both southern and northern components, while Santa Rosa and San Miguel islands are populated primarily with northern species (Murray and Littler 1981).

Invertebrates

Benthic invertebrates include species from nearly all phyla of invertebrates living in (infauna) or on (epifauna) the sea floor during most of their lives, though most also have pelagic larvae. Benthic invertebrates may also be characterized as “sessile” (attached or sedentary) or “motile” (free-moving). They range in size from little known microscopic forms (micro-invertebrates) to the more common larger organisms (macro-invertebrates). Pelagic invertebrates (e.g., jellyfish and squid) also exist in the Sanctuary water column.

The Channel Islands support a wide variety of invertebrates due to their transitional location between cold and warm biogeographic provinces and diversity of substrates. The substrates include sheltered and exposed coasts at depths from the intertidal to deep



Figure 11: Market Squid
(MBNMS)

slopes, canyons and basins (Thompson *et al.* 1993). The total number of species may well be in excess of 5,000, not including microinvertebrates (Smith and Carlton 1975; Straughan and Klink 1980).

Select invertebrates in the Sanctuary include multiple species of corals, prawns, spiny lobster, crabs, sea urchins, sea cucumbers, sea star, abalone, nudibranchs, scallops, mussels, squid, clams, barnacles, snails, salps, tunicates, jellyfish, sea slugs, and anemones. White abalone is protected by the Endangered Species Act (ESA).

Fish

About 481 species of fish inhabit the Southern California Bight (Cross and Allen 1993). The great diversity of species in the area occurs for three principal reasons: 1) the ranges of many temperate and tropical species extend into and terminate in the SCB; 2) the area has complex bottom topography and a complex physical oceanographic regime that includes several water masses and a changeable marine climate (Cross and Allen 1993; Horn and Allen 1978); and 3) the islands and nearshore areas provide a diversity of habitats including soft bottom, rock reefs, extensive kelp beds, and estuaries, bays, and lagoons.

The fish species found around the Channel Islands generally are representative of fish assemblages occurring along the southern California coast, with the addition of some central California species (Hubbs 1974).

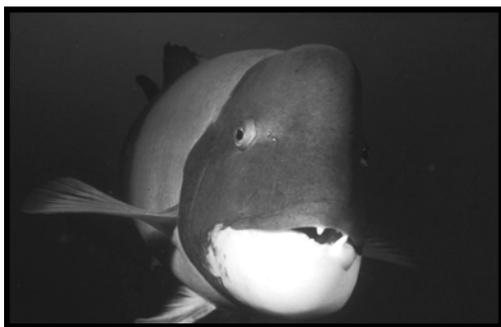


Figure 12: *California Sheephead* (CINMS)

Abundance of fish assemblages is greater at the northern Channel Islands than at nearby coastal regions of the southern California mainland. Regional upwelling carries nutrient-rich waters from canyons and island shelf areas to surface waters. This results in increased primary productivity and large zooplankton populations, which support abundant populations of small schooling species, such as the northern anchovy, Pacific saury, sardine and mackerel. Larger pelagic (open water) fish prey upon these small schooling species, and together they form a significant contribution to the diet of marine mammals and birds. Island-associated pelagic fish are commonly consumed by pinnipeds and tooth whales.

Fishes commonly found in the Sanctuary include: albacore, anchovy (northern), barracuda (Pacific), bass (various species), bat ray, blacksmith, bocaccio, bonito (Pacific), brown smoothhound, butterfish (Pacific), California scorpionfish, cabezon, California sheephead, California moray, California flyingfish, California halibut, croaker, (various species), eel, monkeyface, garibaldi, goby (various species), greenling (various species), grunion, gunnel, hake, Pacific half moon, horn shark, jacksmelt, kelpfish (various species), mackerel (various species), northern ronquil, ocean sunfish, opah, opaleye, orangethroat pikeblenny, queenfish, reef perch, rock wrasse, rockfish (various species), ronquil, stripedfin, salmon (king), sanddab, sarcastic fringehead, sardine (Pacific), sargo, saury, Pacific sculpin, seaperch (various species), señorita, shark (various species) silversides, sole (various species), spotted cusk-eel, surfperch (various species), swordfish, thornback, topsmelt, tube snout, turbot (various

species), white sea bass, whitespotted greenling, yellowfin fringehead, and zebra perch.

Sea Turtles

Four species of sea turtles have been reported in the offshore southern California region: green, loggerhead, olive ridley, and leatherback (Cordaro 2003). Most information on sea turtle distribution in southern California is based on stranding data. This stranding data indicates all four species of sea turtle may be found within the Sanctuary at any time of year (Cordaro 2003). All sea turtles are protected by the ESA.

Seabirds

Over 195 species of birds use open water, shore, or island habitats in the Southern California Bight (Baird 1990). The Channel Islands region is located along the Pacific Flyway, a major migratory route for birds, and acts as a stopover during both north (April through May) and south (September through December) migrations. The months of June and July are peak months for transient shorebirds (Lehman 1994). The diversity of habitats provided both on- and offshore also contributes to the high species diversity in the region. Sandy beaches provide foraging and resting habitat for a number of shorebirds including Black-Bellied Plover, Willet, Whimbrel, Long-billed Curlew, gulls, and sanderlings. The upland portions of the beach provide kelp deposits that attract invertebrates where Black and Ruddy Turnstones, dowitchers, and other shorebird species forage. Several bird species within Sanctuary region have special status (of concern, threatened or endangered) under Federal or state law. The Sanctuary provides important habitat for eight seabirds with special status under Federal or state law: Ashy storm-petrel, Black storm-petrel, California brown pelican, California least tern, Double-crested cormorant, Rhinoceros auklet, Western snowy plover, and Xantus's murrelet.



Figure 13: Western Gull (CINMS)

Marine Mammals

There are three marine mammal groups in the Sanctuary: 1) whales, dolphins and porpoises (cetaceans); 2) seals and sea lions (pinnipeds); and 3) the southern sea otter.

Cetaceans live their entire lives at sea, while pinnipeds come ashore periodically to rest, breed, bear young, or molt. Pinnipeds depend on several haulout and rookery sites throughout the Channel Islands. In California, sea otters normally spend their entire lives at sea, though some do haul out on land. All marine mammals are protected under the Marine Mammal Protection Act of 1972 (MMPA). In addition, some marine mammals are protected under the Federal and state ESA. Species with special protected status are listed in CDFG (2002).

The abundance and distribution of marine mammals is an important indication of the general health and ecological integrity of the Sanctuary. Marine mammals feed on fishes and invertebrates, which feed on other marine life of the Channel Islands region. The

distribution and abundance of marine mammals depend on healthy marine habitats, such as kelp forests and associated rocky reef ecosystems.

Whales Dolphins And Porpoises

At least 33 species of cetaceans have been reported in the Sanctuary region (Leatherwood *et al.* 1982; Leatherwood *et al.* 1987). Most of the reports involve live sightings although a few are known only from strandings. Common species found in the Sanctuary include: long-beaked common dolphin, short-beaked common dolphin, Bottlenose dolphin, Pacific white-sided dolphin, Northern right whale dolphin, Risso's dolphin, California gray whale, Blue whale, and Humpback whale. In winter and spring during the gray whale migrations, orcas are frequently reported in the region.

Seal and Sea Lions

The productive waters and relatively undisturbed environment of the Sanctuary provides vital habitat for pinnipeds, offering important feeding areas, breeding sites, and haul outs. Historically seven species of pinnipeds have been found throughout or in part of the Sanctuary: the California sea lion (common), northern fur seal (uncommon), northern elephant seal (common), Pacific harbor seal (common), Guadalupe fur seal (rare), Steller sea lions (extremely rare), and ribbon seal (extremely rare).



Figure 14: Elephant Seal, San Miguel Island
(Robert V. Schwemmer)

Sea Otters

Sea otters were common in the Channel Islands until prolonged periods of hunting led to local extinction at the Islands and severe depletion along the mainland California coast. In general, the California population has been slowly but steadily increasing since the discovery of a remnant colony off Bixby Creek in central California in 1937. The recovering California stock of sea otters now generally ranges from Point Conception north to Año Nuevo Island, in Santa Cruz County. From 1987 to 1990, the USFWS, which has primary jurisdiction over sea otters, translocated 139 otters to San Nicolas Island, though as of 2003 only 33 animals were reported (Sanders 2003). Following the translocation rare sightings of sea otters in the Sanctuary have been reported. Whether sea otters will become re-established within the Sanctuary remains uncertain. The southern sea otter is listed as threatened under the federal ESA.

PART II-C: THE HUMAN SETTING

Humans have regarded the Channel Islands and the surrounding marine waters as a special place for thousands of years, beginning with ancient cultures known to have lived at the islands and continuing to Chumash Native American societies that once thrived on the lands and waters we now call a National Park and National Marine Sanctuary. Early maritime activities resulted in many ships running aground or sinking within the dangerous waters surrounding the Channel Islands, leaving us today with hundreds of historic shipwrecks, some discovered and many still lost. This rich maritime heritage of the Channel Islands region stands as a testament to the cultural importance and historic value of the Sanctuary.

In modern times, the unique nature of the Sanctuary region has attracted many commercial and recreational uses. The proximity of the northern Channel Islands and Santa Barbara Island to the mainland coast makes them uniquely accessible from Santa Barbara, Ventura, Port Hueneme, and Channel Islands Harbors as well as ports in Los Angeles County (primarily San Pedro and Terminal Island). Human use of the Sanctuary is not limited to regional residents; almost 20 percent of those who use California's coastal areas for recreation are interstate or international visitors ([California] Resources Agency of California 1997).

Within the Sanctuary region, population growth has risen sharply over the last twenty years. The population of southern California is nearly 20 million, including a combined population of over 1.1 million for the two counties adjacent to the Sanctuary, Santa Barbara and Ventura (U.S. Census Bureau 2000a). This represents a regional increase in population of approximately 43% since 1980 (U.S. Census Bureau 1995). As the numbers of people increase, so do the number of Sanctuary users involved in a wide variety of activities. Today the number of regional Sanctuary users is growing exponentially.

Like all national marine sanctuaries, CINMS is mandated to both "protect...the natural habitats, populations and ecological processes" (16 USC sec. 1431(b)(3)) of the Sanctuary and "facilitate to the extent compatible with the primary objective of resource protection, all public and private uses of the resources of [the Sanctuary] not prohibited pursuant to other authorities" (16 USC sec. 1431(b)(6)). CINMS staff recognize the fact each year thousands of people come to the Sanctuary to work and play, and the area's resources are an important part of individual livelihoods and recreation. Managed correctly, use and enjoyment of the Sanctuary can continue to thrive for generations to come.

This section briefly describes the maritime heritage resources of the Sanctuary and summarizes a wide variety of commercial and recreational uses occurring within CINMS. Additional details about human activities within the Sanctuary can be found in the DEIS (Vol. II, Section 3.0).

Maritime Heritage

Maritime heritage resources (MHRs) consist of shipwrecks, aircraft wrecks, material associated with wharves, piers and landings, prehistoric archaeological sites and their associated artifacts, and paleontological remains. These resources represent a broad time-span of the Santa Barbara Channel's cultural history. Early human remains of a woman ("Arlington Springs Woman") were discovered at Arlington Canyon on Santa Rosa Island,

dating back to the end of the Pleistocene, approximately 13,000 years before present (B.P.). This Channel Islands' site represents the oldest human yet discovered in North America (Johnson 2003). Historical remains may exist from as early as Juan Rodriguez Cabrillo's European voyage of discovery (1542 to 1543) through modern times.

Shipwrecks and Aircraft Wrecks

For hundreds of years, mariners transiting this region have been faced with prevailing winds, extreme weather conditions and natural hazards. Between the years 1853 to 1980, an inventory of over 140 shipwrecks and aircraft wrecks has been documented in the Sanctuary (Morris and Lima 1996). To date about twenty of these sites have been located. These wrecks reveal the diverse range of activities and nationalities that traversed the Santa Barbara Channel. They include vessels engaged in various trades; California Gold-Rush, passenger and cargo, lumber, international coal and grain, fisheries, military and island commerce. These American and European shipwrecks depict a remarkable diversity in sail and steam propulsion.

The Sanctuary has a very active shipwreck reconnaissance program working in partnership with the Channel Islands National Park and Coastal Maritime Archaeology Resources (CMAR) avocational group. Several of the submerged shipwreck sites have been recorded through the development of underwater maps.

Archaeological and Paleontological Artifacts

The Chumash Indian homeland consisted of villages along the California coast from the present day sites of Malibu to Paso Robles, and the Northern Channel Islands. The Chumash people spoke different but related languages in different parts of the region. The marine component of the Chumash diet consisted of over 150 types of marine fishes

(Miller 1988), as well as a variety of shellfish including crabs, lobsters, mussels, abalone, clams, oysters, chitons, and other gastropods (Erlandson 1994).

Shellfish were also important to the Chumash economy and material culture. In fact, the Chumash produced the majority of shell bead money used by peoples throughout southern California (Miller 1988).



Figure 15: Chumash Tomol, Santa Barbara Channel (CINMS)

The abundance of prehistoric Native American Chumash artifacts found in the Santa Barbara Channel have helped archaeologists piece together important Chumash trade networks, fishing practices and submerged village sites. In addition, archaeological

information obtained from middens may help to determine the relative effects of subsistence and environmental fluctuation on prehistoric faunal assemblages in the Santa

Barbara Channel (Raab et al. 1995). Archaeologists suggest the Sanctuary may have once been the site of Chumash villages, now submerged by changes in sea level. During the period the Arlington Springs Woman lived the sea level was at least 150 feet lower than it is today and the Northern Channel Islands were joined as one island (Johnson 2003). Further, some submerged artifacts may have been deliberately deposited in the water during religious ceremonies, washed to the sea from shore, or been deposited in the water through cliff erosion. Descendants of the Chumash consider the Sanctuary a special place, still occasionally paddling these waters in *tomols* (seaworthy wood plank canoes used for crossing the Santa Barbara Channel and for offshore fishing).

Recently discovered paleontological remains have also contributed to the rich record of the area. In 1994, for example, a relatively complete pygmy mammoth was discovered on a coastal bluff on the north shore of Santa Rosa Island. This discovery represents the most complete pygmy mammoth discovered in the world to date and suggests a high probability of the existence of submerged paleontological remains within the Sanctuary.

Current Human Activities

Recreational Activities

Recreational and tourist-related activities occur throughout the waters of the Channel Islands National Marine Sanctuary. Many activities are more heavily concentrated close to the islands and on the eastern half of the CINMS. Sportfishing, diving, whale watching, pleasure boating, kayaking, surfing, and sightseeing are all popular pastimes within the Sanctuary.¹¹ In 1999, recreation and tourism businesses represented almost 480 thousand person-days¹² of activity within the CINMS.

Sportfishing and Consumptive Diving

Due to its relatively mild weather, the Channel Islands region is a leading year-round sportfishing (or recreational fishing) area along the West Coast. In 1999, sportfishing and consumptive diving activity in the Sanctuary generated approximately \$24 million in income and supported 654 full and part-time jobs



Figure 16: Recreational Fishing, Anacapa Island (CINMS)

¹¹ The National Park Service bans use of motorized personal watercraft within one NM of the islands.

¹² A person-day of activity is defined as one person participating in an activity for one day or any part thereof. For example, one person participating in an activity for three days would account for three person-days of activity.

in Santa Barbara, Ventura and Los Angeles counties (Leeworthy and Wiley 2003). Recreational (or sport) fishing is typically done with hook-and-line, nets and spearguns and may be conducted from shore, from vessels, or using SCUBA equipment (consumptive diving). Both sportfishing and consumptive diving (including SCUBA and free-diving) in the Sanctuary take place primarily from private and chartered commercial passenger fishing vessels (CPFVs).

Sportfisheries in the region access both nearshore and offshore areas, targeting bottom and mid-water fish species, primarily in the eastern half of the Sanctuary. Types of fish landed on CPFVs include kelp bass, mackerel, California sheephead, halfmoon, and whitefish. Species commonly targeted by consumptive divers, who travel from all over the world to dive in the Sanctuary, include many rockfish species and kelp bass, halibut, yellowtail and white seabass, as well as lobster and scallops. Offshore fishing focuses on mobile species like yellowtail, tuna, white seabass, barracuda, broadbill swordfish, marlin, and mako shark.

Wildlife Viewing

Wildlife viewing in the Sanctuary, especially whale watching, is very popular due to the high frequency of sightings and diversity of marine life. Day trips are offered from several area landings including Santa Barbara, Ventura and Channel Islands harbors. In 1999, eight whale watch operations accounted for almost 26 thousand person-days of activity and about \$1.5 million in revenue from CINMS activity (Leeworthy and Wiley 2003).

A national survey on recreation and the environment conducted in 1999 estimated more than 31.3 million people participated in some form of coastal and marine wildlife viewing or nature-based recreation in the U.S. (NOAA 2003a), while over 6.3 million participated in California (Leeworthy 2001). California ranked second only to Florida in terms of the overall number of participants engaged in marine recreation (over 22 million participants in Florida versus about 18 million in California). Most of the activities captured in this survey either directly or indirectly (visiting beaches, diving/snorkeling, kayaking/canoeing, photographing scenery) involved watching wildlife.

Non-Consumptive Diving

The Sanctuary region is considered to have some of the most highly sought after diving locations in the world. There is great interest in non-consumptive diving in the Sanctuary due to the diversity and beauty of the marine habitat, shipwrecks, and other underwater historical sites. Of the over 140 wrecks in the Channel Islands National Park and National Marine Sanctuary, 21 of these have been located and are popular dive sites.



Figure 17: Scuba diving is a popular activity in the Sanctuary. (CINMS)

In 1999, seven charters operators accounted for almost 11 thousand person-days of nonconsumptive diving in the Sanctuary and earned approximately \$685 thousand in revenue (Leeworthy and Wiley 2003).

Boating, Sailing, Kayaking, and Surfing

Boating is another popular recreational activity within the Sanctuary, which, due to its numerous protected anchorages and scenic coastlines, is a highly sought-after destination for both sail and powered boats. The Channel Islands are within reach of several ports for single or multiple day trips and Channel Islands, Ventura, and Santa Barbara Harbors contain over 5,000 slips used by recreational, commercial, and research vessels. Numerous vessels also traverse the region while in transit to other ports.

Due to abundant marine life and the presence of large sea caves and rock formations, the Channel Islands are considered a primary destination of interest for sea kayakers in California. Several regional operations offer sea kayaking excursions in the Sanctuary region. Users can also take kayaks out to the islands on commercial or private vessels, and spend single or multiple days kayaking along the islands' shorelines.

In 1999, eight for-hire operators provided over 4000 person-days of sailing in the Sanctuary, and four businesses provided over 1200 person-days of kayaking/and sightseeing in the Sanctuary. These operators received about \$390 thousand in revenue from this activity, which in turn generated over \$797 thousand in income and supported 24 full and part-time jobs in Ventura and Los Angeles counties (Leeworthy and Wiley 2003).

Although there are several surfing areas located around the Channel Islands, they are not well documented. Surfing occurs year-round within the Sanctuary, but is generally most popular during the summer months. The number of surfers visiting the Sanctuary has risen steadily over the past several years, with the most popular destinations being closer to mainland ports.

Commercial Activities

Fishing

The Sanctuary has extremely productive commercial fishing grounds. Commercial fishing gear used in the Sanctuary includes nets, traps, lines, and dive equipment. The majority of target species are caught in nearshore waters containing giant kelp beds, an important habitat for numerous species. Key target species include: squid, sea urchin, spiny lobster, prawn¹³, nearshore and offshore finfishes (e.g., rockfishes and California sheephead), coastal pelagic species (e.g., anchovy, sardine, and mackerel), flatfishes (e.g., California halibut, starry flounder, and sanddabs), rock crab, sea cucumber, tuna, and kelp. Live fish trapping for rockfish, California sheephead, California scorpionfish and other shallow water species occurs primarily near the coastlines of the Channel Islands. In addition, trap gear is used to take shrimp and prawns, California spiny lobster, and three types of rock crab (red, brown and yellow). Other fisheries include-shark and swordfish drift netting, squid seining, urchin diving, and diving or trawling for sea cucumbers. Most of California's commercial dive sea cucumber catch is from the four northern Channel Islands (Leet et al. 2001). Abalone, once one of the most valuable fisheries in the

¹³ Prawn fisheries in the Sanctuary area include trawl and trap fishing for spot prawns and trawl fishing for ridgeback prawn. In 2002 the California Fish and Game Commission voted to close the spot prawn trawl fishery.

Sanctuary (over \$2.5 million harvested between 1988 and 1997 according to Leeworthy and Wiley 2003) and state, was closed to commercial harvest by the state legislature in 1997. There is a small but increasing fishery for turban snails and whelks, which is not currently regulated.

Of the Sanctuary's commercially caught species market squid, sea urchin, spiny lobster, and halibut are some of the most economically valuable, with urchin and squid exceeding the market value of all other species. Table 1 shows the ex vessel value of marine species, by group, caught in CINMS and landed commercially during 1999.

Table 1: Ex Vessel Value of CINMS Commercial Catch, 1999

Species Group	1999 Value	Species Group	1999 Value
Squid	\$26,558,813	CA Sheephead	\$153,147
Urchins	\$5,963,876	Sculpin & Bass	\$88,547
Prawn	\$743,159	Roundfish	\$38,174
Tuna	\$79,714	Shrimp	\$665
Spiny Lobster	\$952,991	Yellowtail	\$14,820
Flatfish	\$324,685	Mussels, snails	\$7,689
Rockfishes	\$549,446	Rays & Skates	\$2,299
Crab	\$313,289	Salmon	\$1,407
Wetfish	\$608,865	Octopus	\$63
Swordfish	\$41,205	Surf Perch	\$442
Sea Cucumbers	\$267,842	Abalone	\$47
Sharks	\$41,638	Other	\$24,621
All species (excluding kelp) = \$36,777,444			

Kelp Harvesting

Giant kelp harvesting occurs near Point Conception, San Miguel Island, Santa Rosa Island and near Point Mugu and is another of the Sanctuary's most valuable harvested species. In 1999, kelp harvested from the CINMS had a processed value of about \$6 million (Leeworthy and Wiley 2003). Presently ISP Alginates is the only company harvesting giant kelp in the Sanctuary (California Resources Agency, CDFG 2002), while several small-scale harvesters operate along the mainland coast (Ugoretz 2003). With proper management the surface canopy of kelp forests can be harvested several times annually without damage to the kelp bed (Kimura and Foster 1984; California Resources Agency, CDFG 2002). However, because the kelp canopy serves as important habitat for juvenile fishes (Carr 1989) and many species of invertebrates (Coyer 1979; Watanabe 1984), harvesting kelp may have adverse effects on other inhabitants of the kelp forest community. For example, significant reductions in turban snail species were observed in harvested areas compared with unharvested areas in Carmel Bay (Hunt 1977).

Oil and Gas

The Santa Barbara Channel is rich in oil and gas resources. As a result numerous oil and

gas activities have occurred in this region for over a century and oil has been extracted from the Santa Barbara Channel region since 1896 (Lima 1994). In 1969, a blowout at the Unocal platform off the California coast near the town of Summerland caused a catastrophic oil spill along the south central California coast. The impacts resulting from this accident were one of the major factors contributing to the designation of the CINMS in 1980. Since designation all new oil and gas exploration, development, and protection activities have been prohibited in the Sanctuary.

Currently, there are 79 remaining Federal outer continental shelf (OCS) leases off the coast of Southern California (California Resources Agency, California Coastal Commission 1999). Of these 79 Federal leases there are a total of 43 developed or active leases (California Resources Agency, California Coastal Commission 1999), 39 of which are in the Channel Islands region. Of the 11 oil fields these active leases draw from, the majority are in a mature stage of development, with production declining or near depletion. Two of these lease tracts pre-date CINMS designation and slightly overlap the Sanctuary at its eastern boundary; the rest are outside of the Sanctuary.



Figure 18: Platform Gail, Santa Barbara Channel
(Laura Francis)

Shipping

CINMS is located in close proximity to Los Angeles/Long Beach Harbor, the second busiest port in the United States,¹⁴ and Port Hueneme, a deep-water international port. These ports generate extensive commercial shipping traffic transiting the Santa Barbara Channel using shipping lanes passing through the Sanctuary at its northeast boundary (an average of 6,500 cargo vessels travel through the Santa Barbara Channel each year).¹⁵ CINMS is one of only two internationally accepted “areas to be avoided” (ATBAs) for oil tankers on the Eastern Pacific. As a result, oil tankers often voluntarily reroute to the outer Santa Barbara Channel, outside the Sanctuary.

Department of Defense/Homeland Security Activities

Currently, CINMS maintains a positive and important working relationship with the

¹⁴ Information about L.A/Long Beach Harbor is available at: http://www.polb.com/html/1_about/overview.html.

¹⁵ A Traffic Separation Scheme (TSS) manages vessel traffic in the Santa Barbara Channel. Voluntary routes that separate opposing flows of traffic with an empty safety lane, TSSs are typically in international waters and must be approved by the International Maritime Organization (IMO). In addition, CINMS is one of only two internationally accepted “areas to be avoided” (ATBAs) for oil tankers on the eastern Pacific. ATBAs are areas within defined limits in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties and which should be avoided by all ships or certain classes of ships. As a result, oil tankers voluntarily reroute to the outer Santa Barbara Channel.

regional representatives of United States military, which maintains a strong presence in the CINMS region. The U.S. Air Force and U.S. Navy, individually and together, conduct training exercises, and support military testing and evaluation projects for aircraft, ship, and missile programs. Both support commercial space launch missions as well. The Vandenberg Air Force Base (VAFB), Point Mugu Sea Range and Port Hueneme coastal and marine areas are the primary locations for these military activities.

VAFB, located in western Santa Barbara County, is headquarters for the U.S. Air Force's 30th Space Wing. The Air Force's primary missions at VAFB are to launch and track satellites in space, test and evaluate America's intercontinental ballistic missile systems and provide aircraft operations in the Western Range. VAFB also supports commercial space launch ventures and supports aircraft and helicopter training and testing

In addition to mainland facilities, Point Mugu encompasses a 36,000 square mile Sea Range that supports five categories of tests to evaluate sea, land and air weapons systems: 1) air-to-air testing; 2) air-to-surface testing; 3) surface-to-air testing; 4) surface-to-surface testing; and 5) subsurface-to-surface testing. In addition, the Sea Range supports fleet training exercises, small-scale amphibious warfare training and special warfare training.

The US Coast Guard (USCG), which operates a Marine Safety Detachment and Coastal Patrol Boat at Santa Barbara, California and a Station and Coastal Patrol Boat at Oxnard, California conducts several activities in the Sanctuary region, such as search-and-rescue, migrant and drug interdiction, fisheries enforcement, marine environmental protection, marine mammal protection and monitoring and inspection of all international vessels experiencing mechanical difficulty and distress.¹⁶

Research Activities

The Channel Islands are the subject of extensive scientific interest as thousands of academic and professional researchers conduct research activities within CINMS and are producing a myriad of Sanctuary-focused articles, academic papers, and other products.

The Channel Islands are the subject of extensive research activities, most of which fall under the following categories: physical and biological science research; socioeconomic, cultural, and historic research; and political science research. Within each of these categories research projects are typically:

- 1) *Intramural* (projects are funded by the NMSP and conducted by CINMS staff);
- 2) *Extramural* (projects are funded and conducted by outside agencies and institutions); or
- 3) *Directed* (projects are conducted by outside agencies and institutions with guidance and/or support from CINMS and the NMSP).

Physical and Biological Science Research

Research activities pertaining to the Sanctuary's physical and biological setting are the most extensive. In their report *Summary of Research Programs in the Channel Islands National Marine Sanctuary*, Abeles et al. (2003) provide a comprehensive assessment of

¹⁶ Although the U.S. Coast Guard is not technically considered part of the military, nor does it fall under the authority of the Department of Defense but rather the Department of Homeland Security, due to the similar nature of some of their activities, they are described here.

major physical and biological science research activities in the Sanctuary to date, with a focus on studies including a long-term monitoring component. As shown in Table 2 below, the report categorizes 42 research projects in the Sanctuary according to ecological levels of classification: population studies (marine plants, marine invertebrates, marine fish, marine birds, marine mammals), community studies, environment studies, and ecosystem studies.

Table 2: Summary of Major Biological and Physical Science Research Activities in CINMS (adapted from Abeles et al. (2003))

<i>Study</i>	<i>Agency, Institution Or Researcher</i>	<i>Data Collection Period</i>
Category 1: Population Studies		
Marine Plants		
Aerial kelp canopy monitoring	CINMS	1999 -
Eelgrass Surveys	UCSB	1992 -
Marine Invertebrates		
Anacapa urchin reef surveys	UCSB	1981 -
White abalone studies	CDFG	mid-1980's -
ROV market squid surveys	CDFG	1999 -
Aerial market squid surveys	CDFG	1992 - 2000
Marine Fish		
Acoustic telemetry monitoring	PIER	2000 -
Giant sea bass monitoring	Kathy de Wet-Oleson	1997 -
Nearshore SCUBA surveys	UCSB	1995 -
Midwater trawl surveys	UCSB	1995-2000
Deepwater submersible surveys	UCSB	1995 -
Marine Birds		
Cormorant monitoring	Humboldt State University	1991-2003
Xantus's Murrelet 1	Humboldt State University	2000 -
Xantus's Murrelet 2	Humboldt State University	2001 -
Pelican and Cormorant studies	CA Inst. of Env. Studies & UC Davis	1970 - 1995
Cassin's Auklet studies	USGS	1999-2001
Ashy Storm-Petrel studies	USFWS, USGS, Humboldt State University Foundation	1995-1998; 1999-2002.
Seabird population dynamics	CINP	1985 -
Marine Mammals		
Pinniped populations studies	National Marine Mammal Laboratory	1968 -
Aerial pinniped monitoring	NOAA Fisheries	1981 & 1987
Sea lion diet studies	NOAA Fisheries	1981 -
Harbor seal annual census	CDFG	1982 -
Humpback and blue whales	Cascadia Research	1986 -
Category 2: Community Studies		
Sand beach and coastal lagoon	CINP	1994 -
Rocky intertidal monitoring	CINP	1982 -
Kelp forest monitoring	CINP	1982

Table 2: Summary of Major Biological and Physical Science Research Activities in CINMS (adapted from Abeles et al. (2003))

<i>Study</i>	<i>Agency, Institution Or Researcher</i>	<i>Data Collection Period</i>
Subtidal @ San Miguel Island	California Abalone Association	2001-2002
REEF monitoring	REEF	1997
Biogeography of nearshore fishes	Vantuna Research Group, Occidental College	2000
PISCO	UCSB, UCSC, Stanford, OSU	1999 -
Wind to whales	UCSC	1995; 1997; 2000
CI Naturalist Corps	CINMS	2000
Collaborative marine research	CINMS, CDFG, NOAA Fisheries, Sea Grant, UCSB, PISCO, Santa Barbara and Ventura fishermen	2001 -
SAMSAP	CINMS	1997 -
Category 3: Environment Studies		
CODAR	UCSB	1997 -
Remote sensing	CINMS	1997 -
Side scan sonar mapping	USGS	1998 -
Category 4: Ecosystem Studies		
So. Cal. Bight Regional Marine Monitoring	CINMS, SCCWRP, LA County Sanitation District	1998; 2003
Plumes and Blooms	Institute for Computation Earth System Sciences	1996 -
Long-Term Ecological Research (LTER) Program	UCSB	(not provided)
California Cooperative Oceanic Fisheries Investigations (CalCOFI)	CDFG, NOAA, NOAA Fisheries, UC Scripps Institute of Oceanography	1951 -
Marine Ecological Reserves Research Program (MERRP)	CDFG, Sea Grant, NOAA Fisheries	1997 -

Socioeconomic, Cultural, and Historic Research

Research activities pertaining to the Sanctuary's human setting include socioeconomic studies of industries and individuals linked to the Sanctuary, as well as studies of maritime heritage resources. Socioeconomic studies in the Sanctuary have not been as extensive as other research projects in the Sanctuary. However, since the California Department of Fish and Game and CINMS began the Sanctuary marine reserves process, several socioeconomic studies have been undertaken and a major socioeconomic monitoring program is being developed and implemented. Maritime heritage resource research is focused on either studies of Native American artifacts, paleontological remains, or historic studies of shipwrecks, aircraft wrecks, and material associated with wharves, piers and landings. The NMSRP and major partners, such as the CINP, the Santa Barbara Maritime Museum, the State of California, Coastal Maritime Archaeology Resources (CMAR), and the Chumash Maritime Association, conduct the majority of research on Sanctuary maritime heritage resources.

Political Science Research

Political science research focuses on the Sanctuary's operational setting. Several political scientists studying topics such as collaborative stakeholder-based processes, or consensus-based processes, have cited CINMS as a case study. Political science interest in the

Sanctuary primarily stems from the Sanctuary's use of the Sanctuary Advisory Council and its working groups. Political science research projects tend to be extramural.

Educational Activities

Educational activities have been a central focus of the Sanctuary since its 1980 designation. Today the Sanctuary plays an important role in public and formal marine science education activities for all ages from K-12, to adults. Sanctuary educational activities have reached a wide variety of audiences on a local, regional, national, and international scale. CINMS educational activities are focused in two strategic areas: 1) community involvement, partnerships, and community program development, and 2) product development.

Community Involvement, Partnerships and Community Programs

Community involvement is an essential component of the CINMS Education and Outreach program. Community involvement in Sanctuary educational activities is achieved in large part through the Channel Islands Naturalist Corps: a volunteer corps of naturalists trained to provide interpretation about the Sanctuary and Park on a variety of passenger vessels, such as whale watch and dive boats, as well as at outreach and special events. Community involvement in educational activities is also achieved through the Sanctuary Advisory Council and in particular its Sanctuary Education Team. This team is made up of community members who work to address Sanctuary education needs, and to keep local educational institutions informed about Sanctuary educational opportunities. Advisory Council members at large are charged with keeping their constituents educated about the Sanctuary. Community involvement in educational activities is also achieved through participation in Sanctuary events and programs.

Together the Sanctuary and its education partners develop and implement numerous interactive educational programs including training programs, workshops, special events, and school programs. CINMS Education staff present workshops and programs at a variety of regional and national conferences each year such as the Southwest Marine Educators Association, California Science Teachers Association and National Marine Educators Association. Training programs and teacher workshops teach educators about marine science using the Sanctuary as subject matter, and many are linked to Sanctuary products such as curriculum packages and CD-ROMs. Other workshops target a broader segment of the community, such as the Marine Wildlife Viewing Workshop, which is open to all members of the public interested in responsible wildlife viewing practices. Each year the sanctuary sponsors a variety of public educational cruises targeting varying audiences including local residents, tourists, school children and community groups. These cruises provide field experiences in the Sanctuary and may include activities such as: intertidal and sandy beach monitoring, floating labs, students on research vessels posing questions to divers below using live video and audio feed, kayaking, diving, and wildlife viewing. Sanctuary staff and volunteers facilitate hands-on activities such as oceanography experiments, fish identification, marine mammal and seabird identification, fish surveys, and wildlife viewing to encourage an understanding and stewardship for Sanctuary resources. The Sanctuary and its partners also support marine science programs in local schools such as Los Marineros and the Channel Islands Argonauts.

Beyond these formal educational programs sponsored by CINMS and its partners, educational activities are also provided at community programs such as whale festivals, harbor festivals, boat shows, and dive industry events. This management plan outlines

many additional community-based programs the Sanctuary plans to implement such as multicultural-targeted marine science after-school programs, and volunteer boater interpretive enforcement through the Team OCEAN and Marine Watch programs.

Educational Products

The second strategic area of Sanctuary educational activities is composed of Sanctuary educational products including: printed materials, the Sanctuary website, audio-visual materials, signs, displays, and exhibits. Some of these educational products, such as curriculum packs, are available as materials tied to Sanctuary courses, trainings, and workshops. Other products, such as signs, brochures, websites, and displays, are targeted at the general public. The Sanctuary's general educational products are available at the Sanctuary's offices as well as at local businesses, ports and harbors, museums, local visitor's centers, and online. As in the case of educational programs, the Sanctuary's education partners have played a major role in both designing and disseminating educational products about CINMS.



Figure 19: Los Marineros Program, Stearn's Wharf (CINMS)

PART II-D: THE OPERATIONAL SETTING

The Channel Islands National Marine Sanctuary (CINMS or Sanctuary) operational setting includes CINMS and National Marine Sanctuary Program (NMSP) administration and management, along with the administration and management of numerous other federal, state, and local agencies with whom the Sanctuary shares jurisdiction over particular resources or activities. This description of the operational setting focuses on the Sanctuary's human resources, infrastructure, Sanctuary Advisory Council, funding, enforcement, and permitting. In addition, it provides brief descriptions of the various federal (within and without NOAA), state, and local agencies with jurisdiction relevant to the Sanctuary. The tools the Sanctuary uses to formalize relationships with these agencies are also described.

Human Resources

The Sanctuary Superintendent

While reporting directly to the NMSP Director, the CINMS superintendent oversees site-specific management functions, including implementation of the management plan. The Sanctuary superintendent also designates responsibility for implementing specific programs, provides an administrative framework to ensure all resource management activities are coordinated, and provides and manages an appropriate infrastructure to adequately support site operations. Responsibilities of the CINMS superintendent include:

- Recommending priorities to the NMSP for annual allocation of funds for site-specific resource protection needs, such as surveillance and enforcement activities, violations and emergencies;
- Coordinating with the NMSP in the evaluation, processing and issuing of permits;
- Monitoring and evaluating research, education, marine resource management and cultural resource management programs;
- Overseeing staffing needs and requirements;
- Coordinating on-site efforts of all parties involved in Sanctuary activities including state, federal, regional and local agencies;
- Working closely with constituents and the community; and
- Evaluating overall progress toward the achievement of CINMS goals and objectives.

Sanctuary Staff

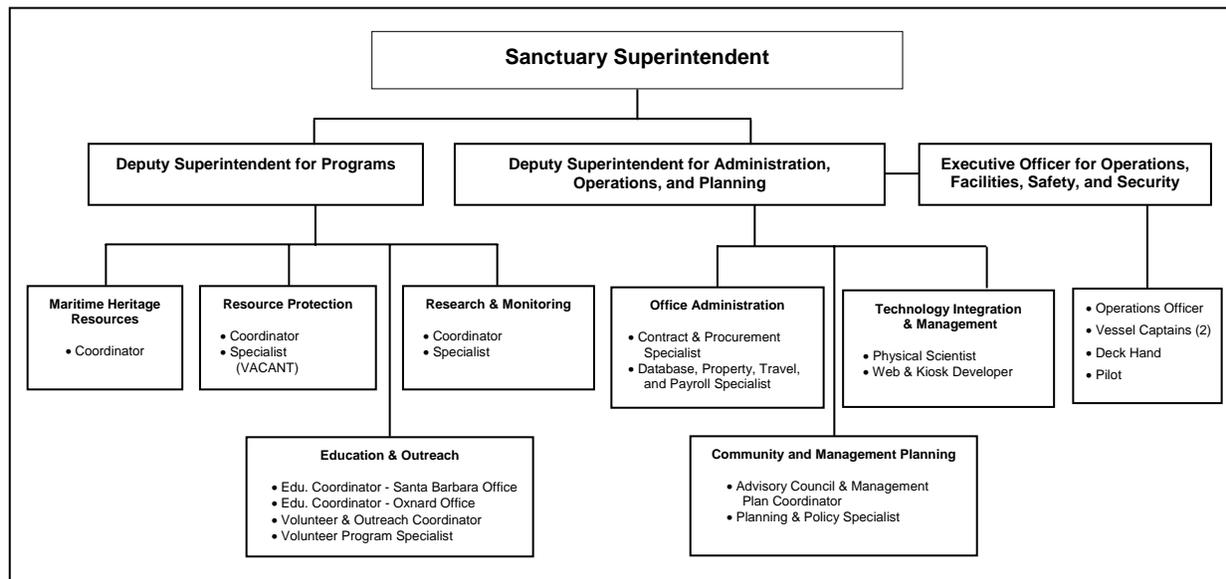
Basic staffing resources provide support for the site's seven functional areas:

- 1) Community and Management Planning,
- 2) Technology Integration and Management,
- 3) Site Operations,
- 4) Resource Protection,
- 5) Research and Monitoring,
- 6) Education and Outreach,
- 7) Maritime Heritage Resources, and
- 8) Office Administration.

Sanctuary staff have knowledge and expertise in policy, marine resource management,

education and outreach, volunteer development, research and monitoring, maritime heritage resources, GIS and communications technology and office administration (Figure 20). In addition, volunteers and interns are an integral component of sanctuary staffing.

Figure 20: CINMS Organizational Chart



Sanctuary Infrastructure

Offices

The main CINMS office is located at the harbor in Santa Barbara, California, while a southern satellite office is located at the Channel Islands Harbor in Oxnard. In the future, other satellite offices and visitor centers may be located throughout the region as deemed necessary to accommodate the need for additional office space and to improve community outreach efforts. These additional facilities may be developed through various partnerships with both the public and private sector (See Strategy OP.3 of the Operations action plan).

Vessels and Aircraft

The Sanctuary currently operates two vessels and one aircraft in support of research, education and emergency response.

The *Xantu* is the Sanctuary’s 28-foot Wilson craft “quick response” vessel. It has proven to be an invaluable management tool in a number of Sanctuary resource protection incidents such as minor oil spills and vessel groundings. The *Xantu* serves as a research and dive platform, supporting single day trips.

The *R/V Shearwater* is the Sanctuary's new 62-foot Teknicraft catamaran. This vessel serves as an important multi-day platform, supporting the bulk of CINMS' research, monitoring and education programs, including oceanographic and biological studies. It is equipped with state-of-the-art bridge electronics and oceanographic equipment.

The *Lake Renegade Sea Wolf* is a rugged, adaptable, single-engine amphibious aircraft designed for extended range with external fuel tanks. Its primary function is aerial monitoring for vessel traffic, marine mammals and kelp canopy coverage, while conducting general Sanctuary surveillance. When conducting aerial surveys the *Sea Wolf* can carry one pilot and two observers (along with GPS/Loran, radar altimeter, hardpoints for camera pods and laptop computer with data collection software), cruises at 120 knots, and has a range of 5 hours/600 NM.

The Sanctuary Advisory Council

The Sanctuary Advisory Council (Advisory Council) includes representatives from 10 government agencies and 10 community stakeholder groups. With its expertise and diverse representation, the Advisory Council offers advice to the Sanctuary Superintendent on resource management issues and helps ensure the manager has a wide range of viewpoints upon which to base management decisions.

In order to better understand and address specific management issues, the Advisory Council extends its capacities by forming a variety of working groups and subcommittees. Working groups invite additional community members and experts to participate in the development of sound management advice for the Sanctuary. Subcommittees, which remain internal to the Advisory Council, take on specific short-term tasks to assist with a variety of Council needs. For a list of current Advisory Council members see <http://channelislands.noaa.gov/sac/main.html>

R/V Shearwater

The Sanctuary's new state of the art 62' high-speed Teknicraft catamaran *R/V Shearwater* is used primarily as a research platform and provides a major contribution to regional research efforts. In addition, the vessel serves as a host for educational field trips and emergency response in and around the Channel Islands National Marine Sanctuary.

The *Shearwater* arrived in Santa Barbara Harbor on March 25th 2003 and has been in operation approximately 80% of the available days. CINMS staff provide all crew and maintenance for the *Shearwater*, which is outfitted with some of the latest research equipments, such as:

- An A-frame and winch for trawls, CTD casts, sediment sampling, and towing equipment such as sidescan sonar and ROVs.
- Wet and dry labs allow on-board processing of samples and data.
- Onboard facilities and equipment for supporting dive operations.
- On board berthing, stowage, galley and safety equipment allow for multiple-day excursions with crews of up to ten scientists.



R/V Shearwater (All American Marine)

Relationships With Other NOAA Offices

Of the many NOAA offices, there are several working closely with CINMS and other national marine sanctuaries in a wide variety of capacities, including:

NOAA Fisheries (National Marine Fisheries Service or NMFS)

NOAA Fisheries administers NOAA programs that assess, manage and promote the domestic and international conservation of living marine resources within the United States Exclusive Economic Zone (3-200 miles offshore). NOAA Fisheries' Southwest Region Office (Long Beach, CA) and associated Southwest Fisheries Science Center (La Jolla, CA) serve the Southwestern United States and Pacific Ocean Islands, including the Channel Islands. More specifically, in conjunction with state resource agencies (such as the California Department of Fish and Game) NOAA Fisheries approves and enforces Fishery Management Plans (FMPs) prepared by regional fishery management councils under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). NOAA Fisheries also shares responsibility with the U.S. Fish and Wildlife Service for the implementation of the Marine Mammal Protection Act and the Endangered Species Act, both of which prevent the taking of any endangered, threatened, or otherwise depleted species. As part of the Marine Mammal Protection Act mandate, NOAA Fisheries Office of Protected Resources (OPR) works in collaboration with the Protected Resources Divisions of the NOAA Fisheries Regional Offices and Science Centers to develop and implement a variety of programs for the protection, conservation, and recovery of marine mammals.

NMFS OPR is also responsible for implementing the ESA, generally managing endangered and threatened marine species, including anadromous salmonids. NMFS and USFWS share joint responsibility for managing sea turtles. In the Pacific Ocean, NMFS manages 5 species of sea turtles, over 25 evolutionarily significant units of salmon and steelhead, including their critical habitat, white abalone, 7 large whales and several species of pinnipeds. In coordination with the regional offices and science centers, OPR develops policies and regulations to implement the provisions of the ESA with the goal of protecting and recovering endangered and threatened marine and anadromous species and their habitat.

NOAA Fisheries offers resources to the Sanctuary such as collaborative assistance on environmental policy processes and enforcement through NOAA's Office for Law Enforcement (OLE). They also provide technical expertise on many issues related to resource protection and management. NOAA Fisheries has one member and one alternate seat on the Advisory Council.



Figure 21: NOAA Ship McArthur (CINMS)

NOAA Corps

CINMS has traditionally filled sanctuary positions with officers from the NOAA Corps, which is located within NOAA Marine and Aviations Operations. These highly skilled officers are trained in engineering, earth sciences, oceanography, meteorology, fisheries science, and other related disciplines. Throughout NOAA they operate ships, fly aircraft, manage research projects, conduct diving operations, and serve in staff positions. Commissions for officers on billets at the sanctuaries are paid for by the NOAA Corps.

The Office of Response and Restoration (OR&R)

OR&R works to prevent and mitigate harm to coastal resources and is the primary NOAA office responding to oil spills and hazardous material releases. It provides scientific support to the U.S. Coast Guard for spills and technical assistance to other agencies for hazardous material releases. OR&R also works with federal, state, and tribal natural resource trustees to restore damaged coastal resources.

Sea Grant

The National Sea Grant College Program encourages the wise stewardship of marine resources through research, education, outreach, and technology transfer. Sea Grant is a partnership between the nation's universities and NOAA that began in 1966, when the U.S. Congress passed the National Sea Grant College Program Act. Today, the Sea Grant Colleges are focused on marine research and the sustainable development of marine resources. Sea Grant produces and makes available a wealth of information on marine topics - from public school curriculum materials to the most advanced scientific research. Sea Grant fellows work throughout NOAA for a wide variety of offices, including the NMSP.

Damage Assessment Center (DAC)

DAC implements NOAA's responsibilities for natural resource damage assessment for releases of oil and hazardous substances. DAC scientists and economists provide the technical foundation for these assessments and work with other trustees and responsible parties to restore resources injured by releases of oil and hazardous substances, as well as other injury to resources of national marine sanctuaries and estuarine research reserves. DAC collects data, conducts studies, and performs analyses needed to determine whether coastal resources has sustained injury from releases of oil or hazardous materials, how to restore injured resources, and to ascertain the damages that must be recovered to accomplish restoration.

DAC maintains an administrative record to facilitate public input, conducts public outreach activities, documents expenditures to support cost recovery, and administers and oversees significant damage assessment contracting capabilities. DAC works with other NOAA elements and federal and state agencies at both the national and regional levels and supports a network of field offices. DAC provides technical support to NOAA's Office of General Counsel and the Department of Justice for litigation and for settlement of natural resource damage claims.

Office of Coastal Resource Management (OCRM)

OCRM is responsible for implementing the Coastal Zone Management Act of 1972 (CZMA), which Congress passed to address the growing concerns about the health of the nation's coastal resources. The office works with state and territorial governments to implement their coastal management programs and find local solutions to problems

occurring throughout the entire nation. Daily management decisions are made at the state and territorial level. Thirty-four states and territories have active coastal management programs.

OCRM works to advance national coastal management initiatives, and to maintain and strengthen state coastal management through financial, policy and technical assistance. It also helps to ensure actions of federal agencies are consistent with state and territory coastal management policies. It undertakes projects with program-wide or system-wide benefits in the areas of coastal habitat protection and restoration; coastal hazards; public access to the shore for recreation; responsible development of coastal communities, including urban waterfronts; and polluted runoff (also known as nonpoint source pollution or runoff pollution).

The National Estuarine Research Reserve System (NERRS)

NERRS is a network of 25 estuarine areas — places where fresh water from land drainage mixes with saltwater from the sea — established across the nation for long-term stewardship, research, and education purposes. Estuaries can be bays, lagoons or sloughs and are crucial spawning areas for many commercial fish and shellfish. Estuaries also serve to buffer upland areas from flooding. The sites within the estuarine reserve system range in size from 365,000-acre Kachemak Bay, Alaska, to 571-acre Old Woman Creek, in Erie County, Ohio.

The National Ocean Service implements NERRS as part of the Coastal Zone Management Act (CZMA) of 1972, which called for the establishment of a network of estuaries representing different biogeographical regions of the United States. Within this network, reserve scientists and other researchers conduct ecological research and their findings are communicated to coastal managers.

Special Projects Office (SPO)

SPO is the focal point for providing NOS and NOAA Program and Staff Offices with planning, data synthesis and assessment, and advanced technical services (e.g., GIS and web mapping, database development, and information visualization tools). SPO's primary goal is to promote integration of program capabilities within and across NOS and NOAA to ensure more effective and efficient delivery of products and services to the coastal stewardship community.

SPO works to build capacity within NOAA and NOS by collaborating with internal partners to define problems and issues, identify information needs, assemble and synthesize relevant data, develop strategies, evaluate options, and develop products and results contributing to and supporting better coastal resource management decision-making. SPO also provides NOS with a quick response capability to anticipate and respond to emerging opportunities to further the coastal stewardship mission.

The National Centers for Coastal Ocean Science (NCCOS)

NCCOS conducts and supports research, monitoring, assessment, and technical assistance for managing coastal ecosystems and society's use of them. These activities fit within a framework of five environmental stressors: climate change, extreme natural events, pollution, introduced species, and land and resource use. NCCOS activities are focused in estuaries, coral reefs, national marine sanctuaries, and national estuarine research reserves, as well as other coastal ecosystems. NCCOS is the primary NOAA office working on the CINMS biogeographic assessment for the CINMS boundary evaluation

process (see Strategy BE.1 in the Boundary Evaluation Action Plan).

MPA Center

The MPA Center works to implement Executive Order 13158, which directs federal agencies to conserve the nation's valuable marine resources through a variety of tasks related to marine protected areas. This implementation requires considerable cooperation, collaboration, and information sharing among many government and private institutions. Working with the Department of the Interior (DOI) and other partners, the MPA Center: develops the framework for a national network of MPAs; coordinates the development of information, tools, and strategies, and guides agencies in their efforts to enhance and expand the protection of existing MPAs, and to establish or recommend new ones; coordinate the MPA web site; partners with Federal and non-Federal organizations to conduct research, analysis, and exploration; helps construct and maintain an inventory of existing U.S. marine managed areas and the MPA List; and supports selection of the MPA Advisory Committee and its operation.

Relationships With Other Regional Authorities

CINMS seeks to provide comprehensive and coordinated Sanctuary management in a way that complements existing regulatory authorities and capitalizes on opportunities to establish close working relationships. Within the coastal and offshore waters adjacent to southern California, the Sanctuary operates alongside and in some cases, in direct partnership with local, state, and Federal jurisdictions. Several of these partnerships are identified within the specific management strategies proposed in the action plans.

Coastal and offshore waters in the Sanctuary region are divided into several different categories, each of which has varying jurisdictions:

- State tidelands and submerged lands (mean high tide line to 3 nm¹⁷ offshore);
- The outer continental shelf (OCS) (seaward of 3 nm from shore, with exceptions in Texas and Florida);
- The territorial sea (shoreline to 12 nm offshore);
- The contiguous zone (12 to 24 nm offshore);
- The exclusive economic zone (EEZ) (12 to 200 nm offshore); and,
- The high seas (beyond 200 nm from shore).

Several laws and court rulings have clarified the complex jurisdictional setting of the Channel Islands region. The Federal Submerged Lands Act of 1953 granted ownership of lands and natural resources from the mean high tide line to three nautical miles (nm) offshore to coastal states. This provided for state control and regulation of the development of resources such as oil and gas and fisheries within three nm. In addition, the Outer Continental Shelf Lands Act of 1953 established federal jurisdiction over the resources beyond three nm and created a legal framework within which to manage those resources.

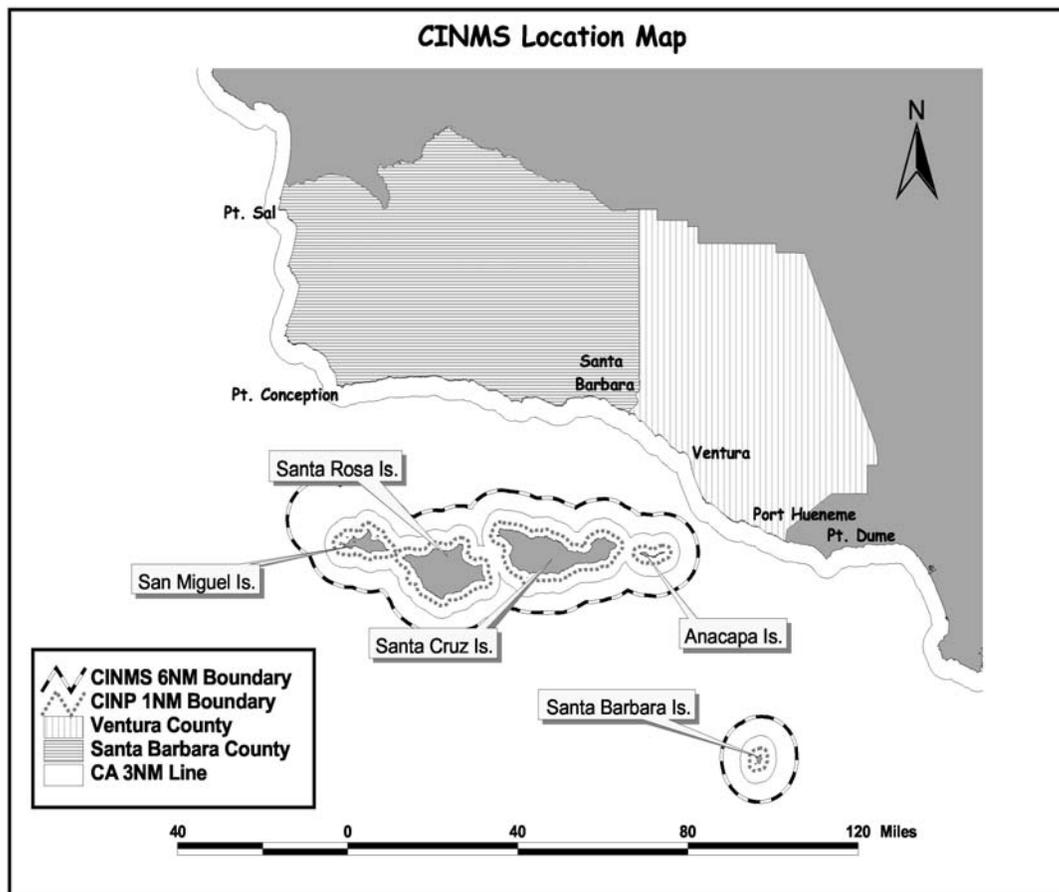
Although the Channel Islands are located more than three nm from the mainland coast, *United States v. California* (1965)¹⁸ established state jurisdiction to three nm offshore from each of the Islands. Federal jurisdiction extends beyond three nm offshore from the mainland and islands. A detailed description of jurisdictions and the various agencies with

¹⁷ One nautical mile (nm) is equivalent to 1.852 kilometers or 1.15 statute miles.

¹⁸ Available online: <http://www.usseplus.com/online/index.asp?case=3810139>.

regulatory authority is provided in *California's Ocean Resources: An Agenda for the Future* ([California] Resources Agency of California 1997), and in the DEIS (Vol. II, Section 5.0).

Figure 22: Various Jurisdictions in the CINMS Region



Federal Agencies and Related Organizations

The National Park Service (NPS)

The NPS is housed within the DOI and includes the Channel Islands National Park (CINP). The NPS conserves scenery, national, and historic objects and wildlife and provides for the enjoyment of those resources in a manner that will leave them unimpaired for the enjoyment of future generations. CINP's proprietary jurisdiction extends out to one nautical mile offshore around Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara islands, and non-proprietary jurisdiction extends out to one mile offshore from San Miguel Island. This one nm of jurisdiction overlaps with of the jurisdiction of the Sanctuary.

The NMSP and the NPS are committed to working closely together on the protection and

management of shared marine resources across the country. In the Channel Islands region, Channel Islands National Park (CINP) is an active and integral Sanctuary partner on projects ranging from enforcement, education and outreach, and research and monitoring. CINP has one member and one alternate seat on the Advisory Council.

The Pacific Fishery Management Council (PFMC)

The PFMC is one of eight regional fishery management councils established by the Magnuson-Stevens Act for the purpose of managing fisheries within the EEZ. The PFMC is responsible for select fisheries off the coast of California, Oregon and Washington. The regulation of fishery resources in national marine sanctuaries is a collaborative process where Sanctuary Superintendents work with other fishery managers, including councils such as the PFMC, to ensure fishery resources are protected. Currently CINMS is working closely with the PFMC on the environmental review process for consideration of marine reserves within the Sanctuary (see Strategy MZ.2 in the Marine Zoning Action Plan).

The U.S. Navy

The U.S. Navy operates the Ventura County Naval Complex. This complex controls 36,000 square miles of Special Use Airspace over the Pacific Ocean providing the Navy with a realistic operational environment for the safe conduct of controlled air, surface and subsurface launched missile tests, aircraft tests and fleet exercises involving aircraft, surface ships and various targets. Also known as the Point Mugu Sea Range, this area includes the northern Channel Islands and San Nicolas Island. The Navy owns both San Nicolas and San Miguel Islands and leases property on Santa Cruz Island. However, San Miguel Island is jointly managed by the Navy and the CINP. The Navy has provided important support for various Sanctuary research efforts (ships, submarines, remotely operated vehicles, etc.).

The U.S. Air Force

The U.S. Air Force in the region is based at Vandenberg Air Force Base (VAFB). VAFB, located on approximately 98,000 acres in western Santa Barbara County, is headquarters for the U.S. Air Force 30th Space Wing. The Air Force's primary missions at VAFB are to launch and track satellites in space, test and evaluate America's intercontinental ballistic missile systems, and provide aircraft operations in the western range. The installation also supports aircraft and helicopter training and testing programs along the base's coastal area.

The Navy and the Air Force share one seat on the Advisory Council. These Advisory Council members formed a military activities working group providing invaluable support explaining Department of Defense related activities.



Figure 23: US Coast Guard Vessel, Santa Barbara Channel (Laura Francis)

The U.S. Coast Guard (USCG or Coast Guard)

The USCG operates under the Department of Homeland Security.¹⁹ The USCG holds broad responsibility for enforcing all federal laws and regulations throughout the Sanctuary and assists NOAA in the enforcement of Sanctuary regulations. The USCG provides on-scene coordination with Regional Response Center facilities under the National Contingency Plan for removal of oil and hazardous substances in the event of a spill threatening Sanctuary resource or qualities. In addition to enforcing fishing and vessel discharge regulations, the USCG is also responsible for regulating vessel traffic, maintaining boater safety, and coordinating search and rescue operations. The USCG has one member and one alternate seat on the Advisory Council.

The Minerals Management Service (MMS)

MMS is the bureau of the Department of the Interior managing the nation's oil and natural gas resources in the outer continental shelf (OCS), as well as leases pertaining to these resources. Management responsibility for OCS lands offshore California, Hawaii, Oregon, and Washington resides with the MMS Pacific OCS Region located in Camarillo, California. The CINMS boundary extends into the Federal OCS approximately 3 nautical miles.

MMS contributes significant funds and resources to marine research projects in the Channel Islands region. The Sanctuary sometimes uses MMS research results in support of Sanctuary management. MMS is also responsible for ensuring safe practices among the various oil and gas entities operating within the Santa Barbara Channel. MMS has one member and one alternate seat on the Advisory Council.

The U.S. Fish and Wildlife Service (USFWS)

USFWS is housed within the DOI. USFWS works to conserve, protect, and enhance fish (freshwater species), wildlife, and plants and their habitats. USFWS shares responsibility with NOAA Fisheries for implementing the Marine Mammal Protection Act and the Endangered Species Act (USFWS is responsible for managing sea otters, walrus and brown pelicans; NOAA Fisheries is responsible for all other marine mammals).

The Environmental Protection Agency (EPA)

The EPA helps to protect Sanctuary water quality by performing such activities as regulating sewage outfalls (via National Pollutant Discharge Elimination System Permits) and ocean dumping (under Title I of the Marine Protection, Research, & Sanctuaries Act).

U.S. Geological Survey (USGS)

The USGS is a bureau within the DOI providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy and mineral resources; and enhance and protect our quality of life. The USGS has no regulatory or management mandate. Scientists within the USGS work within four disciplines: biology, geography, geology and water. Scientists at the USGS Channel Islands Field Station (part of the Biological Resource Division, Western Ecological Research Center) conduct research on the ecology and conservation biology of sensitive plants and animals at the Channel Islands and along California's coast. In addition to CINMS, the field station supports information needs of the National

¹⁹The United States Coast Guard was transferred to the Department of Homeland Security on March 1, 2003. Information is available on line [last accessed January 23, 2003] at: http://www.whitehouse.gov/news/releases/2002/11/reorganization_plan.pdf.

Park Service, U.S. Fish and Wildlife Service, Department of Defense, California Department of Fish and Game and other state and federal clients. In addition, the USGS Coastal and Marine Geology Program's Western Region conducts multidisciplinary scientific research in the coastal and offshore areas of California, as well as Oregon, Washington, Alaska, Hawaii, and other US Pacific Islands and waterways of the United States.

State of California

The CINMS coordinates with the State of California in implementing many of its programs as well as its regulations. The CINMS and the various state resource agencies work in partnership to protect the resources in the CINMS. The State's jurisdiction in the Sanctuary extends 3 nm offshore from the mean high tide line.

Since the Sanctuary's designation, the NMSP has enjoyed a close partnership with the State of California in achieving effective resource protection for the marine waters surrounding the Channel Islands. With four national marine sanctuaries designated in California, the NMSP and State of California are strong partners in protecting California's exceptional natural and cultural marine resources, providing effective cooperative enforcement of Sanctuary and state resource protection laws, conducting vital ocean research and monitoring, delivering state-of-the-art public education services, and planning together to sustain and protect California's coast and ocean. California has been a leader in ocean and coastal management and continues to lead important initiatives for improving the management of fisheries, introduced species, marine protected areas, water quality, historic resources, and coastal development.

In 2004 California Governor Arnold Schwarzenegger adopted *Protecting Our Ocean: California's Action Strategy* (CRA and Cal EPA 2004). This forward-looking plan of action for ocean and coastal management in California places a focus on ecosystems and stewardship closely paralleling the NMSP mandate and corresponding CINMS goals, underscoring the opportunity for CINMS/ State collaboration on a wide array of issues. Many of the challenges addressed highlighted in California's ocean action strategy have also been identified as priorities in this draft management plan and DEIS. As CINMS and the NMSP work closely with the State to help achieve the goals of California's ocean action strategy, the Sanctuary will benefit from the partnership and make important progress on in implementing the strategies contained in this management plan.

The California Resources Agency (Resources Agency)

The Resources Agency is a cabinet-level agency responsible for the conservation, enhancement, and management of California's natural and cultural resources. The Resources Agency oversees the activities of 19 state departments, boards, commissions and conservancies, including the Department of Fish and Game and the California Coastal Commission. The Resources Agency, and in particular the Ocean Resources Management Program, is an integral Sanctuary partner, working with CINMS to develop successful relationships with state entities and collaborating on several regional marine resource protection projects. In addition, Resources Agency staff have been instrumental in mutual efforts to integrate Sanctuary and state policies, and along with the California Environmental Protection Agency produced the state's new ocean action strategy: *Protecting Our Ocean: California's Action Strategy* (CRA and Cal EPA 2004). While the Resources Agency does not implement specific prohibitions or regulations, individual entities under its oversight do. CINMS maintains close working partnerships with several

of these entities, including:

- *The California Coastal Commission (CCC)* was established in 1976 by the California Coastal Act for the purpose of planning and regulating water uses consistent with the comprehensive set of specific policies for the protection of coastal resources and the management of orderly economic development throughout the coastal zone. Activities in State waters must comply with the policies established by the California Coastal Act. In addition, federal activities affecting any land or water use or natural resource of the coastal zone must be conducted in a manner which is consistent with these policies to the maximum extent practicable, and activities which require a federal license or permit must be conducted in a manner consistent with the enforceable policies. The CCC holds a seat on the Sanctuary Advisory Council and assists CINMS in developing water quality protection strategies.
- *The California Department of Fish and Game (CDFG)* and the Fish and Game Commission regulate and manage a wide variety of activities affecting the fish and game resources found on the land and in water areas under State jurisdiction. The CDFG is responsible for habitat protection and maintenance of California's marine resources. It is also responsible for management of fish and game stocks for commercial and recreational use. The CDFG retains jurisdiction of fisheries management in state waters, coordinates with NMFS, and represents the State of California as a member of the Pacific Fishery Management Council. Management of fisheries in the CINMS is administered by CDFG in state waters and NMFS in federal waters. The Pacific Fishery Management Council (PFMC) provides recommendations to NMFS regarding fishery management and fishing regulations. When issues arise affecting fisheries management, the CINMS coordinates with the respective agencies to identify the appropriate action for that agency to pursue. In the event the CINMS recommends regulation to restrict fishing, it pursues a formal process with fishery management agencies, as described in Section 304(a)(5) of the NMSA (see Appendix B of Vol. II, DEIS). More commonly, the CINMS also coordinates with the CDFG on marine research activities, enforcement measures to protect marine resources (e.g., enforcement of State marine reserves and State marine conservation areas within CINMS), protection of endangered species, protection of migratory birds, and coordination of oil spill response and contingency planning.
- *The California Fish and Game Commission* is involved in the management of California's fish and wildlife resources. Formed in 1870, the Commission is composed of up to five members who are appointed by the Governor and confirmed by the state Senate. The Commission meets to publicly discuss various proposed regulations, permits, licenses and management policies, including fisheries issues. In addition, the Commission has general regulatory powers for state fisheries management. For example, the Commission decides on levels and methods of take for commercial and sport fishing. Sanctuary staff regularly attend Commission meetings to offer testimony and scientific expertise to inform pending Commission decisions. In 2002 the Commission voted to establish a network of state marine protected areas within the Sanctuary.
- *The California State Lands Commission (CSLC)* manages and protects the sovereign lands of the state pursuant to section 6301 of the California Public Resources Code.

These lands include the beds of California's naturally navigable rivers, lakes, and streams, as well as the state's tide and submerged lands along California's more than 1,100 miles of coastline, extending from the mean high tide line out to three nautical miles offshore. The CSLC's policies for the management of the state's lands and natural resources are based upon the highest standards of environmental protection, financial responsibility and the Public Trust Doctrine, which imposes a duty to preserve the public's lands for the use and enjoyment of future generations. The CSLC was created by the California Legislature as an independent body, composed of three members- the Lieutenant Governor and State Controller, both statewide elected officials, and the Director of the Department of Finance, a cabinet level officer appointed by the Governor. The CINMS coordinates with the CSLC on projects altering the seabed such as the protection of submerged cultural resources. With regard to public trust lands, the CSLC has adopted regulations for the protection and use of public trust lands in the coastal zone. Administration of state lands includes leasing of these lands for various legislatively authorized purposes, regulation of ballast water under the Marine Invasive Species Act, and protection of State property held in the public trust such as submerged shipwrecks. The CSLC also regulates activities pursuant to leases for oil and gas development to ensure they proceed safely and marine resources are adequately protected. In some cases, the jurisdiction of CINMS regulations may overlap those of the CSLC and while ownership of the lands out to three nautical miles lies with the State of California, management and permitting issues are coordinated between the two agencies.

- *The California Historical Resources Commission (HRC)* is the state agency responsible for the preservation of representative and unique archaeological, paleontological, and historical sites in the land and water areas of the state.

The California Environmental Protection Agency (Cal/EPA)

Cal/EPA works to restore, protect, and enhance the environment, to ensure public health, environmental quality, and economic vitality. The Sanctuary works with two boards overseen by Cal/EPA:

- *The State Water Resource Control Board (SWRCB)* and the nine Regional Water Quality Control Boards (Regional Boards) have primary authority for regulating water quality in California. The authority to administer the National Pollutant Discharge Elimination System (NPDES) permits has been delegated by EPA to the SWRCB and by the state to the Regional Boards. The SWRCB is the regional lead in water quality management and assists CINMS in developing water quality protection strategies. SWRCB is also the statewide lead in assessing water pollution from large vessels. Two regional boards share jurisdiction over the Channel Islands and within the Sanctuary. Water quality on and around San Miguel, Santa Rosa, and Santa Cruz Islands is under the jurisdiction of the Central Coast Regional Board. Water quality on and around Santa Barbara and Anacapa Islands is under the jurisdiction of the Los Angeles Regional Board.
- *The California Air Resources Board (ARB)* is charged with the maintenance and enhancement of the ambient air quality of the state. The ARB has set air quality standards designed to meet National Ambient Air Quality Standards and delegated their implementation to local Air Pollution Control Districts. The ARB consults

with CINMS on vessel traffic issues in the Santa Barbara Channel.

Local Government Agencies

The County of Santa Barbara

The County of Santa Barbara regulates land uses within its boundaries, excluding incorporated cities, state operated universities, and federal lands. In the Channel Islands Santa Barbara County has land use authority from the mean high tide line landward on Santa Cruz and Santa Rosa Islands. Santa Barbara County provides expertise on oil and gas development and is an active participant on the Advisory Council.

The County of Ventura

The County of Ventura regulates private land uses within its boundaries, excluding incorporated cities, state operated universities, and federal lands. In the Channel Islands Ventura County has land use authority from the mean high tide line landward on Anacapa Island. The County has been instrumental in assisting Sanctuary education and outreach programs in the Ventura region, provided the Sanctuary's first office space in Channel Islands Harbor, and is an active member of the Advisory Council.

Coastal Municipalities

Coastal cities including, Oxnard, Ventura, Carpinteria, and Santa Barbara represent important existing and potential Sanctuary partners. For example, the Santa Barbara Waterfront Department leases office space and vessel slips to the Sanctuary while Oxnard, Ventura and Carpinteria are frequent hosts of Sanctuary events.

Tools For Formalizing Relationships

The CINMS manager may draw from a selection of standard management tools to formalize interactions with other federal, state, and local agencies or the private sector including:

- *Memoranda of Understanding and Memoranda of Agreement* formalize in writing relationships between the Sanctuary and other entities for a specific purpose or project;
- *Interagency Agreements* are used to share expertise, equipment and/or personnel;
- *Grants/Cooperative Agreements* are financial assistance tools used to provide or receive certain funding for projects and/or products benefitting the public;
- *Contracts* are used to procure goods and services for the benefit of the Sanctuary;
- *Joint Project Agreements* are used for sharing costs equitably among participating entities in a joint project;
- *Consultation* is communication between agencies occurring when one agency's activity may affect the resources of another.

Sanctuary Funding

Appropriations

Funding for the NMSP is derived primarily from federal appropriations and broken into two principal categories: funds for base budget and funds for capital facilities. The NMSP distributes its base budget funds to individual sanctuaries for site-specific core operations (labor costs for existing staff and other administrative expenses) and programmatic costs

(the additional costs the Sanctuary incurs carrying out management strategies such as costs for printing, training, and additional contract labor, etc.). Capital facility funds supplement the site's base budget to cover costs of such things as exhibits, information kiosks, and visitor centers. Each action plan includes a table identifying costs for the individual strategies over the next five years (from the date of publication of this document). The tables provide a rough estimate of the programmatic costs needed to implement each of the strategies.

Additional Sources of Support

In addition to Federal appropriations, CINMS relies on partnerships, appropriate outside funding sources, and in kind services to assist in the implementation of the management plan.

The National Marine Sanctuary Foundation (NMSF)

The NMSF provides opportunities for the national marine sanctuaries through public and private sector partnerships. The NMSF continues to develop external funding opportunities for the NMSP's outreach and education programs and other resource protection efforts.

The Channel Islands Marine Sanctuary Foundation

The Channel Islands Marine Sanctuary Foundation was established in 1997 to increase the visibility and accessibility of CINMS. The Foundation Board is local and citizen-based, and works to raise funds and build stewardship for the Sanctuary. The Foundation has secured funding for specific Sanctuary projects, programs or products.

Federal, State, Regional And Local Agencies

Federal, state, regional, and local agencies participate in ongoing resource protection, management, monitoring, enforcement and permit programs carrying out Sanctuary objectives. As intra- and interagency relationships become formalized and common goals and objectives are identified, CINMS pursues opportunities to share staff, expertise and financial resources, as appropriate.

Nonprofit Organizations And Foundations

Nonprofit organizations and foundations have joined CINMS in numerous cooperative projects. For example, the Santa Barbara Museum of Natural History, the Sea Center, the General Services Foundation, and The Ocean Conservancy have all made a contribution of staff and/or financial resources in support of Sanctuary purposes.

Enforcement and Permitting

Enforcement

Sanctuary resource protection depends in part upon enforcement of Sanctuary regulations and other applicable state and federal statutes and regulations.²⁰ The Sanctuary's approach to enforcement focuses on two specific components: 1) the use of interpretive enforcement²¹ as a means to inform the public and encourage voluntary compliance, and 2)

²⁰ For more information on enforcement under the NMSA, see sec. 307 of the NMSA in Appendix B of the DEIS.

²¹ Interpretive enforcement is an enforcement strategy in which voluntary compliance and stewardship are stressed through educational messages and literature on responsible behavior. Many state and federal resource management agencies across the United States now utilize this strategy

the legal enforcement of regulations.

Sanctuary regulations are enforced through the NOAA Office for Law Enforcement (OLE), United States Coast Guard (USCG), and cooperative agreements, which allow the NMSP to deputize enforcement officers from other federal and state agencies. The Sanctuary currently has individual enforcement agreements with USCG, CDFG, and the NPS. For example, enforcement officers from CINP are authorized to enforce CINMS regulations. CINMS continues to develop and update cooperative agreements among enforcement agencies (see Strategy EE.2 - Expanding Enforcement Efforts) for purposes such as ensuring effective enforcement of marine reserve regulations.



Figure 24: NOAA Aircraft On Patrol In The Sanctuary
(Ed Cassano)

Permitting

Permits are required in all sanctuaries for conducting activities otherwise prohibited by sanctuary regulations (current CINMS regulations, proposed revised regulations, and proposed new regulations are discussed in the DEIS (Vol. II, Section 2.0)). Under current regulations, the Sanctuary Superintendent (certain circumstances may require the NMSP Director's approval) may issue a permit to conduct an activity in the Sanctuary otherwise prohibited by CINMS regulations provided the activity: 1) is research related to the resources of the Sanctuary, or 2) furthers the educational value of the Sanctuary, or 3) involves salvage or recovery operations (15 CFR 922.72).

The permit application process requires the submittal of a project summary, including the exact location of activities, description of methods, rationale for use of the Sanctuary environment, explanation of environmental consequences, and plan for reporting results to the Sanctuary. In considering whether to grant a permit the Sanctuary Superintendent (or NMSP Director where appropriate) evaluates: the professional and financial responsibility of the applicant; the appropriateness of the methods envisioned to the purpose(s) of the activity; the extent to which the conduct of any permitted activity may diminish or enhance the value of the Sanctuary as a source of recreation, or as a source of educational or scientific information; the end value of the activity; and such other matters as may be deemed appropriate (15 CFR. 922.72). CINMS permit program activities are discussed further in the Operations Action Plan.

In addition to having the authority to issue permits for such activities as research, education, and salvage, some national marine sanctuaries have the authority to issue permits to conduct management activities in the Sanctuary. The manager's permit describes the scope of activities it may address, criteria for evaluating proposed projects, and the terms and conditions applied to those projects if permitted under the manager's permit. CINMS is seeking this additional permit authority as part of the management plan review process.

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SECTION III: ACTION PLANS

SECTION III: ACTION PLANS



Figure 25: *San Miguel Island (James B. Fredrickson)*

ACTION PLANS - BACKGROUND

What Are Action Plans?

Action plans are the means by which a sanctuary identifies and organizes the wide variety of management tools it employs to manage and protect its marine resources. Action plans allow the sanctuaries to clearly articulate the programs, projects, and regulations it uses to address the resource issues identified for this management plan and to fulfill the purposes and policies of the NMSA.

The strategies and activities in each of the action plans reflect the diversity and range of projects implemented by staff representing each of the Sanctuary's functional areas:

- Resource Protection;
- Research and Monitoring;
- Education and Outreach;
- Maritime Heritage Resources;
- Community (Sanctuary Advisory Council) and Management Planning;
- Technology Integration and Management; and
- Site Operations
- Office Administration

These seven functional areas are supported by staff implementing the strategies in the action plans described below. Each strategy identifies which functional areas are responsible for implementation of the corresponding management actions.

How Were The Action Plans Developed?

Identifying the Issues

The first step in the development of these action plans was the identification of a set of current resource management issues. After initial identification, the issues were refined and prioritized over many months early in the management plan review. The first phase in the issue identification process was public scoping. Scoping meetings were held in six locations around the Channel Islands region between the months of June and August, 1999. Hundreds of comments were received via letters, email, and oral testimony at public meetings in the cities of Lompoc, Oxnard, Santa Barbara, Ventura, San Luis Obispo and Long Beach (a seventh meeting was held in Washington D.C.). Comments were wide-ranging and diverse and included community concerns, specific problems, and unmet needs for the Sanctuary (for a complete listing of the comments received during scoping, see http://channelislands.nos.noaa.gov/manplan/com_archive.html).

After the scoping meetings ended, CINMS staff compiled all the comments and organized them by subject, which led to several management issue "categories":

- Water quality;
- Public awareness and knowledge of the Sanctuary;
- Research and monitoring;
- Enforcement;
- Boundary redefinition;

- Human uses (certain recreational and commercial extractive activities, military activities, vessel traffic and mooring systems, oil and gas activities);
- Marine reserves;
- Sea otter management; and
- Administrative issues, such as a need for Sanctuary performance standards, and improved inter-agency coordination.

Working from this list, CINMS staff began working with the Sanctuary Advisory Council to identify a set of priority issues for the draft management plan. At the January 2000 meeting of the Council, CINMS staff detailed a prioritization process they had been using in internal discussions to begin ranking the various issues. This process used various criteria, such as staffing and budget resources, jurisdictional and political feasibility, ecosystem protection needs, etc.

Based on this process, staff identified and presented to the Council a recommendation for (at least) ten priority issues to be addressed by the Sanctuary program areas in the draft management plan: 1) water quality; 2) military activity; 3) oil and gas activity; 4) large vessel traffic; 5) emergency response; 6) recreational and commercial uses; 7) research uses; 8) maritime heritage resource protection; 9) boundary redefinition; and 10) education and outreach.²²

Over the next several Advisory Council meetings (from March 2000 to February 2001), CINMS staff reviewed and refined various aspects of these ten general issue categories with Advisory Council members by discussing important factors such as information needs and resource requirements. In addition, CINMS staff worked both internally and with NMSP headquarters staff to refine and characterize the issues. Sanctuary staff, for example, collected background information on the specific threats each of these issues posed to the Sanctuary region and its resources. As the final issue characterizations matured, CINMS and NMSP headquarters staff, in conjunction with the Advisory Council, then began considering actions (both new and existing) the Sanctuary could take to address the issues and their specific threats (for descriptions of these meetings with the Advisory Council, see the Council meeting minutes at <http://channelislands.nos.noaa.gov/sac/minutes.html>).

Drafting Action Plans

Working from the list of priority issues, and the concepts for existing and new actions to address those issues, CINMS and NMSP headquarters staff developed criteria for selecting the issues and actions to be incorporated into action plans. Staff conducted a gap analysis to determine which issues were not addressed through existing actions, and in instances where staff were addressing a given issue, they evaluated their success in doing so. Staff then considered the feasibility, available staff expertise, and appropriateness of each existing or proposed action, along with existing or potential partners for implementing each action. Actions collectively addressing particular sub-issues were then grouped into strategies within each action plan.

²² Two important issues that emerged from the scoping meetings, marine reserves and sea otters, were left off of this list for specific reasons. Marine reserves were addressed as part of a separate process from the management plan (this process is described in this management plan, however, in Strategy EM.2 of the Ecosystem Management Action Plan). The issue of sea otters was deferred to the US Fish and Wildlife Service, who manage the animals under the Marine Mammal Protection Act and the Endangered Species Act.

In early 2000, staff began drafting initial action plans, such as Research and Monitoring, Marine Resource Protection, Education and Outreach, and Submerged Cultural Resources. Soon after, the NMSP began initiating a directed and comprehensive overhaul of the internal processes and criteria used for building management plans. As such, the first CINMS action plans went through numerous iterations over the next several months so they would include all of the components emerging as part of a programmatic standard for action plans.

The final set of draft action plans in this management plan incorporate the latest programmatic standards. They have been vetted through several internal reviews at both the Sanctuary office in Santa Barbara and the NMSP headquarters office in Silver Spring, Maryland and directly reflect the priority issues identified by the Advisory Council and the CINMS staff, many of the original scoping comments of 1999, and the resource management responsibilities and directives established by the NMSA. There are ten action plans in this draft management plan:

- 1) Public Awareness and Understanding;
- 2) Conservation Science;
- 3) Boundary Evaluation;
- 4) Marine Zoning;
- 5) Water Quality;
- 6) Emergency Response and Enforcement;
- 7) Maritime Heritage Resources;
- 8) Emerging Issues;
- 9) Operations; and
- 10) Performance Evaluation

How Are Action Plans Organized?

Each action plan is organized around three principal sections. The first section provides introductory and supporting information for the action plan. An *Overview* summarizes the action plan's purposes and needs. A *Description of The Issues* summarizes the various management issues associated with the action plan. *Addressing the Issues* identifies the management strategies and regulations²³ CINMS will use to address the issues.

The second section details of the action plan's strategies by providing such information as a strategy *Background*, which presents a brief overview of the strategy's purpose and need and *Activity Descriptions*, which summarize the specific means by which the strategy will be implemented. A complete list of all strategies included in this draft management plan is presented in Table 3 (page 69).

The third section of each action plan consists of a summary table providing estimated annual costs for implementing each strategy. All of these costs are approximate calculations intended to provide estimates on the necessary costs of implementing each

²³ Regulations are included in this section as part of the suite of management tools that CINMS uses to address the particular issues associated with the action plan. Details on any new regulations or modifications to existing regulations that are being proposed as part of this management plan review are not provided in the draft management plan; a detailed description and full analysis can be found in Section 2.0 of the DEIS.

strategy. The availability of funds is contingent upon the federal appropriations process, which can change from year to year.

This organizational framework is the same for each action plan. This framework is applied so each action plan conveys information in the same straightforward and uncomplicated style. The reader should come away from each action plan with an understanding of two points: 1) the particular resource management issue associated with the action plan; and 2) the ways in which CINMS plans to address it.

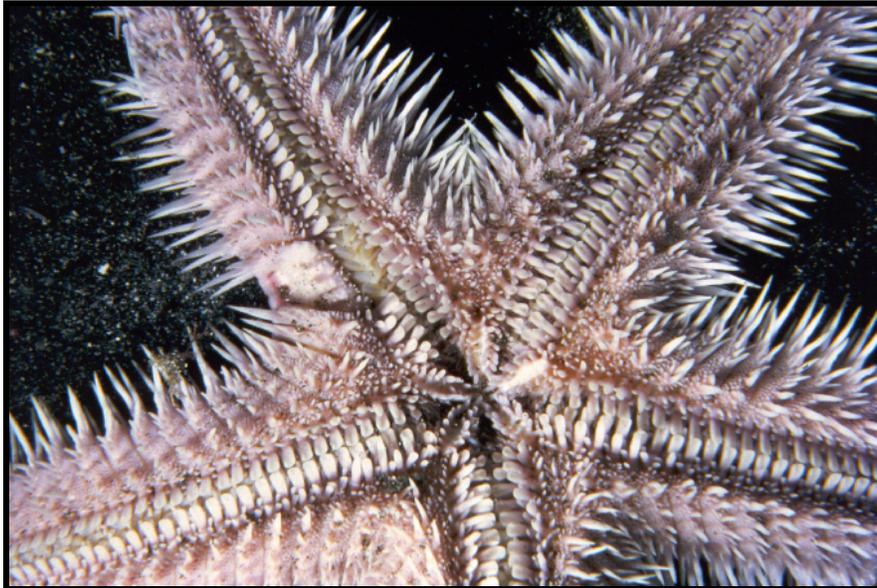


Figure 26: Sea Star (Dan Richards)

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PUBLIC AWARENESS & UNDERSTANDING ACTION PLAN

Overview

The primary objective of this action plan is to promote an understanding of the unique natural and historical²⁴ resources of the Sanctuary. Since CINMS' designation as a sanctuary in 1980, the Education and Outreach Program has been the cornerstone of resource protection efforts. Through community and regional partnerships in education, CINMS has reached out to a broad spectrum of the public, exposing them to not only the biological, physical, and intrinsic value of the Sanctuary, but also the impacts human activity can have on this invaluable resource. Developing a personal sense of ownership and responsibility is the key to building stewardship. As stewards of the marine resources, the public can better identify opportunities for protection and enhancement of the Sanctuary through conservation-based efforts and activities.

Description of the Issues

Section 301(b)(4) of the NMSA indicates one of the purposes of the National Marine Sanctuary Program is to enhance public awareness, understanding, appreciation, and wise and sustainable use of the marine environment, and the natural, historical, cultural, and archeological resources of the National Marine Sanctuary System (16 U.S.C. 1431(b)(4)). Enhancing these characteristics in the public is highly challenging and never-ending given the continuous stream of new information about the Sanctuary, and population dynamics of the southern California coastal region. New information about the Sanctuary results from improved understanding of known resources as well as new discoveries of natural and maritime heritage resources, varying conditions of the Sanctuary ecosystem, and the adaptive management scheme applied to Sanctuary resources by CINMS and its partner regulatory agencies. In addition to perpetually sharing new information with the public, education and outreach staff are tasked with reaching increasing numbers of people from many different cultural backgrounds.

Improving Awareness and Understanding

Through the course of management plan review the public, Sanctuary Advisory Council members, and Sanctuary staff have recognized several specific issues related to public awareness and understanding. Input from the public came in the form of comments from 1999 public scoping meetings.²⁵ One of the issues emerging from the public scoping process was a lack of public understanding about the Sanctuary, its resources, purpose, location, rules and programs. Many community members felt addressing the lack of awareness and basic knowledge about the Sanctuary is something CINMS should make a priority in the revised management plan. CINMS staff, in conjunction with the Sanctuary Advisory Council (Advisory Council), also acknowledged the fact education and outreach are an integral part of Sanctuary management and are mandated by the NMSA. Other general scoping comments included:

²⁴ "Historical" is used to include cultural and archeological resources. See 15 CFR 922.3.

²⁵ Since several public scoping meetings were held in San Luis Obispo, Los Angeles and Washington D.C. (communities beyond the sanctuary's major outreach efforts in Santa Barbara and Ventura counties), many comments from those regions reflect less familiarity with the Sanctuary. Furthermore, public scoping comments do not reflect Sanctuary outreach efforts made since 1999.

- The Sanctuary should continue to inform the public about the Sanctuary, its boundaries, resources and authorities;
- The Sanctuary should support efforts to improve marine education in the public school system;
- The Sanctuary should emphasize connections between watersheds and ocean systems in education programs and products;
- The Sanctuary should identify and target specific user groups on the resource impacts of their activities;
- CINMS education and outreach should be expanded outside of Santa Barbara;
- The Sanctuary should provide more public education opportunities;
- The Sanctuary should continue to foster a stewardship ethic;
- To improve safety, the Sanctuary should improve and expand its public service tools, such as weather reporting capabilities;
- The Sanctuary should do more to reach non-English speaking communities.

Since the 1999 public scoping period the Sanctuary has been thrust into the spotlight by two projects that have received much national attention: 1) the Channel Islands marine reserves designation and implementation process, and 2) *JASON XIV - "From Shore To*

Sea."²⁶ The reserves process, which began in 1999, has drawn the attention of academic institutions, policy makers, fishermen, resource managers and conservationists worldwide. Reserves education and outreach programs engaging this diverse array of constituents has been an important and unique Sanctuary contribution to the process. From 2001 to 2003, the Sanctuary was a major partner in *JASON XIV: From Shore To Sea*. This project generated extensive regional, national and international interest in the Channel Islands with 8,000 local and over one million



Figure 25: *JASON XIV* broadcasts about the Channel Islands, such as this one led by Dr. Bob Ballard, reached over one million students around the world. (Robert Schwemmer)

national and international students participating in the live broadcasts and online digital

²⁶ The JASON Project is a multi-disciplinary education program founded in 1989 by Dr. Robert Ballard and administered by the Jason Foundation for Education. Each year JASON participants explore a different region of the earth using science, math, and technology. JASON XIV focused on the Channel Islands.

labs. The Sanctuary contributed to JASON XIV by developing storyline themes and by providing data, content resources and staff support. Through these projects and other efforts described in this action plan Sanctuary education and outreach staff continue to strive for enhanced public awareness and understanding about CINMS and its unique natural and maritime heritage resources.

Population Growth and Cultural Diversity

The challenge of enhancing awareness and understanding about the Sanctuary is exacerbated by population growth and cultural diversity along the southern California coast. CINMS is located adjacent to Los Angeles, one of the largest metropolitan areas in the United States. The latest U.S. Census estimates the population of the Los Angeles metropolitan area (composed of Los Angeles, Orange and Riverside counties) at approximately 16 million (U.S. Census Bureau 2000a), up 12.7% since 1990 (U.S. Census Bureau 1990). The same census estimates indicate the population of coastal counties bordering the Sanctuary (Santa Barbara and Ventura counties) is over 1.1 million, up 10% since 1990. These population growth rates present a challenge to reach ever-more members of the public with information about the Sanctuary. Furthermore, this growing population consists of numerous ethnic groups: white 60%, non-Latino white 47%, Latino 32%, Asian 11%, black 7%, American Indian 1%, and Pacific Islander 0.3%, (U.S. Census Bureau 2000a). Within these ethnic groups are people from numerous cultural backgrounds, with a variety of language traditions. Education and outreach staff must assess how best to reach these different cultural groups, which is an effort requiring cultural awareness and understanding and demands far more than translating Sanctuary information into multiple languages. Southern California's expanding population and complex cultural diversity challenge CINMS education and outreach staff to create meaningful connections with a vast and changing audience to increase awareness and understanding about the Sanctuary and its mandate to protect the fragile living and cultural resources making this region so unique.

Addressing the Issues – Strategies For This Action Plan

Each of the thirteen national marine sanctuaries has its own unique marine environment. Thus, education, outreach and interpretive efforts are tailored to site-specific ecosystems, cultural resources, human activities and resource management issues. CINMS education and outreach efforts are focused in two strategic areas: 1) *community involvement, partnerships and community program development* through interactive programs (training programs, workshops, special events, and school programs) and 2) *product development* (printed materials, website development, audio visual materials, signs, displays and exhibits) as critical education and outreach tools.

The education strategies in this action plan were developed with regional input from marine educators, user groups and concerned citizens. When possible, these programs and products will be implemented with a bilingual component in an effort to communicate to southern California's non-English speaking population. In addition, all education programs and products, from classroom educational materials to teacher training workshops, strive to correlate with California and National Science Education standards. While addressing site-specific education and outreach needs, the CINMS Education Program also strives to fulfill the NMSP's national education plan by: 1) providing educational leadership in marine conservation and protection efforts; 2) promoting the Sanctuaries' identity with site-specific application of projects and products; and 3)

establishing a standard of educational excellence to be upheld by all thirteen national marine sanctuary sites.

As individual sites, each of the sanctuaries works to develop stewards on a local and regional basis. Collectively, the thirteen sanctuaries work together to foster a national and global marine conservation ethic. Education and outreach provide essential tools for successful marine resource management. Volunteers are viewed as a valued Sanctuary resource and a key to success in the implementation of CINMS' education and outreach programs.

There are nine strategies in the Public Awareness and Understanding (AU) action plan:

- AU.1 – Education Program Development
- AU.2 – Community Involvement/Volunteer & Intern Program Development
- AU.3 – Team Ocean
- AU.4 – Developing Outreach Technology
- AU.5 – Greater Southern California Outreach
- AU.6 – Developing Education and Outreach Tools and Products
- AU.7 – Visitor Center Support and Development
- AU.8 – Reserves Education
- AU.9 – Multicultural Education

Each of these strategies is detailed below.



Figure 26: K-12 education is an important part of CINMS management. (CINMS)

STRATEGY AU.1 – EDUCATION PROGRAM DEVELOPMENT

- *Objective:* To link local teachers with national efforts to improve ocean literacy.
- *Implementation:* Education and outreach staff

Background

The Sanctuary recognizes the value of working with educators in local school systems to provide educational materials throughout local and regional K–12 programs, train teachers and give students first hand exposure to the Sanctuary. CINMS links local teachers to national efforts to improve ocean literacy by providing opportunities for teachers to integrate ocean studies into all disciplines, participate in field investigations, interact with the research community, learn scientific monitoring techniques, develop lesson plans and refine presentation skills.

Activities (7)

(1) Develop teacher workshops. CINMS is working with community partners to conduct teacher-training workshops directed toward developing Sanctuary stewards. The purpose of these workshops is to provide teachers with materials and strategies for incorporating marine science, and specifically sanctuary-related topics into their teaching practice. Workshops range from one day to one-week programs and longer workshops incorporate a field trip component to the Sanctuary. Most workshops target grade 6-12 teachers. Topics for workshops include: 1) Marine Science Technology including GIS; 2) Ocean-related concepts in physical, earth and biological sciences; 3) Field monitoring techniques for intertidal and offshore systems, and 4) historical resources.

Status: This activity has been ongoing for several years and new workshops will be developed as necessary.

Partners: CREEC Network, Santa Barbara County Office of Education, Ventura County Superintendent of Schools Office, Los Angeles Unified School District, UC Santa Barbara Marine Science Institute, Center for Image Processing and Education, Gold Coast Science Network, Project Clean Water, other NGO's, and resource agencies such as the Channel Islands National Park, West Coast National Marine Sanctuaries and Centers for Ocean Science Education Excellence (COSEE) West and California COSEE.

(2) Continue to develop education programs addressing water quality. Recognizing the critical role water quality plays in the health of Sanctuary resources, CINMS is working in partnership with local NGOs and agencies to develop a watershed education program taking a systems approach to understanding the types, range and extent of human use impacts on water quality and marine ecosystems. By establishing this link between the community and the Sanctuary, CINMS hopes to develop a more informed constituency to influence decision makers about system-wide water quality issues.

The Coastal Watersheds Education Program includes the following components: 1) Web-based and classroom activities integrating and interpreting current research program data sets, such as *Plumes and Blooms* (a study of the impacts of storm runoff on the marine environment of the Santa Barbara Channel); 2) research and monitoring training programs for teachers onboard the Sanctuary research vessel to expand skills in developing field investigations; 3) involving students in local volunteer monitoring projects including

water sampling and sandy beach monitoring. Watershed education programs are linked to priority water quality issues and focus on educating the public about the causes and impacts of nonpoint source pollution to the marine environment.

Status: This activity has been ongoing for several years and new education programs will be developed in conjunction with Strategy WQ.2.

Partners: South Coast Watershed Resource Center; Sea Center; CI Harbor Boating Instruction and Safety Center; Community Environmental Council; Surfrider Foundation; Heal the Ocean; Cabrillo High School Aquarium; UCSB Marine Science Institute; Santa Barbara Maritime Museum; Project Clean Water; County of Ventura and Channel Keeper

(3) Providing Content for Geographic Information Systems (GIS) “Mapping An Ocean Sanctuary” Educational Materials. *Mapping An Ocean Sanctuary* contains GIS educational materials specific to CINMS, designed for students in grades 6–12. CINMS provides the content and data sets for development of these materials, working in cooperation with other partners to complete the final product. *Mapping An Ocean Sanctuary* partners conduct regional and national workshops, held in Santa Barbara, Ventura, and Los Angeles counties.



Figure 27: CINMS Education Coordinator Laura Francis conducts water sampling with teachers during a 2003 “Mapping an Ocean Sanctuary” GIS Workshop. (CINMS)

A GIS-based teacher training program visually displays large databases so patterns and processes in the Sanctuary (a complex interface between natural and human activities) are revealed over time. GIS is an excellent tool to integrate across disciplines of science, geography and math and create a knowledge base to better understand human use impacts on the marine environment. The purpose of the program is to provide: 1) GIS-based resources for teaching students about the role of the Sanctuary in resource protection; 2) opportunities for teachers and students to participate in field monitoring studies and

data collection techniques contributing to the GIS database; and 3) “shared” information through GIS ARCIMS on the Internet. *Mapping An Ocean Sanctuary* allows teachers and students to collect and analyze data, spatialize the information using GIS, and begin to see trends over time between human interactions and impacts on the marine environment.

Modules within *Mapping An Ocean Sanctuary* include: Internet Resources, ArcView Skill Sheets, Exploring a Sanctuary, Environmental Stewardship, Invisible Boundaries, Protecting Our Seas and Environmental Monitoring. In 2003, CINMS worked with Florida Keys, Gray's Reef and Stellwagen Bank national marine sanctuaries to develop a mini grant to expand this curriculum to the other sanctuary sites.

Status: Initiated in 2000; expanded in 2003; content upgrades in years 2 and 4.

Partners: Center for Image Processing in Education; NGS; NSF; ESRI; UCSB; Ventura College, National Marine Sanctuaries.

(4) Continue support of UC Santa Barbara's Marine Science Institute Oceans to Classrooms marine science series. The Sanctuary is working collaboratively with researchers from the University of California at Santa Barbara (UCSB) on research and monitoring projects focusing on the Santa Barbara Channel. One component of the marine sciences series is the Floating Lab Program, which provides opportunities for students to participate in collaborative offshore research and monitoring conducted by UCSB's Marine Science Institute and CINMS. Students gain exposure in the use of scientific information in natural resource protection. CINMS provides staff support for teacher workshops, content for the floating lab workbook, field itineraries, classroom teaching kits and pre/post trip curricula. CINMS will also provide the research platform for teacher workshops.

Status: Partnership with UCSB initiated in 2001; materials to be updated and staff support provided biannually or as requested by Floating Lab Program staff

Partners: UCSB researchers and area teachers

(5) Conduct Student Field Monitoring. CINMS is working with teachers and students to conduct intertidal and sandy beach monitoring programs and is part of a network of national marine sanctuaries (including Monterey Bay, Cordell Bank, Gulf of the Farallones, and Olympic Coast) coordinating teacher and student monitoring activities on the West Coast. The goals of the Long Term Monitoring Program and Experiential Training for Students (LiMPETS) program are to use field-based workshops and emerging technologies to engage teachers and students in marine monitoring efforts and to encourage collaboration and coordination among west coast sanctuaries. The network has established a web site, provides teacher training opportunities, and produces classroom and field toolkits. By engaging the K-12 community in marine monitoring, the network provides opportunities to explore local, state, and Federal parks, reserves, refuges, and sanctuaries and foster stewardship for these important marine areas. By becoming involved in field-based science and monitoring efforts, teachers and students appreciate and understand nature's complex inter-relationships and will support development of policies that lead to effective ecosystem management.

Status: Ongoing program since 2002, LiMPETS workshop held in 2002; program to continue across years 1-5

Partners: K-12 teachers from Santa Barbara, Carpinteria, Ventura, Oxnard, Lompoc and L.A. Unified School District High Schools, West Coast National Marine Sanctuaries, California Sea Grant, University of California Santa Cruz, Farallones National Marine Sanctuary Foundation, COSEE West.

(6) Partner With the Santa Barbara Museum of Natural History's Waves on Wheels (WOW). The WOW program is a partnership between the Channel Islands National Marine Sanctuary, Santa Barbara Museum of Natural History and County of Santa Barbara to develop a specially outfitted outreach van that will take our dynamic marine education programs on the road to serve schools, libraries and community centers. The program began its tour in Santa Barbara County in 2002 and plans to extend the reach to Ventura and Oxnard in 2004. The WOW program is expected to reach 6,000 teachers and students and the general public in the first year of operation. The WOW program will support the Sanctuary's mission of protecting marine life and habitats surrounding the Channel Islands and will help educate the public about the Sanctuary's goals, programs and current resource management issues. Program activities are linked to state and local science education standards and include hands-on activities focusing on topics such as: 1) species adaptations; 2) food chains; 3) ocean habitats; 4) predator-prey relationships and 5) endangered species. WOW uses dynamic instruction techniques to develop an understanding of the richness and complexity of life found in our local marine environment and teach the importance of ensuring continued preservation.

Status: Program initiated in 2000; support to continue as needed through years 1-5

Partners: Santa Barbara Museum of Natural History, County of Santa Barbara

(7) Participate in National Initiative strategies including the JASON Project, Immersion Institute, Sanctuary Quest, and Telepresence. The NMSP encourages each site to participate in national initiatives to foster a system-wide identity. CINMS will be hosting and coordinating a variety of national initiatives in the next 5 years as well as locally sponsored outreach events. CINMS will sponsor events linked to the JASON Project, Immersion Institute, Sanctuary Quest, and national telepresence initiative (see also AU.4, activity 3) to educate the local and national community about sanctuary resources and research programs. Events may include ocean fairs/ community days, live broadcasts from the sanctuary via the Internet or to mainland viewing locations, teacher workshops and student argonaut programs.

Status: Ongoing since designation; to continue across years 1-5

Partners: The JASON Foundation for Education, NOS, National Park Service, and others.

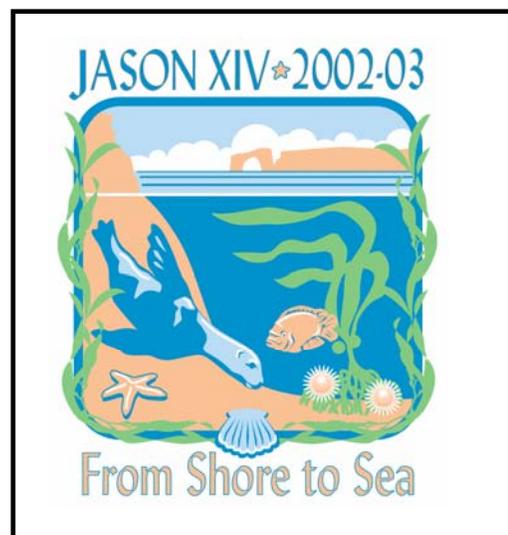


Figure 28: The JASON XIV logo.

STRATEGY AU.2 - COMMUNITY INVOLVEMENT/VOLUNTEER & INTERN PROGRAM DEVELOPMENT

- *Objective:* To increase community awareness about the National Marine Sanctuary Program through the development of CINMS volunteers and interns.
- *Implementation:* Education and Outreach staff

Background

The sanctuary recognizes the value of reaching the public through adult education venues and is actively working with local and regional city and community colleges to provide opportunities to learn about Sanctuary resources in a formal, higher education setting. Critical to Sanctuary operations, volunteers and interns are important human resources the Sanctuary considers among its greatest assets. Volunteers and interns help the Sanctuary accomplish many of its objectives.

CINMS draws on all members of the community to participate as volunteers. Through volunteer programs, CINMS strives to increase community awareness about the National Marine Sanctuary Program and develop stewards of CINMS. Volunteers provide a mechanism for involving the community in sanctuary activities such as research and monitoring, education and outreach programs, sanctuary events and functions, and office/administration duties.

In 2003, Channel Islands Naturalist Corps volunteers alone provided over 10,000 hours of service. This service is approximately equivalent to the work of five full time equivalent (FTE) employees. In addition, CINMS internships provide opportunities for students from local, national, and international colleges and universities an opportunity to gain valuable work experience in, explore career options in, and contribute to: marine resource protection, research and monitoring, policy and planning, and education and outreach. CINMS interns may earn college credit, move on to higher education, or find interesting and productive marine-resource related employment. Sponsoring interns enables CINMS to raise awareness about the sanctuary among the local college community as well as foster careers in marine resource management.

Another essential volunteer element of CINMS is the Sanctuary Advisory Council. While approximately half of the members of this advisory body serve as government representatives and are therefore paid by their employers to participate, the majority of individuals serving as community representatives volunteer their time to do so. Activities pertaining to the CINMS Sanctuary Advisory Council are discussed in Strategy OP.1 of the Operations Action Plan.

Activities (5)

(1) Presenting at regional and national workshops and conferences. To increase awareness among formal and informal educators about educational resources and programs available through NOAA, NMSP headquarters and CINMS, CINMS education staff present workshops and programs at a variety of regional and national conferences each year (such as the Southwest Marine Educators Association, California Science Teachers Association and National Marine Educators Association). Presence at these workshops and conferences also provides CINMS with an opportunity to demonstrate and distribute educational

materials and products.

Status: Ongoing since designation; to continue annually

Partners: California Science Teachers Association, National Science Teachers Association, National Marine Educators Association and others

(2) Continue Adult Education Programs at Santa Barbara City College (SBCC) and Ventura College Community Services. CINMS is working with Santa Barbara City College and Ventura College Community Services to offer two adult education classes each year. These evening classes cover the major program areas and resource issues of the CINMS. Classes usually have approximately 30 participants and include three, two-hour evening sessions. A field trip component with a boat trip to the Sanctuary is included. This program provides adults with opportunities to learn about current resource management issues of the Channel Islands and Santa Barbara Channel. Class participants are encouraged to become volunteers for CINMS.

Status: Ongoing since 2001; to continually twice annually

Partners: Santa Barbara City College, Ventura College Community Services

(3) Develop Interagency Interpretive Program with Channel Islands National Park. The National Park Service and the NMSP share a common goal of protecting sensitive marine ecosystems through the management of designated national parks and seashores and national marine sanctuaries. Channel Islands National Park (CINP) and CINMS are creating a strategic plan under the General Agreement between the NMSP and NPS to develop joint interpretive and educational projects and programs, including program planning, facilities design and operation, and on-site services to the public. The strategic plan addresses interpretive volunteer programs through inter-agency volunteer training, recruitment, and scheduling. This collaboration enables both agencies to more efficiently use local volunteers while providing a mechanism for both agencies to present a united front to the public.

Status: Initial development began in 2001; will continue to evolve over years 1-5

Partners: Channel Islands National Park

(4) Maintain the Great Annual Fish Count Program (GAFC). The Great Annual Fish Count (GAFC) is made possible through a partnership between the NMSP and the Reef Environmental Education Foundation (REEF). Since its 1992 inception in CINP and CINMS, the GAFC now takes place every July in seven marine sanctuaries off the coasts of California, Florida, New England, Texas and Washington, as well as off the coasts of Georgia, Louisiana, North Carolina, Oregon and British Columbia (with outreach surveys in Belize). Volunteer scuba divers and snorkelers are trained throughout the year to collect data on fish species' diversity, abundance and distribution. The GAFC event takes place during the first week of July, although monitoring is carried out year-round. CINMS and REEF partner to conduct an annual four-day field survey with fish identification experts to fill in gaps in REEF and Sanctuary data sets. Data are processed by REEF and used by many of the national marine sanctuaries as baseline data in which to measure changes over time.

Status: Initiated in 1992; to continue as an annual event

Partners: Channel Islands National Park, Reef Environmental Education Foundation, Paradise Dive Club.

(5) Maintain the CINMS Internship Program. CINMS provides internships in marine resource protection, research and monitoring, policy and planning, and education and outreach on a year-round basis, as needed. Maintaining the CINMS internship program requires intern recruitment, placement, orientation, training, and supervision. In some instances paid internships are arranged through Sanctuary partners such as the National Marine Sanctuary Foundation.

Status: Formalized intern program initiated in 1998; to continue across years 1-5

Partners: UC Santa Barbara; Santa Barbara City College; California State University Channel Islands; Ventura and Oxnard Colleges



Figure 29: Channel Islands Naturalist Corps, 2001 (Becky Swift)

STRATEGY AU.3 - TEAM OCEAN

- *Objective:* To build on the success of Team Ocean Programs at other national marine sanctuaries by fully achieving the network's three primary goals.
- *Implementation:* Education and outreach staff

Background

A 1999 national survey estimated more than 120 million people participated in some form of coastal and marine wildlife viewing or nature-based recreation in the US - over 60% of all residents 16 and older. The California coast offers some of the best opportunities in the world to view marine wildlife in a variety of habitats and California ranked second only to Florida in terms of overall number of participants engaged in marine recreation (18 million). Marine wildlife can be disturbed or injured when marine recreation activities are conducted inappropriately. Similarly, inappropriate conduct may also cause injury in the participants involved in such activities. Public awareness about proper marine recreation and marine wildlife viewing conduct is necessary. One mechanism for the Sanctuary to provide awareness and understanding about proper marine recreation and wildlife viewing conduct is Team OCEAN (Ocean Conservation Education Action Network). Team OCEAN has three primary goals: 1) provide public education through one-on-one interpretation and a variety of informative brochures; 2) promote stewardship by instilling a sense of personal understanding, ownership and responsibility for the Sanctuary among the general public; and 3) establish a Sanctuary presence on the water, emphasizing the importance of proper use of our resources, now and for future generations. The Team OCEAN program was established in the Florida Keys National Marine Sanctuary and has been adopted at several Sanctuaries including CINMS. Building on the success of programs developed at other sites unifies volunteer and outreach program messages and training programs on a national level.

Activities (4)

(1) Maintain the Channel Islands Naturalist Corps (CINC). The CINC program (part of the interagency interpretive program with Channel Islands National Park described in AU.2, activity 3) trains volunteers to educate the community about the culturally rich and biologically diverse resources found within the Sanctuary and Park. Over 100,000 tourists, school children, and local residents visit the sanctuary annually on board whale watch vessels, marine floating classrooms, and natural history tours. CINC volunteers educate passengers, monitor sanctuary resources, and collect data on board whale watch vessels departing out of Santa Barbara Harbor, Ventura Harbor, and Channel Islands Harbor. Data sets and images are used by Cascadia Research Collective and national whale distribution databases such as Journey North. The field season runs from January through October, capturing the presence of migrating gray whales and foraging blue and humpback whales.

One of the functions of the CINC is bringing together the whale-watching industry on a number of Sanctuary-related issues. Whale-watching operators will be offered marine wildlife viewing workshops covering topics including Sanctuary regulations, the Marine Mammal Protection Act, and Endangered Species Act, and standardized whale-watching guidelines.

CINMS maintains and trains a base of 80–100 CINC volunteers annually to provide

naturalist interpretive services on whale-watching boats departing out of Santa Barbara, Channel Islands and Ventura Harbors. CINMS offers this as a service to the whale-watching industry (within the three designated harbors) on an ongoing basis. Volunteers are available at varying times throughout the week and weekend. In addition, volunteers take their knowledge to the classroom by providing community outreach talks through the CINC Speaker's Bureau. CINC volunteers receive specialized training in identification, behavior and life history of marine mammals. The natural history of the Sanctuary, Santa Barbara Channel and the Channel Islands are emphasized. In addition, CINC volunteers receive training from the CINP to provide interagency interpretation on board CINP concessionaire vessels.

Status: Program first began in 1995 and the "Whale Corps." CINMS initiated Naturalist Corps in 2001, and joined with CINP in 2004. Program to continue throughout years 1-5

Partners: Commercial whale-watching and marine excursion vessels; Cascadia Research Collective; Santa Barbara and Ventura County Schools; CIMSF; SBMM; Santa Barbara Museum of Natural History; Channel Islands National Park; National Marine Fisheries Service Office of Protected Resources

(2) Develop Sanctuary Marine Watch Volunteer Program. One of the goals of the NMSP is to allow multiple recreational and commercial uses of Sanctuary waters compatible with resource protection. Recreational and commercial boats (whose impacts may be not only from consumptive activity, but from the boats themselves) can easily access CINMS' waters. Sewage discharge, pollution from fuel, illegal dumping, anchor-scarring, and seabird and marine mammal disturbance are all avoidable impacts. CINMS has developed a series of projects to involve volunteers and interns in activities to assist the site while educating them about the resources. Team OCEAN (Sanctuary Marine Watch), a volunteer-based, peer education program, will use interpretation to affect behavior and values to help achieve voluntary compliance with Sanctuary regulations. CINMS is building a volunteer-based, peer-interpretive enforcement program to work together with user groups in Sanctuary waters. Volunteers will impart information about Sanctuary resources, the benefits of protection, and the impact of the individual on the environment. Interpretive enforcement is intended to be both proactive and preventative in averting negative impacts before they occur.

Status: Initial program designed in 1998; boater consultations in 2003; pilot program to start in year 3

Partners: Recreational and commercial boating and diving industries; Channel Islands National Park; Chumash Maritime Association; local dive clubs; Santa Barbara Harbor; Ventura Harbor; Channel Islands Harbor; Department of Boating and Waterways; Clean Seas; Wildlife Care Network; Santa Barbara Maritime Museum; Santa Barbara Marine Mammal Center; Channel Keeper; USCG/Auxiliary; County of Ventura, Channel Islands Marine Sanctuary Foundation; NOAA Office of Law Enforcement; Sanctuary Education Team

(3) Integrate CINMS Volunteer Program Strategies into NMSP volunteer efforts. CINMS will collaborate with multiple NMSP sites and the NMSP Volunteer Program Manager to integrate successful volunteer program strategies into a national volunteer plan. The CINMS Channel Islands Naturalist Corps program will be incorporated into a NMSP Interpreter/ Naturalist Certification program. This certification program will address the need to establish national standards such that visitors to the Sanctuary sites can be assured

of expert levels of information at every site and consistent NMSP messages. CINMS will be represented on the National Certification Working Group to develop protocols for the program, core training curriculum, baseline knowledge and education level needed at each site, the design and production of patches and certificates for certified interpreters/naturalists, and the development of a web-based training program. This multiple site collaboration may be funded through existing programs designated in site annual operating plans and through the NMSP Catalyst Mini Grant program.

Status: Establish by year 2 or in accordance with NMSP schedule

Partners: Multiple NMSP sites, Channel Islands National Park, local NGOs

(4) Conduct Ocean Etiquette Outreach. The NMSP, California national marine sanctuaries, and NOAA Fisheries developed a draft handbook presenting guidelines for viewing marine species and responsibly entering their habitats as well as information about laws pertaining to California's marine wildlife. The goals of "Responsibly Viewing California's Marine Wildlife: Handbook for Ocean Users" are to 1) promote voluntary compliance with existing federal and state wildlife protection laws and regulations, 2) raise public awareness about responsible viewing and stewardship principles, and 3) promote communication and coordination among California's ocean user groups and Federal and state agencies.

In addition to developing the handbook, CINMS and various partners are engaged in developing an Ocean Etiquette program at the site. This is a process that began with the handbook and subsequent workshops. The 2003 workshop was held at the release of the handbook to communicate the information contained in the book and gather initial community feedback. The 2004 Marine Wildlife Viewing Workshop was held to determine user group need for outreach messages and products, and to solicit further feedback on the handbook. Using feedback gathered at the 2004 workshop, the site and involved community user groups will address the next steps for product development. This may involve future workshops to bring together community user groups to discuss current issues pertaining to responsibly viewing California marine life. Community user groups include recreational and commercial boaters, recreational and commercial fishing interests, kayaking stores and guides, SCUBA divers/ snorkelers, dive stores and dive vessel operators, whale watching vessels/ sightseeing vessels, volunteers/ naturalists, birders, and small aircraft operators. Team OCEAN and CINC volunteers will participate in these activities including implementation of a CINMS Ocean Etiquette volunteer program, as well as function to encourage participation from the targeted constituent groups.

Status: Program development began in 2003 and has continued to evolve; will be implemented across years 1-5.

Partners: Cordell Bank, Gulf of the Farallones and Monterey Bay national marine sanctuaries; National Marine Fisheries Service; CA Department of Fish and Game; California State Parks

STRATEGY AU.4 - DEVELOPING OUTREACH TECHNOLOGY

- Objective: To provide immediate and direct information about the Sanctuary's natural resources, issues and activities as they occur.
- Implementation: Education and Outreach staff

Background

CINMS will expand its virtual, real-time and interactive capabilities to provide a more immediate and direct understanding of the natural resources, issues and activities as they occur. Through the use of advanced outreach technology such as websites, weather kiosks, and Internet2 interactive video broadcasts, diverse audiences will be able to engage with the Sanctuary in a more dynamic and participatory manner.

As an offshore site, the easiest way for the public to come into contact with the CINMS is through a virtual experience. CINMS' website averages 9,000 visitors per month and offers everything from an online weather service to information on cultural resources, the Advisory Council, marine reserves, research, *Living Journal* articles and *What's New* pages. The diverse habitats, resources and unique setting of the CINMS offers the opportunity for the interpretation of three bioregions, historic shipwrecks, prehistoric Native American Chumash artifacts, and paleontological discoveries.

Activities (4)

(1) Expand Website Capabilities. CINMS has developed a strong presence locally, nationally, and internationally through its website. The website is an important outreach tool enabling the Sanctuary to access and track thousands of monthly inquiries. The website also provides CINMS with a mechanism to provide important resource protection updates, list Sanctuary regulations, post Sanctuary Advisory Council meeting minutes, and information on education and volunteer opportunities. CINMS will expand its website outreach through the application of Internet technology in many different environments. CINMS will incorporate multi-media elements, including:

- Sound, streaming video and mobile webcasting,
- Using leading edge technologies and equipment CINMS plans to incorporate a Web-Cam that would be stationed on the new vessel for periodic web casts from vessel / shore and underwater.
- Running programs on live camera and broadcasting directly to the web.
- Coverage of the islands while using a mobile camera and world wide web infrastructure.

Taking these steps will allow the Sanctuary to deliver dynamic, real-time information to viewers and will be focused in the following areas: 1) improving communication with educators (distance learning for K-12, virtual teacher workshops, providing resources); 2) providing scientists, decision makers, and the public easy access to CINMS research data base (intuitive querying of data, interfacing with GIS, interpretation of data for use in the classroom); and 3) providing visitors with a virtual experience and understanding about the Sanctuary (virtual flyovers and video capture from Sanctuary waters).

Status: Evolving since 2001; upgrades to continue across years 1-5

Partners: Various offices within NOAA; Sanctuary Education Team

(2) Increase The Number Of CINMS Weather Kiosks. In 1998, CINMS worked in cooperation with the National Weather Service to install the Internet Weather Kiosk at the fuel dock in Santa Barbara Harbor as a resource for commercial and recreational boaters. This interactive touch-screen kiosk is accessed by roughly 1,800 mariners per month and has proven to be a multi-dimensional tool providing practical information while fostering relationships between the Sanctuary and user groups. By presenting real-time weather updates, the kiosk also serves as a safety tool. Mariners no longer have to face weather-related safety uncertainties, which often pose risks to humans, vessels and natural resources. The Channel Islands Harbor Weather Kiosk was installed in spring 2001.

To reach a broader audience, CINMS will install six more weather kiosks at key departure points to the Sanctuary. Using the latest technology, CINMS would like to expand the type and level of Internet information available to mariners. CINMS will also develop a design for a freestanding unit so the kiosk also serves as an interpretive and information center for land-based visitors. Kiosks will be standardized and easy to identify with interpretive panels and brochure racks. Each kiosk will replicate appropriate CINMS Website information, have interactive factoids and provide links to NOAA and other Sanctuary sites. Kiosks will be installed at the following locations:

- Sea Landing (Santa Barbara)
- Channel Islands Harbor fuel dock (Oxnard)
- Youth and Group Marine Activities Center (Oxnard)
- Ventura Harbor (Ventura)
- Cabrillo High School Aquarium (Lompoc)
- Morro Bay
- Avila Bay
- Santa Barbara Museum of Natural History Sea Center
- Santa Barbara Maritime Museum

Status: New kiosk prototype designed and installed in 2005; additional four sites by year 3

Partners: National Weather Service; Sanctuary Education Team

(3) Participating in National Telepresence Initiative. Telepresence takes advantage of cutting-edge technology to allow people to experience these special marine areas without ever getting wet. Using underwater cameras and scientific equipment, telepresence uses lightning-quick Internet2 connections to feed live, interactive video - as well as pre-recorded content - to distance learning centers, Boys and Girls Clubs after-school programs, exhibits in aquaria and interpretive centers, and a Web-based marine science portal. Combined with the resources of sanctuary marine science professionals, telepresence allows children, adults, and teachers a more meaningful educational experience. Through telepresence visitors do not passively view sanctuaries, but instead actively experience and explore these underwater worlds by taking control of underwater vehicles and cameras - an intimate, immersive experience. Telepresence greatly expands education and outreach possibilities for the NMSP and is expected to greatly increase public awareness of the program, especially among currently underserved audiences.

Since 2003, the NMSP has been engaged in planning activities to support the implementation of telepresence in CINMS. The Sanctuary is working in close partnership with Channel Islands National Park to place a series of underwater cameras in and around

the Landing Cove on Anacapa Island, capturing a variety of environments. These cameras will not only serve the NMSP telepresence program, but also feed into the existing live broadcasts shown at the CINP visitors center in Ventura. The program is also working with the Marine Science Institute at UC-Santa Barbara to develop scientific monitoring equipment that can use this same, high-speed infrastructure.

Status: Under development since 2003; implementation to follow in years 1-2

Partners: See above

(4) Maintain Interactive Marine Mammal Sightings Database. Over 18 species of marine mammals are documented annually by Channel Islands Naturalist Corps (CINC) volunteers (see AU.3 (1)) in sanctuary waters, including information on migratory species, resident species, strandings or entanglements, behavior, and associated marine life. In order to make the data more accessible to the public CINMS staff developed an interactive marine mammal sightings database in 2003. The database went online in early 2004 and enables the public to access and query marine mammal data collected primarily by CINC volunteers and sanctuary staff. The public can also enter sightings into the database and create visual maps of data points.

Status: Developed in January 2004, maintenance in years 1-5

Partners: CINC volunteers; Signatory marine excursion vessels participating in the CINC program; Sanctuary Education Team

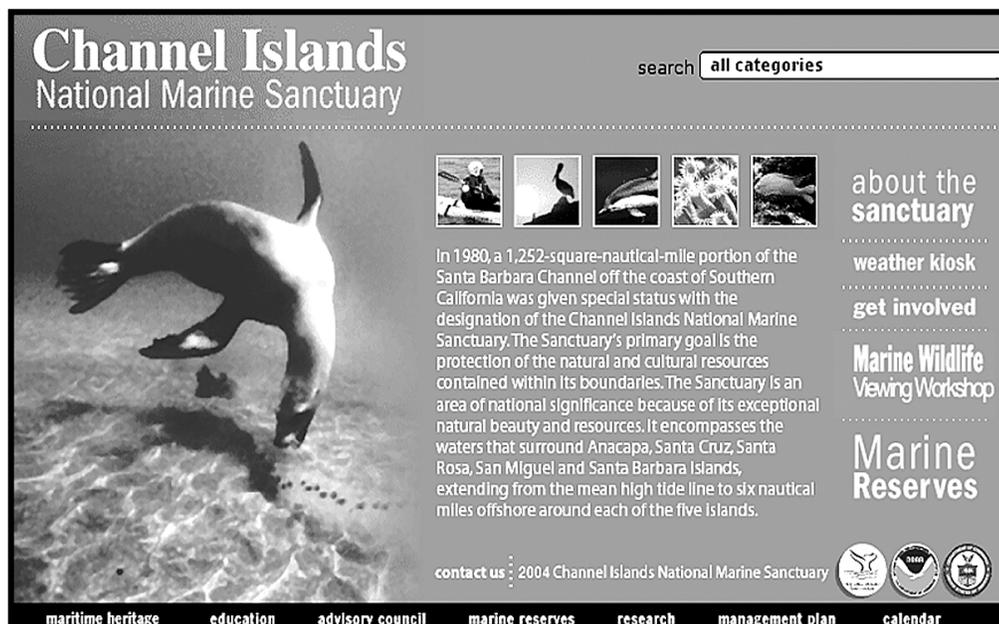


Figure 30: CINMS Website Homepage, 2003

STRATEGY AU.5 – GREATER SOUTHERN CALIFORNIA OUTREACH

- *Objective:* To establish a presence and identity for the Sanctuary and its various programs in the Ventura and Los Angeles region.
- *Implementation:* Education and Outreach staff

Background

Increasing CINMS outreach to the greater Southern California area will help to: expand the Sanctuary's presence and identity in the Ventura and Los Angeles region; develop new education partners; provide education and outreach programs to new communities; and work towards building a larger and stronger constituency and stewardship of the Sanctuary. At the invitation of the Channel Islands Harbor in Oxnard, approximately 30 miles to the south of Santa Barbara, CINMS opened a southern office in 1999. Channel Islands Harbor, which is home to over 5,000 boat slips, supports a tri-county population base of 1,355,835 and is the closest mainland departure point to the CINMS, is the site of a new *Channel Islands Harbor Boating Instruction and Safety Center (CIHBISC)*. This Center will provide a forum in which to provide information about the Sanctuary for boaters in the Oxnard area. CINMS has also been able, and will continue to, provide Los Angeles area ocean science education programs with information about the southern California marine environment and the sanctuary by participating in the Centers for Ocean Science Education Excellence West (COSEE-West).

Activities (3)

(1) Place Channel Islands Harbor Boating Instruction and Safety Center exhibits, interpretation panels and literature units. CINMS will work with the CIHBISC on a strategic plan that will include the designing and placing of exhibits, interpretation panels and portable literature distribution units. Sanctuary exhibits, interpretation panels and literature units will be in place by the opening of the CIHBISC.

Status: Planning assistance since 2001; to be completed in 2006

Partners: Channel Islands Harbor, County of Ventura, California State University at Channel Islands and NGO's

(2) Implement outreach plans and volunteer programs. The best and most immediate vehicle for CINMS southern office outreach efforts is through the CIHBISC. The Center's programming will include not only boating instruction and safety, but marine biology, ecology, and oceanography. Programs will include both K-12 students and college-level programs administered by California State University-Channel Islands, two local community colleges and continuing education programs. CINMS will play a major role in providing a Sanctuary orientation and an ocean conservation ethic through educational programming at the CIHBISC. The successful "Oceans to Classrooms" program will be expanded to Ventura County, and will include partnerships with local operators, Island Packers, California State University Channel Islands, Channel Islands Marine Resource Institute, and the Ventura County Harbor Department.

CINMS is working with the CIHBISC on a strategic plan for a boating and waterways education program, program curriculum, exhibitory, a dockside touch-tank and water-based education activities such as a floating lab. Team OCEAN (Sanctuary Marine Watch), Channel Islands Naturalist Corps, and other volunteer opportunities will be

available through the southern office. A weather kiosk with up-to-date NOAA weather reports and Sanctuary interpretive panels and information will be placed on the dock in front of the Center. Once regional needs have been evaluated, interpretive signage, partnerships, additional weather kiosks, and outreach programs will be put in place throughout the county.

Status: Ventura county-based program implementation began in 2001; will continue across years 1-5

Partners: Ventura County Schools; UC Santa Barbara; Island Packers; Channel Islands Marine Resource Institute; Channel Islands Marine Floating Laboratory Program

(3) Implementing COSEE-West Programs

In 2001, the National Science Foundation (NSF) funded the development of the Centers for Ocean Science Education Excellence (COSEE) in order to promote ocean education as an interdisciplinary tool for improving science education in the 21st century. Funding is used to foster communication and coordination among ocean science education programs nationwide and to promote partnerships between ocean science researchers and educators. COSEE-West is one of seven centers that was awarded funding by NSF and its partners including the University of Southern California, the University of California Los Angeles and the Los Angeles Unified School District (LAUSD). The LAUSD is the nation's second largest public school district with 677 schools and 270 science centers. There are over 1 million students enrolled in LAUSD and the population is composed largely of immigrant and English-limited students. CINMS is a member of the COSEE-West Education Advisory Committee and assists in coordinating the LiMPETS (see AU.1, activity 5) program in Los Angeles County, teacher workshops and lectures, and creating classroom linkages to the southern California marine environment and the Sanctuary.

Status: Began in 2001, program development continues in years 1-5

Partners: UCLA Institute of the Environment, USC Sea Grant and Wrigley Institute, Los Angeles Unified School District, Los Angeles county Museum of Natural History, Aquarium of the Pacific, California Science Center, Cabrillo Marine Aquarium, UCLA Discovery Center

STRATEGY AU.6 - DEVELOPING EDUCATION & OUTREACH TOOLS & PRODUCTS

- *Objective:* To provide Sanctuary information to a widely diverse audience.
- *Implementation:* Education and Outreach staff

Background

CINMS produces a variety of educational tools and products to help reach targeted and general audiences through our education and outreach program(s). CINMS educational products enable CINMS to provide information to a diverse audience including divers, boaters, commercial fishers, teachers, students and the general public. They are distributed through a variety of venues including conferences, outreach and community events, teacher workshops, presentations, media packets, and in the field by volunteers, enforcement agencies, and other agencies co-managing the waters around the Channel Islands. Educational products play a vital role in raising awareness and knowledge about Sanctuary resources and regulations. These products also help to build stewardship for the Sanctuary. In addition to outreach products, the sanctuary's educational cruises, web site, weather kiosks, and outreach events are valuable tools for educating the public about sanctuary resources.

Activities (5)

- (1) ***Maintain various print publications.*** The table on the following page lists current CINMS brochures, posters, or publications that will be updated, as appropriate, and restocked as needed.

Status: Ongoing since mid-1990s; annual updates to products as needed.

Partners: Channel Islands National Park, California Department of Fish and Game, and Chumash Maritime Association, SET (Sanctuary Education Team, which is a working group of the Sanctuary Advisory Council), and others.

Marine Mammal Guide

A concise and comprehensive waterproof field guide developed in cooperation with the Olympic Coast, Cordell Bank, Gulf of the Farallones, Monterey Bay, and Hawaiian Islands Humpback Whale NMSs.

Alolkoy

A nationally distributed biannual newsletter, produced jointly by CINMS and the CINMS Foundation; offers highlights into current Sanctuary and regional issues, research and education programs. This publication also serves as an annual report.

Window to The Channel

An illustrated resource guide describing the unique flora and fauna and human uses of the Channel Islands Sanctuary. It is an informative and easy-to-read booklet for both children and adults.

Annual Research Report

An overview of the year's research activities in and around the Sanctuary. A useful information piece for both scientists and the layperson.

Boater Safety Tips Brochure

A brochure including information related to boating safety, regulations on discharge in the ocean and Sanctuary, clean boating practices, and local marine refuse stations. This publication is a partnership effort between CINMS, CINP, Ventura Power Squadron, County of Ventura, and CDFG.

Protecting Our Seabirds

A bilingual brochure targeting pier and jetty fishermen, kayakers, and boaters. The brochure includes: general information about reducing impacts to seabirds, tips while fishing and boating, and seabird viewing guidelines. Hotline information is included to report injured or entangled seabirds.

Things to Do

A brochure with activities for visitors, providing contact information on nearby harbors. Includes information on pinnipeds, whales, dolphins, and sharks

Protecting You Channel Islands

A new brochure describing marine reserves, provides information about different jurisdictions protecting resources of the Channel Islands, and highlights locations for activities such as diving, camping, and anchoring.

Common Fishes of the CINMS

Includes images of fish commonly seen in both the Channel Islands and Monterey Bay NMSs. A good underwater reference for divers and snorkelers.

Whale Bookmark

Includes a blue whale illustration, information on blue whales in the Sanctuary and whale-watch guidelines.

Sharks of The Channel

A full-color poster with images of the seven most common sharks in the Sanctuary.

Channel Islands Aerial View A full-color poster of an aerial photograph showing the four northern Channel Islands from the perspective of Anacapa Island looking west.

3D Bathymetric Map

A poster featuring a GIS-based, three-dimensional perspective map of CINMS.

Chumash Tomol Poster

A poster highlighting the importance of the living Chumash Native American culture to the Santa Barbara Channel region and CINMS. The poster has a Chumash story on the back and an interpretation of some of the important elements and symbols of Chumash Native American culture.

(2) **Support various other educational materials.** The following is a list of current and future classroom and educational materials developed and to be maintained by CINMS.

Channel Islands Naturalist Corps Training Manual

A training and reference manual for CINC volunteers containing information on the biology, distribution and natural history of marine life found within the Sanctuary; oceanography of the Channel; historical resources; Sanctuary regulations and Sanctuary research and monitoring programs. (See Strategy AU.3)

Mountains to Sea Educational Material

Boater education curriculum to be produced in cooperation with the Community Environmental Council and the Channel Islands Harbor Boating Instruction and Safety Center. (See Strategy AU.5)

Coastal Watersheds Classroom Educational Material

For grades 4–8. Developed by the Youth Education Committee of Project Clean Water. Project Clean Water is a unified community effort to clean up Santa Barbara County's creeks and beaches with members from the City and County of Santa Barbara and local organizations. (See Strategy AU.1)

Team OCEAN: Sanctuary Marine Watch Classroom Educational Material

Educational material to be developed/updated for prospective Sanctuary Marine Watch volunteers containing information on marine protected areas, biodiversity and marine conservation, marine habitats and living resources, potential impacts of recreational activities, and Sanctuary management responsibilities and regulations. (See Strategy AU.3)

Mapping a Sanctuary Classroom Educational Material

A curriculum guide using ArcView software to explore maps and databases showing biological, geological and economic features of the Channel Islands National Marine Sanctuary. Some specific topics covered in the Mapping an Ocean Sanctuary curriculum include storm water pollution, environmental monitoring, sea surface temperature effects on fish distribution and marine protected areas.

Status: Above pre-existing education materials developed from 1998-2002 and updated periodically; existing materials to be updated and maintained throughout years 1-5 as appropriate; Team OCEAN materials to be updated by year 3.

Partners: Numerous partners including, Center for Image Processing in Education, Project Cleanwater, SET (Sanctuary Education Team - a working group of the Sanctuary Advisory Council).

(3) **Support Other Outreach Materials.** The following is a list of outreach materials developed and to be maintained by CINMS.

National Marine Sanctuary Video

Informative video highlighting the rich and abundant resources of the Channel Islands Sanctuary, research and education activities and commercial and recreational opportunities.

CINMS Slide Library

Contains thousands of images of regional marine resources taken by local photographers, researchers and Sanctuary staff. This extensive image inventory is used to develop Sanctuary educational products, to support web content, and for Sanctuary publications.

Channel Islands Educational CD-ROM

An interactive overview of the geography of the Channel Islands, three-dimensional Island fly-bys, information on marine life of the Channel and Sanctuary programs.

Encyclopedia of the Sanctuary

An online interactive reference guide to over 100 species of mammals, fishes, birds, invertebrates, and plants found in CINMS. Produced in cooperation with The Ocean Channel/ Ocean.Com and the National Marine Sanctuary Foundation.

Weather Kiosk

Provides real-time weather data twenty-four hours per day for mariners, fishers, divers and other Sanctuary user groups through an interactive computer touch-screen at the Santa Barbara Harbor fuel pier and the CINMS Website. Additional weather kiosks are slated for installation at locations convenient for Sanctuary recreational and commercial user groups (see Strategy AU.4)

Website

Up-to-date information regarding education, research, cultural resources and resource protection, Advisory Council, other public events and meetings Sanctuary curriculum, research data, Internet workshops, distance learning and chat sessions (see Strategy AU.4).

Signage and Interpretation Panels

Sanctuary educational signs and interpretation panels are currently posted at: 1) City of Santa Barbara Shoreline Park; 2) Ventura Pier; 3) Outdoors Santa Barbara Visitor Center; 4) Channel Islands National Park Visitor Center; and 5) Santa Barbara Island. Future locations include: 1) City of Santa Barbara Chase Palm Park; 2) Santa Barbara Maritime Museum; 3) Channel Islands Youth and Group Center; 4) Cabrillo High School Aquarium; 5) Sea Center Aquarium; 6) Santa Cruz Island and Anacapa Island; and 7) South Coast Watershed Resource Center..

3D Bathymetric Terrain Model

GIS-based, three dimensional perspective map and poster of CINMS.

Living Journal

Accessed through the CINMS Website, the Living Journal provides a firsthand perspective on local and national projects and events.

Status: Most of the above-listed outreach materials developed and updated from 2000-2004; updates to continue through years 1-5, as appropriate.

Partners: Numerous partners including Green Meadow Entertainment, The Ocean Channel and others.

(4) Sponsor Sanctuary Cruises. Each year the Sanctuary sponsors a variety of public educational cruises aboard different vessels. These cruises include kayaking, diving and wildlife viewing and are targeted toward varying audiences including local residents, tourists, school children and community groups. Sanctuary staff and volunteers facilitate hands-on activities such as oceanography experiments, fish identification, marine mammal and seabird identification, fish surveys, and wildlife viewing to encourage an understanding and stewardship for Sanctuary resources.

Status: Common practice since designation; will continue through years 1-5.

Partners: Concessionaire vessels to the Channel Islands National Park, other commercial marine excursion vessel operators, and numerous other education partners.

(5) Participate In Outreach Events. CINMS participates in a variety of outreach events each year including whale festivals, harbor festivals, boat shows, and dive industry events. Presence at these community outreach events provides CINMS an opportunity to distribute educational products and discuss sanctuary programs with a broad audience interested in a variety of marine related activities such as ocean conservation, recreational boating, diving, and wildlife viewing.

Status: Ongoing activity since designation that has grown in scope; will continue throughout years 1-5.

Partners: Numerous partners.



Figure 31: Outreach products are widely disseminated throughout the Sanctuary community. (CINMS)

STRATEGY AU.7 - VISITOR CENTER SUPPORT AND DEVELOPMENT

- *Objective:* To maximize the Sanctuary's regional public exposure through the development of exhibits and programs at planned and developed marine and natural resource-based visitor centers.
- *Implementation:* Education and Outreach staff

Background

While CINMS does not currently maintain its own independent visitor or education center, it maintains exhibits at a variety of visitor centers and similar facilities operated by partner organizations. In 2003 Booz Allen Hamilton, a strategy, management and technology consulting firm, produced a Facilities Master Plan for CINMS adopted by the NMSP. The plan contains an assessment of and recommendations for pursuing various existing and potential new exhibit spaces, visitor centers, signage locations, an analysis of existing sanctuary facilities, and a recommendation for expanding office space (see Strategy OP.7 for more information about office space expansion).

Over the next five years, the Sanctuary will complete implementation of a CINMS Master Facilities Plan to maximize CINMS' regional public exposure through the development of exhibits and programs at planned and developed marine and natural resource-based visitor centers. These venues, which are represented in the activities of this strategy, provide an important opportunity to display, promote and interpret CINMS programs and products while enhancing and leveraging a variety of existing and new partnerships.

Activities (7)

(1) Partner With The Outdoors Santa Barbara Visitor Center. The Outdoors Santa Barbara Visitor Center is a unique partnership among four government agencies: 1) Channel Islands National Park; 2) Los Padres National Forest; 3) the City of Santa Barbara; and 4) CINMS. Perched on the fourth floor of the Waterfront Center in the Santa Barbara Harbor, this Center is completely staffed by a paid volunteer coordinator and volunteers. Through tile murals representing the *Chumash Rainbow Bridge Legend*, a computer station and a wayside exhibit featuring living and historical resources of the region, visitors are provided with opportunities to learn about the different ways each agency protects the resources. This interagency partnership also provides improved public service at a reduced cost by the sharing of resources to develop and operate this Center in the Santa Barbara Harbor. CINMS staff will continue to support the Center's operations and assure CINMS educational materials and displays are kept updated.

Status: The center opened in 2000; CINMS support for operations to continue throughout years 1-5.

Partners: Channel Islands National Park, US Forest Service, City of Santa Barbara.

(2) Partner With The Santa Barbara Museum of Natural History's New Sea Center. Over the last decade, the Santa Barbara Maritime Museum has partnered with the Sanctuary in the development and implementation of several highly successful projects. One such project is the Sea Center on Stearns Wharf in Santa Barbara. Over the years, the Sea Center evolved from a casual, walk-in visitor center into a community education resource center serving more than 70,000 visitors and 7,000 school children each year. The Sea

Center was closed for the past few years for major renovations, and reopened its doors in 2005 as a dynamic new education center. The new Ty Warner Sea Center represents the leading edge of museum exhibit design and interactive experience, utilizing both technology and trained staff to create a fun, engaging, interactive visitor experience featuring: interactive exhibits designed to help visitors experience scientific discovery; opportunities to work like scientists, sampling and testing ocean water, studying animal behavior, and examining microscopic marine life; live tidepool animal encounters; a theater showcasing the wonders of the Santa Barbara Channel; and several exhibits on the CINMS, including an interactive touch screen Sanctuary kiosk. CINMS has and will continue to work closely with the Ty Warner Sea Center to bring Sanctuary resources and programs to the public through use of Center's trained staff, cutting edge technology, planned school programs, and high level of public visitation.



Figure 32: The Santa Barbara Museum of Natural History Sea Center has undergone significant revitalization. (Mark Berger)

Status: CINMS assistance with exhibit design from 2002-2004; center reopened in 2005; support, maintenance and upgrade of CINMS exhibits and Center programs to continue over years 1-5

Partners: Santa Barbara Museum of Natural History Sea Center

(3) Maintain Exhibits For The Cabrillo High School Aquarium. The Cabrillo High School Aquarium is a newly renovated and expanded aquarium (managed by the students of Cabrillo High School), featuring a cold water reef and animals, touch tank and exhibit of living resources of CINMS. The CINMS has designed and developed interpretive exhibits (including a 3-dimensional model of the Sanctuary showing the depth contours around the Channel Islands) and a weather kiosk displaying real-time weather conditions in and around the Sanctuary. These interactive exhibits educate visitors about the role and importance of the CINMS protecting the marine resources of the region. The CINMS will maintain these exhibits and continue to work with high school and aquarium staff to develop educational programs and products highlighting sanctuary resources and technology tools.

Status: Design and installation of exhibits 2000-2003; maintenance and educational program develop to continue over years 1-5, as appropriate

Partners: Cabrillo High School

(4) Partner With The Channel Islands Harbor Boating Instruction and Safety Center (CIHBISC). CINMS' presence is an integral part of the continued planned development of the CIHBISC (see AU.5, activity 1). CINMS staff will provide oversight in planning Sanctuary exhibits, education programs and an outside visitor center overlooking the Channel Islands. CINMS staff will also maintain a board member seat on the Channel

Islands Harbor Foundation.

Status: Staff assistance with planning and development began in 2001; upon completion and opening of the Center, ongoing exhibit and education programming support to continue, as needed, throughout years 1-5

Partners: Ventura County Harbor Department, Channel Islands Harbor, Channel Islands Harbor Foundation, Channel Islands Harbor Boating Instruction and Safety Center

(5) Provide Support For The South Coast Watershed Resource Center. This Center is a relatively newly opened learning and educational resource facility aimed at enhancing public awareness of Santa Barbara County's watershed system. Program themes include watershed restoration and water quality, with an emphasis on helping visitors and the local community understand the connection between healthy watersheds and individual personal habits. CINMS has worked with the Center to install a nautical chart tile map of the Sanctuary and CINMS interpretive signage at the entrance to the building, and has contributed watershed-based educational curriculum to the Center. CINMS staff will continue to assist with educational programming and exhibits, and will look to the Center as a partner as steps are taken to develop a Sanctuary water quality action plan (see Strategy WQ.2 – Water Quality Protection Planning).

Status: Partnership activities since 2001, to continue as appropriate over years 1-5.

Partners: Community Environmental Council

(6) Maintain and Improve CINMS Presence at Channel Islands National Park Visitor Center. CINMS will continue its ongoing partnership with the Channel Islands National Park Visitor Center in Ventura, which receives thousands of visitors each year. CINMS maintains an exhibit, provides brochures, and contributes to the reference library. CINMS will partner with the Channel Islands National Park Visitor Center to fund the development of a new interactive Sanctuary exhibit in the Center's lookout tower. The exhibit will highlight Sanctuary resources such as marine habitats and their associated species.

Status: Maintenance of CINMS presence in Visitors Center has been ongoing for several years. Initial planning for new Sanctuary exhibit began in 2003 and continues; implementation schedule dependent upon future capital facilities funding.

Partners: Channel Islands National Park

(7) Assist in Development of the Outreach Center for Teaching Ocean Sciences (OCTOS). A 2003 CINMS Facilities Master Plan recommends NMSP investment in a proposed new facility at the University of California Santa Barbara (UCSB) as a best value option for securing additional office space while also enhancing exhibits and visitor center services. UCSB's Marine Science Institute (MSI) has for several years partnered and collaborated with CINMS on many research, monitoring and educational programs and projects. MSI approached CINMS in 2002 with the idea of constructing a state-of-the-art education center on campus at a site next to the MSI building that could also provide needed additional CINMS office space. From this initial idea UCSB took the lead on fundraising. In 2004 the NMSP provided some initial funding for preliminary design and feasibility work. Then, in fiscal year 2005, Congress awarded \$4 million to the project. These funds are currently being applied toward development of a detailed design the proposed

combined CINMS office space and Outreach Center for Teaching Ocean Sciences (OCTOS). Fundraising by UCSB and MSI will continue. CINMS would ultimately not own the new OCTOS/office space facility, but would enter into a long term lease with UCSB.

OCTOS is still in the design phase, but is expected to feature a variety educational opportunities that will enhance public understanding and appreciation of the marine environment and CINMS in particular, including: a seawater center with touch tanks that will provide hands-on learning experiences about marine life; a technology center that will offer interactive learning opportunities; a “Science on a Sphere” station; a high-tech 40-person floating “Immersion Theater” capable of supporting live, interactive telepresence communications around the world; video and microscope projection installations; and virtual reality environments.

CINMS and NMSP staff will continue to work jointly with UCSB-MSI on development of OCTOS, including Sanctuary-related exhibits and educational experiences. CINMS staff will continue to play a leading role in OCTOS design work, including serving as co-chair the UCSB’s project Building Committee and serving as a liaison to CINMS and NMSP staff involved in or affected by the project. CINMS staff will also assist with a variety of project oversight duties during the construction phase.

Status: Joint planning with UCSB/MSI in progress since 2003; CINMS design assistance through years 1-2; assistance with construction oversight in years 3-4; possible OCTOS opening in year 4 or 5.

Partners: UC Santa Barbara - Marine Science Institute

STRATEGY AU.8 - MARINE RESERVES EDUCATION

- *Objective:* To raise public awareness and understanding of the system of marine reserves and conservation areas within the Sanctuary.
- *Implementation:* Education and Outreach staff

Background

From 1999 through 2002, the NMSP was involved in a community-based joint process with the California Department of Fish and Game resulting in the State designation and implementation in 2003 of a network of 10 State marine reserves (or no-take zones) and two State marine conservation areas (limited-take zones) within portions of the State waters of the Sanctuary. The NMSP has since continued with the process to consider possible extensions of the State marine reserve and conservation area network into federal waters of the Sanctuary, as originally envisioned during the community input and State adoption process (see Strategy MZ.2 for more information). An important focus of CINMS education programs and services since 2002 has been to help the public understand what and where the marine reserves and conservation areas are, why they were established, and what can be learned from them. This strategy identifies education actions the Sanctuary has been taking since 2002 and will be maintained and enhanced over the five year horizon of this management plan. These same actions would also be applied to address educational needs and opportunities associated with any additional marine reserves or conservation areas should they be established in the Sanctuary.

Activities (6)

(1) Implement SET recommendations for marine reserves education and outreach products and services. The Sanctuary Education Team (SET) is a working group of the Sanctuary Advisory Council established in January 2002 to advise and make recommendations on marine educational issues related to the Sanctuary. The SET conducted a needs assessment of Sanctuary user groups to determine the best messages and delivery mechanisms for development of marine reserves educational programs and materials. In late 2002 the SET recommended and the Advisory Council endorsed a comprehensive suite of education strategies, programs and products to inform various sectors of the public about marine reserves (existing and potentially new) at the Channel Islands. Some of these SET recommendations have been implemented by CINMS staff, but much remains to be done and will continue to be developed and implemented over each of the five years of this management plan (and is reflected in many of the activities of this strategy). In 2004 and 2005 the SET focused on developing education and outreach presentations to support public education about CINMS marine reserves. Staff has assisted with that effort and will continue to support SET involvement in presentation design and delivery. In addition, wherever possible, marine reserve components will be incorporated into existing Sanctuary education and outreach activities (such as those listed at AU.1, AU.2, AU.3 and AU.6).

Status: SET advice in 2002 and 2003; implementation to continue across years 1-5.

Partners: Sanctuary Education Team, Advisory Council

(2) Develop Printed Educational Products. Printed educational products have been and will continue to be developed to raise awareness about the marine reserves and conservation areas. These include brochures, posters, maps, publications and other

existing materials listed at AU.6 (activities 1 and 2), and will also involve new product development as needed and appropriate.

Status: CINMS marine reserve-related printed products developed from 2002 through 2005, maintenance of supplies, update of materials, and development of new products, as appropriate, to continue through years 1-5.

Partners: California Department of Fish and Game, Sanctuary Education Team, Channel Islands National Park.

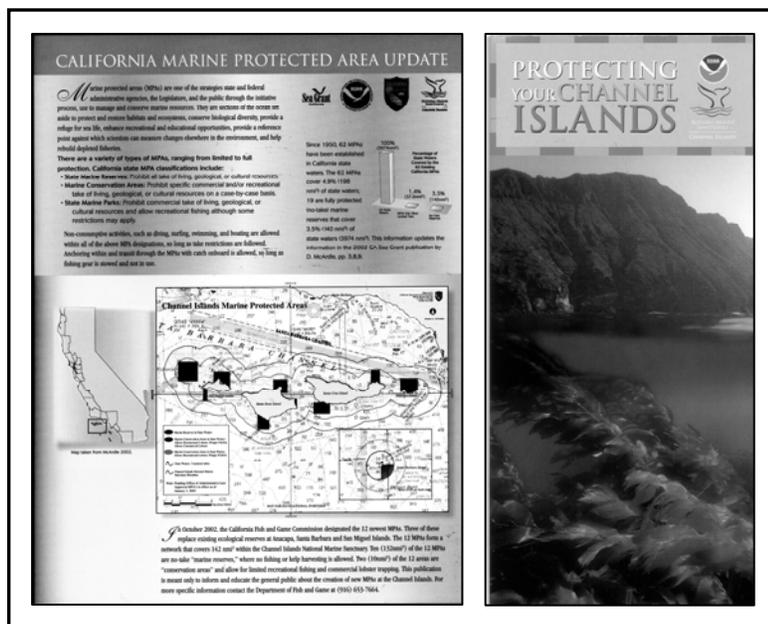


Figure 33: Marine Reserves Outreach Products,

(3) Develop Public Service Announcements. Public service announcements will be developed to raise local awareness concerning marine reserves. CINMS staff will develop radio and film-based public service announcements.

Status: Implement by year 2.

Partners: California Department of Fish and Game, Sanctuary Education Team, Sanctuary Advisory Council, Channel Islands National Park.

(4) Conduct Sanctuary Cruises. Sanctuary Cruises have and will continue to be conducted as educational field trips to the Sanctuary, including visits to marine reserve sites (four times per year).

Status: Occasional marine reserve cruises have taken place from 2003-2005; additional cruises (at least 4 per year) to be implemented throughout years 1-5.

Partners: California Department of Fish and Game, Channel Islands National Park, and numerous other potential partners

(5) Develop, Place and Maintain Interpretive Signs And Kiosks. CINMS will develop, place and maintain marine reserves signage at various Sanctuary departure points,

including the Channel Islands. Sanctuary Education Team recommendations (provided in 2002) will help guide placement. Signs will provide basic information about the CINMS, including the purpose, location, resources and regulations for marine reserves. At local ports and harbors, upgrade and maintain CINMS touch-screen weather kiosk system to include information about marine reserves.

Status: Signage implementation began in 2003-2004, and will ramp up through years 1-2. Upgraded signage to follow if additional marine reserves or conservation areas are designated.

Partners: CA Department of Fish and game, Channel Islands National Park, Sanctuary Education Team

(6) Maintain Marine Reserves Website. Maintain and enhance a comprehensive public information center on the CINMS marine reserves through the Sanctuary's website.

Status: Marine reserves web site began in 1999 and has evolved considerably since then. Continued enhancements to occur over years 1-5.

Partners: CA Department of Fish and game, Sanctuary Education Team

STRATEGY AU.9 - MULTICULTURAL EDUCATION

- *Objective:* To build sanctuary stewardship and increase understanding of ocean related threats within the Hispanic communities of Santa Barbara and Ventura Counties.
- *Implementation:* Education and Outreach staff

Background

According to the U.S. Census Bureau (2000a) approximately 34% of the population in Santa Barbara and Ventura counties is Hispanic (also known as Latino) and in California 33% of the population is Hispanic. However, community participation in CINMS programs and services does not currently represent the demographic composition of the region. It is important for the CINMS to provide programming allowing increased community participation in resource protection in order to implement effective resource management. In addition, Sanctuary-based multicultural education may encourage Latino students to pursue careers in fields related to marine resource management, along with the higher education and advanced degrees necessary for such careers.

Although CINMS has not historically followed an official multicultural education plan, the Sanctuary does have a history of success in working with local education partners to create K-12 educational programming for Latino students in Santa Barbara County. In 1987, the Sanctuary funded the development of an integrated marine science program called “*Los Marineros*” for 5th grade students in Santa Barbara County Schools. Administered by the Santa Barbara Museum of Natural History, the program served over 1000 students annually, with over 70% of the students representing the Latino community.

The NMSP supports using the Monterey Bay National Marine Sanctuary’s (MBNMS) Multicultural Education Plan as a model for other national marine sanctuaries across the nation. CINMS will develop a multicultural education plan, based on the success of the MBNMS Multicultural Education for Resource Issues Threatening Oceans (MERITO) program to provide expanded bilingual outreach and education about marine and coastal environments and their conservation to students, teachers, adults, and families. Proposed education programs, including media campaigns, materials, and products will address how families can protect coastal watershed areas, how they can take action in their own lives to protect the ocean, and why ocean protection is a role all coastal citizens share. An important first step at CINMS has been the completion of a needs assessment survey to identify critical audiences, themes, and tools for effective multicultural education in this region. CINMS staff will move forward to build in multi-cultural elements to existing Sanctuary education programs and materials.

Activities (5)

(1) Evaluate Needs Assessment Survey Results. In 2004 an assessment tool was designed by CINMS staff, in partnership with the Monterey Bay National Marine Sanctuary, to effectively survey members and community leaders representing different community groups, school districts, universities, non-profit organizations, city, state and Federal agencies and the farm industry. Through a comprehensive set of thirty-three interviews, the survey was administered throughout the CINMS region and resulted in the identification a list of critical needs to be addressed in order for the Sanctuary to provide effective multicultural education. CINMS will evaluate the survey results and

define/prioritize common themes needing to be addressed.

Status: Needs assessment conducted in 2004/2005; Evaluation to be completed in year 1

Partners: Internal and surveys with: Boys and Girls Clubs of Santa Barbara and Ventura Counties, California Department of Education-Migrant Education, California State Parks, California State University at Channel Islands, Casa de La Raza, Channel Islands National Park, Generation Communications (Ojai Valley Youth Foundation), Girls Inc. in Santa Barbara and Carpinteria, Girl Scouts of America, Golden State Environmental Education Consortium, Guadalupe Dune Center, Los Angeles Unified School District, UCSB chapter of Movimiento Estudiantil Chicano de Aztlan (MEChA or the Chicano Student Movement of Aztlan), Oxnard City College, Santa Barbara City College, Santa Barbara Hispanic Chamber of Commerce, Santa Barbara Maritime Museum, Santa Barbara Museum of Natural History, Santa Barbara Office of Education, Santa Barbara SEA, Society of Advancement of Chicanos and Native Americans in Science, Splash the Trash, UC Cooperative Extension (*Agua Pura* Leadership Institute), UC Santa Barbara/Marine Science Institute, UCSB Latino fraternities and sorority organizations and Latino service organizations, Ventura Community College, Ventura Superintendent of Schools office, Ventura Unified School District.

(2) Retain Bilingual Community Liaison. CINMS hired a bilingual community liaison in 2004 to conduct and coordinate the needs assessment survey and analysis. This position will be retained at CINMS to support implementation of the multi-cultural education program.

Status: Liaison hired in 2004; CINMS to retain services through years 1-5

Partners: Internal

(3) Develop A Strategic Plan For Multicultural Education. The bilingual community liaison will work with CINMS education coordinators and the MBNMS MERITO program manager to develop a strategic plan for multicultural education in the Sanctuary.

Status: Initiated in 2004, complete in year 1.

Partners: MBNMS, Sanctuary Education Team and surveyed organizations (see Activity 1 partners).

(4) Develop And Adapt Multi-Cultural Elements To CINMS Programs And Materials. CINMS will build multicultural elements into existing CINMS education and outreach programs that will be selected and prioritized based on the strategic plan developed from the needs assessment survey and workshop and the MERITO strategic plan.

Youth Programs (K-12 and after school).

The Sanctuary will develop and implement programming for Hispanic youth to increase awareness about CINMS within the Hispanic community. For example, the incorporation of the CINMS Argonauts program into the MERITO Youth program, and the pairing of the Santa Barbara Museum of Natural History's Quasars to Seastars program with the Waves on Wheels (WOW) program (see AU.1, activity 6). The Quasars to Seastars program trains teens, 60% of whom are Hispanic, to be interpreters and classroom instructors. These teens could work with the WOW classroom van to provide after school programming targeting Hispanic communities in both Ventura and Santa Barbara counties.

Adult Education Programs (see AU.2 activity 2).

CINMS staff will develop a lecture/field trip about the Sanctuary and present it in English as a second language (ESL) classes. Santa Barbara City College, Ventura College, and Oxnard Adult Education School each offer ESL classes. Other potential adaptations include: The a bilingual media campaign, bilingual outreach materials, internship opportunities for bilingual graduate and undergraduate students, and participation of CINMS staff at Hispanic community events. CINMS staff would also develop a lecture/field trip about the Sanctuary for presentation at English as a second language (ESL) classes.

Status: To be conducted from years 2 through 5.

Partners: MBNMS, SET and others (see Activity 1 partners), including Santa Barbara City College, Ventura College, Oxnard College and other Adult Education Schools offering ESL classes.

(5) Implement the Multicultural Education Strategic Plan. Based on common themes and programs/products generated from the needs assessment and workshop and developed into a strategic plan (see activity 1 and 3 above), CINMS will begin implementing the multicultural education strategic plan in Santa Barbara and Ventura County communities.

The CINMS MERITO Strategic Plan will include education and outreach strategies to be implemented within a 5-year time-frame in collaboration with community partners. The plan will be geared toward reaching sub-audiences within the Hispanic community such as youth, teachers, Spanish speaking adults, migrant families, community leaders and representatives of the agriculture and restaurant industry. The program will focus primarily on fostering Sanctuary stewardship, increasing knowledge of water quality issues and promoting environmentally responsible living. Main themes of the MERITO Action Plan will include:

- *Community Based Bilingual Outreach Program.* Serving Hispanic students (middle school level), adults, migrant families, community leaders and agriculture and tourism representatives.
- *Teacher Training and Hispanic Students Internship Program.* Address teacher professional development opportunities for Hispanic-serving teachers and youth program educators on marine sciences and resource protection and the need for paid internship opportunities for Hispanic graduate and undergraduate level students.
- *Bilingual Outreach Program.* To increase visitation to the Channel Islands and outreach centers (such as park visitors-centers, museums and aquariums), and collaboratively provide comprehensible natural resource protection information.
- *Communications Plan.* Targeting at a larger scale all age levels of the Hispanic audience through a comprehensive media campaign and communication tools in collaboration with partner organizations.
- *Bilingual Outreach Products and Materials.* Produce bilingual products conveying sanctuary related information, watershed and ocean connections and promote environmentally friendly practices.

Status: Initiate in year 2, ongoing thereafter.

Partners: MBNMS, SET and potentially many others, including: Channel Islands National Park, Ventura County Superintendent of Schools Office, Santa Barbara

County School District, UCSB Marine Sciences Institute, Santa Barbara Maritime Museum, Boys and Girls Clubs of Oxnard, Ventura and Santa Barbara, UC Cooperative Extension LA and Santa Barbara County, Santa Barbara Museum of Natural History – Ty Warner Sea Center, Clear Channel Broadcast, Oxnard City, Santa Barbara County Water Agency, Santa Barbara City Creeks Outreach Division, El Consilio, Future Leaders of America, Oxnard Network Coalition, El Centrito de la Colonia, La Casa de la Raza, CAUSE, Head Start, Oxnard College, Santa Barbara Community College, Ventura College, Migrant Education Offices of Ventura and Santa Barbara, UC Channel Islands, Ojai Valley Youth Foundation, Ocean Futures Society, Heal the Ocean, Environmental Defense Center, Community Environmental Council. Island Packers, Truth Aquatics, Aquarium of the Pacific, California Department of Parks and Recreation Ventura County and Santa Barbara County

Table 4: Estimated Costs For The Public Awareness and Understanding Action Plan

Strategy	Estimated Annual Cost (in thousands)*					Total Estimated 5 Year Cost
	YR 1	YR 2	YR 3	YR 4	YR 5	
AU.1: Education Program Development	\$30	\$91.5	\$91.5	\$81.5	\$81.5	\$376
AU.2: Community Involvement	\$32	\$55	\$56	\$57	\$58	\$258
AU.3: Team Ocean	\$38.5	\$26	\$24	\$24	\$24	\$136.5
AU.4: Developing Outreach Technology	\$52.5	\$99	\$99	\$56	\$56	\$362.5
AU.5: Greater Southern CA Outreach	\$0	\$40	\$45	\$50	\$30	\$165
AU.6: Education/Outreach Tools & Products	\$111.5	\$112.5	\$112.5	\$112.5	\$112.5	\$561.5
AU.7: Visitor Center Support & Development	\$20^	\$20^	\$60^	\$32^	\$27^	\$159
AU.8: Marine Reserves Education	\$49	\$16	\$16.5	\$17.5	\$18	\$117
AU.9: Multicultural Education	\$0	\$27**	\$30	\$35	\$40	\$132
Total Estimated Annual Cost	\$333.5	\$487	\$534.5	\$465.5	\$447	\$2267.5
* Cost estimates are for “programmatic” funds, which exclude base budget funding requirements (salaries, overhead, etc.).						
** Contributions from outside funding sources also anticipated.						
^ Additional funding will come from NMSP Capital Facilities allocations.						

Addressing the Issues – Strategies From Other Action Plans

In addition to the strategies identified in this Public Awareness and Understanding Action Plan, there are several strategies from other action plans either directly or indirectly addressing the issue of increasing public awareness and understanding of the Sanctuary and its resources:

- CS.2 – Comprehensive Data Management
- CS.5 – Research Interpretation
- MHR.2 – Maritime Heritage Resources Volunteer Program
- MHR.3 – Partnering with the Santa Barbara Maritime Museum
- MHR.4 – Implementing a Coordinated MHR Protection Outreach Effort
- MHR.5 – Upgrading the MHR Website
- MHR.6 – Promoting Public Education of Chumash Native American History
- EE.2 – Expanding Enforcement Efforts
- OP.1 – Sanctuary Advisory Council Operations

Addressing the Issues – Regulations

Existing Regulations

Not applicable. Although education and outreach are important tools used to assist with increasing compliance with Sanctuary regulations, the regulations themselves are not integral to addressing the need to raise public awareness and understanding.

Potential New or Modified Regulations

Not applicable. Although education and outreach are important tools used to assist with increasing compliance with Sanctuary regulations, new regulations would not be integral to addressing the need to raise public awareness and understanding.

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CONSERVATION SCIENCE ACTION PLAN

Overview

The mission of the National Marine Sanctuary Program (NMSP) is “to serve as trustee for the nation’s marine protected areas to conserve, protect and enhance the biodiversity, ecological integrity, and cultural legacy of these ecosystems.” One of the NMSP purposes is “to support, promote, and coordinate scientific research on, and long-term monitoring of, the resources” of the marine areas. Fundamental to accomplishing this mission is the development of a rigorous, objective scientific foundation for understanding ecosystem structure and function, evaluating environmental condition, and implementing effective, sustainable and adaptive management strategies (Gittings et al. 2003). The NMSP has adopted the mission-oriented, multi-disciplinary approach of conservation science for the protection, assessment, monitoring, maintenance, and restoration of the historical and natural resources under its stewardship.

Within this approach, CINMS research and monitoring efforts focus on the development and application of a research and monitoring program for evaluating ecosystem health, socioeconomic impacts, and implementing effective resource management strategies. Site staff and their partners work to obtain sufficient data on living marine resources, ecosystems and human activities to better understand such questions and issues as how biological communities function and vary naturally; how different biological components interact and are integral to the health of the ecosystem; the effects of human activities on the natural system; and how ecosystems vary over time due to natural perturbations and anthropogenic factors; socioeconomic impacts resulting from the health of the ecosystem or from management actions. Answering these questions will allow CINMS to better understand Sanctuary ecosystems, the effects of human use impacts on Sanctuary resources, and the socioeconomic effects of Sanctuary management.

Description of the Issues

During the 1999 scoping meetings, a number of specific issues emerged in association with the general issue of science. Several of these specific issues were then designated by CINMS staff and the Advisory Council as areas the Sanctuary should address in the draft management plan:

- The Sanctuary should implement and support more research projects and opportunities;
- The Sanctuary should better interpret and summarize research findings for decision makers and public understanding;
- The Sanctuary should coordinate and cooperate with other regional science organizations;
- The Sanctuary should work to characterize and inventory Sanctuary species and habitat types, assess ecosystem health, and examine natural fluctuations vs. human impacts;
- The Sanctuary should include the participation of commercial fisherman in its scientific research projects; and
- The Sanctuary should always try to base decision-making on scientific information.

CINMS staff also prioritized conservation science as one of the Sanctuary's primary programmatic functions. This function is driven by the NMSA, which states the NMSP is to "support, promote, and coordinate research on, and long-term monitoring of, sanctuary resources" (16 U.S.C. 1431 (b)(5)).

Socioeconomics – A Growing Monitoring Need for CINMS

In 1999, when CINMS, the California Department of Fish and Game, and the Sanctuary Advisory Council first began to consider the possible need for marine reserves (no-take zones) within the Sanctuary, the social and economic implications of such an action demanded new levels of social science be brought in to provide relevant data and analysis. However, it was immediately apparent socioeconomic baseline data was not readily available and few studies had been conducted in the Sanctuary region. NOAA economists Vernon (Bob) Leeworthy and Peter Wiley then led efforts to form a Socioeconomic Advisory Panel to the Advisory Council's Marine Reserves Working Group (MRWG), gathering existing and new baseline data on the economic status of commercial fishing and numerous recreational activities occurring within CINMS. With this data, Leeworthy and Wiley were able to estimate the possible economic impacts resulting from establishment of marine reserves within the Sanctuary (Leeworthy and Wiley 2003). This socioeconomic science work was unprecedented for the Sanctuary.

Development of a socioeconomic monitoring program for Federal marine reserves and conservation areas (which is subject to a separate process to determine if such reserves should be put in place) was originally guided by the MRWG, which came to consensus on a broad socioeconomic goal of "maintaining long-term economic viability while minimizing short-term losses."

In March 2003, over 100 stakeholders and experts met to design a monitoring program for the marine reserves within CINMS. Forty-six individuals participated in the socioeconomic monitoring component of the two and one-half day workshop. As demonstrated in the text above, a final report by Leeworthy and Wiley (NOAA 2003b)

CINMS Socioeconomic Monitoring Challenges

Excerpt from: Socioeconomic Research and Monitoring Recommendations for Marine Protected Areas in the Channel Islands National Marine Sanctuary (National Oceanic and Atmospheric Administration, National Ocean Service, Special Projects: Silver Spring, Maryland. July 2003).

Priority Recommendations:

1. Hire a Social Science Coordinator
2. Create an Oversight Committee and a Peer Review Committee
3. Advisory Council Should Review the Current Set of Monitoring Program Recommendations and Establish Priorities
4. CINMS and CDFG Should Aggressively Seek Funding Support

Workshop Planning Team Recommendations:

1. The Sanctuary Advisory Council meet and establish socioeconomic measurement thresholds. These thresholds are social value judgments and are best left to the political process, for which the Advisory Council is well suited.
2. Evaluation of Socioeconomic Impacts must include information on factors other than the marine protected areas. Changes in regional environmental and socioeconomic conditions may be the cause of changes in socioeconomic measurements. Other management strategies and regulations, along with changes in regional and socioeconomic conditions must be accounted for in any evaluation of socioeconomic impacts.

came out of the workshop presenting a menu of recommendations from which a research and monitoring plan can be developed. Cost estimates for the socioeconomic monitoring program recommendations, whether totaled at low, medium or high cost options, represent a level of investment without precedent within the National Marine Sanctuary System (NOAA 2003b).

In February 2004, the California Department of Fish and Game released a *Channel Islands Marine Protected Areas Monitoring Plan* (California Resources Agency, CDFG 2004).



Figure 34: Sonar equipment is frequently used to map the seafloor. (CINMS)

The plan draws on the NOAA 2003 recommendations report, opting to pursue a number of socioeconomic monitoring programs. In 2005, CINMS hired on contract a Social Science Coordinator to assist in implementation of socioeconomic programs call for in the 2004 monitoring plan. CINMS is a committed partner to seeing through implementation of the socioeconomic

monitoring programs in this plan (see CS.6 below).

Addressing the Issues – Strategies For This Action Plan

Currently, CINMS is building a research plan that complements the NMSP's national research priorities by focusing its data collection efforts in the areas of ecosystem assessment, monitoring, and processes. Development of research projects in these three areas will help CINMS build strong foundations of sound science on which to base management decisions. These foundations will also allow CINMS to identify gaps in knowledge about the resources to better identify future research needs and to address increasingly complex resource management issues. This information will be used to develop new strategies to protect Sanctuary resources, restore impaired ecosystem structure and functioning, and mitigate threats to ecosystem health.

Three types of research projects provide information for CINMS management:

- 1) *Intramural* research projects funded by the NMSP and conducted by CINMS staff;
- 2) *Directed* research projects carried out by outside agencies and institutions with guidance and/or support from CINMS and NMSP headquarters; and
- 3) *Extramural* research projects funded and conducted by outside agencies and institutions.

In addition to data collection efforts, CINMS is assuming an emerging role in the community by taking an ecosystem-based approach to identifying research needs; collaborating and coordinating research efforts between agencies and institutions; analyzing and disseminating data and identifying practical management applications for existing data.

There are seven non-regulatory management strategies in this Conservation Science (CS) action plan:

- CS.1 – Sanctuary Aerial Monitoring and Spatial Analysis Program
- CS.2 – Comprehensive Data Management
- CS.3 – Support Existing Site Characterization And Monitoring Programs
- CS.4 – Collaborative Marine Research Project
- CS.5 – Research Interpretation
- CS.6 – Marine Reserves Monitoring

Each of these strategies is detailed below.

STRATEGY CS.1 – SANCTUARY AERIAL MONITORING AND SPATIAL ANALYSIS PROGRAM (SAMSAP)

- *Objective:* To analyze historical data and create predictive models for resource management through near real-time data collection.
- *Implementation:* Research and Monitoring staff

Background

SAMSAP allows near real-time collection and viewing of data vital to Sanctuary management and resource protection. Using the Sanctuary's amphibious fixed wing Lake Renegade Sea Wolf aircraft as a platform, SAMSAP is utilized for three principal research efforts: 1) vessel traffic monitoring; 2) marine mammal sighting and 3) kelp canopy monitoring. CINMS will continue mission flights to maintain a statistically significant database to better analyze historical data and create predictive models for resource management.

Activities (2)

(1) Continue SAMSAP Data Collection. To collect statistically reliable data on vessel traffic and marine mammal sightings, the Seawolf needs to fly on a weekly basis. Kelp canopy monitoring data is collected on a seasonal basis, requiring monthly overflights. A basic survey mission (vessel or marine mammal survey) consists of a recorder entering specific coordinates and species-specific information into the survey program. After completion, the survey file is converted to GIS data, which are then classified and displayed over a base map. Other data layers, such as sea surface temperature, may be added to allow queries across data types. Data are comparatively analyzed with other sampled physical and anthropogenic phenomena to observe trends and locations. Animations of historic data are created to aid in the visualization of visitor use and marine mammal migration patterns over variable time frames. Kelp canopy data sets include forest locations and density of cover. The data are used to assess the general health and distribution of *Macrosystis pyrifera* (giant kelp) in Sanctuary waters. In addition to the data collection efforts, SAMSAP is being used as a response tool for resource emergencies such as oil spills. Data collected on spill perimeter changes, spill trajectories, oil types and endangered animals can be downloaded in real-time directly from the aircraft to a portable GIS at Unified Command Centers to aid in both immediate response decisions and long-term impact analysis.

Status: Ongoing since 1998, will continue multiple flights per week as weather and aircraft readiness permits

Partners: NOAA Marine and Aviation Operations

(2) Produce Data And Trends Encyclopedia. Data collected from the vessel traffic surveys will help assist the Sanctuary in understanding levels and types of visitor use (both recreational and commercial) taking place in Sanctuary waters. These data are essential for understanding visitor impacts on marine resources and making sound management decisions. Marine mammal data will provide valuable information on migration patterns to better understand seasonal use of Sanctuary waters by cetaceans and pinnipeds. Kelp canopy monitoring data will help in the effort to assess the impacts of local and global climatic and oceanographic changes on both the health and distribution of kelp forests. Ultimately, the encyclopedia will be made available to scientists and

decision-makers for predictive modeling and to the public for viewing.

Status: Data collection since 1998; SAMSAP encyclopedia development by year 2

Partners: Internal only



Figure 35: The Lake Renegade Seawolf is an integral part of SAMSAP. (CINMS)

STRATEGY CS.2 - COMPREHENSIVE DATA MANAGEMENT

- *Objective:* To develop a well-designed information management and dissemination tool to facilitate conservation science-based decision-making.
- *Implementation:* Research and monitoring staff

Background

Combining CINMS' existing infrastructure capacity with outside software expertise, the Sanctuary will develop a system in which to integrate, process, synthesize and analyze a large volume of Sanctuary data. This system will initially focus on spatial data; however, CINMS will work to incorporate data spanning the variety of Sanctuary programs. For example, the system may include ecological, policy, and historical resource data, as well as data on education and outreach projects. To maximize the utility of such a system, the user should be able to connect across the system for individual querying of all available data sets. The system, which will be web-based, will be made available for practical application by both a casual user and experts.

The objective of comprehensive data management is to develop a well-designed information management and dissemination tool to facilitate conservation science-based decision-making. In order to accomplish this objective, relevant Sanctuary data must be standardized into a system-compatible format. The system will be widely applicable and accessible to CINMS staff, scientists, decision makers and the public. By setting up a database on an in-house server, CINMS will expand the range and uses of existing Sanctuary data.

Activities (4)

(1) Contract A Software Expert. A software expert will evaluate current data structures and types; evaluate network hardware and software and upgrade as appropriate; and implement an Open Database Connectivity-compliant software system to integrate existing data and test for robustness.

Status: Contract is for one year; implement by year 2

Partners: Internal only

(2) Process Existing Data. CINMS will continue current research programs involving data collection on natural and anthropogenic phenomena in the Sanctuary. To enhance the resource management value of these programs, remotely-sensed satellite, aerial and sonar data will be integrated into existing and future research as well as current GIS programs to increase the Sanctuary's ability to carry out complex spatial analyses. To do so, CINMS will procure remote sensing software and perform in-house research and algorithm design while partnering with other NOAA divisions and outside agencies for data sharing and dissemination.

Status: Project completed by year three

Partners: Internal only

(3) Upgrade The CINMS System For Individual Querying. To make the data more accessible and applicable to individual needs, relevant software will be installed on CINMS computer work stations while personnel will be trained in software system use so

individuals can use the database for particular management needs.

Status: Project completed by year four.

Partners: Internal only

(4) Integrate Remotely Sensed Data Into GIS Format. This activity includes processing and analysis of data collected from remote-sensing projects, analysis and integration of data into the existing GIS system and integration of the GIS system into an Open Database Connectivity database. All spatial data will be standardized according to National Spatial Data Infrastructure format (NSDI).

Status: Project completed by year four.

Partners: Internal only

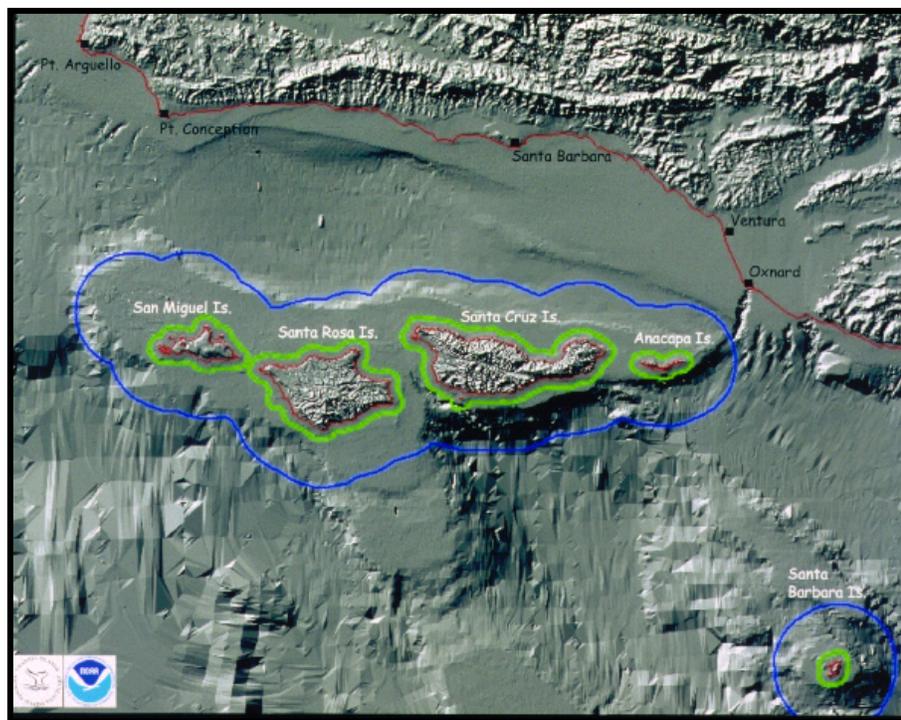


Figure 36: GIS Imagery of CINMS

STRATEGY CS.3 – SUPPORT EXISTING SITE CHARACTERIZATION AND MONITORING PROGRAMS

- *Objective:* To continue supporting existing monitoring programs and build a historical database on Sanctuary resources.
- *Implementation:* Research and monitoring staff

Background

CINMS will continue to develop an inventory and description of habitats, species abundance and diversity, ecological processes, links with abiotic processes (e.g., climate and physical oceanography), and interactions with natural and human disturbance. A baseline inventory is necessary to build a historical database on Sanctuary resources to determine change over time; effectiveness of resource protection efforts; the effects of human activities on natural systems and socioeconomic information on the use, scenic and existence value of resource conservation.

CINMS also strives to achieve a system-wide ecosystem monitoring program to enhance efforts to track structural, functional, biological, chemical and physical conditions of natural marine resources over long periods of time to identify changes resulting from anthropogenic and/or natural disturbance. There are a variety of ecosystem monitoring efforts focused on important management issues, both current and emerging. Based on information from these monitoring programs, actions may be taken to address adverse impacts in order to more effectively conserve, enhance and restore habitats and ecosystems.

Among these various monitoring efforts, the Sanctuary's role is to actively coordinate and support research efforts of other agencies and institutions, provide platform and personnel support for research conducted by CINMS and other agencies, and synthesize existing information to better identify data gaps and information needs. In addition, CINMS will create a structure for data integration and develop a methodology for intuitive data query to be used by resource managers through web-based access (see Strategy CS.2). The following site characterization and monitoring activities are "directed" research projects conducted by others with guidance and/or support from CINMS and NMSP headquarters.

Activities (4)

(1) Continue Mapping the Seafloor Project. Since 1997, CINMS and the U.S. Geological Survey have conducted an ongoing survey to characterize benthic habitats in and around the waters of CINMS. This research is designed to identify and link different habitat types and their associated biological communities. With NOAA vessels as launch platforms, side scan sonar has been and will continue to be used to ground truth sensor imagery of bottom types and bring a finer resolution to Sanctuary bathymetric maps. In addition, ROVs, submersibles and cameras have been and will be used to ground truth the side scan sonar findings. With 30 percent of the mapping complete in Sanctuary waters, it is estimated it will take an additional 10 years to map the remainder. To complete seafloor mapping and site characterization of the CINMS, Sanctuary staff will continue to work closely with the U.S. Geological Survey and other groups.

Status: Surveys ongoing since 1997; work planned to continue until mapping

complete

Partners: US Geological Survey and other experts.

(2) Continue Support For Various Seabird Studies. Through captures, nocturnal spotlight surveys and sea cave nest searches, Xantus's murrelet baseline population data are being collected in the Sanctuary to obtain several measures of baseline data. These data will be used to compare future data to help measure an anticipated Xantus's murrelet population increase after the eradication of black rats on Anacapa Island. Additional seabird studies (Ashy Storm petrels, auklets, etc.) will be supported using the CINMS vessel as a platform.

Status: Xantus's murrelet annual surveys ongoing since 2000 and planned to continue as needed

Partners: Humboldt state University; US Geological Survey; Channel Islands National Park; Point Reyes Bird Observatory; US Navy; US Fish and Wildlife Service; ATTC; CA Dept. of Fish and Game; Minerals Management Service

(3) Continue Support For The CINP's Kelp Forest Monitoring. Since 1981, the NPS has monitored 16 sites in CINMS and Channel Islands National Park on a regular basis. These sixteen sites were selected to represent a range of biogeographical and physical settings of kelp forests in the CINP and CINMS. CINMS has provided vessel support for the program, and staff assist with CINP sampling schemes which include quadrants, band transects, random point contacts, visual fish transects, size frequency surveys, thermographs, video surveys, photogrammetric plots and species inventory surveys. These data indicate temporal trends for 68 kelp forest taxa at 16 sites. Data also reveal differences in abundance of benthic organisms at different locations. This project is one of the longest ongoing data collection efforts in Sanctuary waters, providing statistically significant data on one of the Sanctuary's unique and prolific habitats and CINMS is committed to supporting its continued operation.

Status: Kelp forest monitoring in continuous operation by CINP since 1981; Sanctuary support and involvement to continue through years 1-5, and beyond.

Partners: Channel Islands National Park

(4) Support Other Site Characterization Research Projects. As additional Sanctuary-based research proposals emerge, CINMS will consider supporting select projects having the potential to assist in gaining a better understanding of living marine resources, ecosystems and human activities. As appropriate, CINMS will provide staff, vessel time or other support to these projects.

Status: Ongoing activity since site designation, support of select research projects to continue through years 1-5.

Partners: Various researchers

STRATEGY CS.4 - COLLABORATIVE MARINE RESEARCH PROJECT

- Objective: To foster research collaboration among scientists, various agencies and fishers.
- Implementation: Research and Monitoring staff, Channel Islands Marine Sanctuary Foundation

Background

This strategy seeks to develop a program fostering collaboration among scientists, various agencies and fishermen and promotes cooperative research, resource assessment and protection with stakeholders who have experience and knowledge of the marine environment. The program (which is facilitated by CINMS) is based on a partnership of local marine researchers, conservation organizations, commercial and recreational fishers and regional resource management agencies. It is designed to simultaneously collect resource management information in a cost-effective manner, build working relations between marine stakeholders and provide additional income to participating fishermen.

Collaborative Marine Research Project partners will work together to prioritize resource management issues and questions and use these to select and design research projects. The data collected from these projects will help direct resource management efforts in the northern SCB. Efforts will be made to ensure this program does not duplicate existing research efforts, but rather complements them by filling research gaps and building new knowledge to assist resource managers in the decision making process.

Activities (1)

(1) Select And Implement Research Projects. A planning committee with representatives from participating agencies organizations and institutions will solicit research projects, design a training curriculum and develop a website designed to foster communication and collaboration. The committee will also seek outside funding for additional program support.

Status: Pilot projects selected and funded in 2001/2002; another project selection process was initiated in 2005 following CINMS funding; Sanctuary support to continue through years 1-5 as funding allows

Partners: CA Dept. of Fish and Game; NOAA Fisheries; Channel Islands National Park; UC Santa Barbara; UC Sea Grant; commercial and recreational fishermen; The Ocean Conservancy; Channel Islands Marine Sanctuary Foundation

STRATEGY CS.5 - RESEARCH INTERPRETATION

- *Objective:* To communicate and interpret for the public, NOAA, the scientific community, and other resource managers, the research activities taking place in and around the Sanctuary.
- *Implementation:* Research and monitoring staff; Education and Outreach staff

Background

CINMS seeks to communicate and interpret for the public, NOAA, the scientific community and other resource managers the research and monitoring activities taking place in and around Sanctuary waters. A successful interpretation and outreach program will help to establish an ongoing and open dialogue among scientists, managers and the public. Better outreach will lead to a better understanding of Sanctuary resources and their value and, ultimately, to more informed participation in resource management decision-making and ocean conservation. As an offshore site, CINMS needs to reach out to the regional community to make a connection between their activities on land and in and on the water and how this impacts the marine environment. Fundamental to this effort will be helping the public learn about the value of the natural ecosystem, how human activities affect it and the connection between a healthy economy and a healthy ecosystem.

One model for successful monitoring program outreach is the Sanctuary Integrated Monitoring Network (SIMoN) system, a center for initiating and integrating data collecting efforts and for disseminating information (www.mbnms-simon.org). First implemented at the Monterey Bay National Marine Sanctuary in 2002, SIMoN uses a comprehensive website and database system to help researchers integrate existing monitoring programs and identify gaps in information. As a communication and data discovery tool, SIMoN helps the research community to avoid duplication of efforts so resources can be more effectively directed towards surveying and characterizing habitats, assessing the impact of natural processes or human activities on specific resources, and long-term monitoring. Through a web site, reports, newsletters and symposiums, SIMoN also serves to make monitoring data available to managers, decision makers, the research community, and the general public. The NMSP is seeking to expand SIMoN from the Monterey area to regions further north and south, specifically including the CINMS. Sanctuary staff plan to work closely with SIMoN staff and regional scientists to build and maintain SIMoN for CINMS.

Activities (4)

(1) Interpret and Disseminate Sanctuary Research Findings. CINMS will work closely with the scientific community to serve as a clearinghouse for scientific information, identify information gaps, coordinate and disseminate data, and interpret research generated by the scientific community for public consumption. A key component of this activity will be the development and maintenance of a Sanctuary Integrated Monitoring Network (SIMoN), as described above, and similar to the system already in place at the Monterey Bay National Marine Sanctuary (www.mbnms-simon.org). Another component will be the continuation of an annual report summarizing CINMS research projects/results, as was compiled by Sanctuary staff in 2004.

Status: CINMS research department web site offerings upgraded in 2003/2004.

Since 2004, Sanctuary staff has assisted coordinating and supporting the Sanctuary Advisory Council's (Research Activities Panel), which in part contributes to disseminating research and monitoring program findings. SIMoN development expected by the end of year four.

Partners: Sanctuary Advisory Council, Research Activities Panel

(2) Develop A Research-Focused Website. The website will provide access to various research and monitoring results, data, maps, publications and other materials.

Status: CINMS research web site significantly upgraded in 2003/2004, maintenance and updated postings continue; SIMoN website developed by the end of year four.

Partners: Internal

(3) Hold Annual Research Meetings and Bimonthly Seminar Series. CINMS will ensure public involvement in the Sanctuary by developing a series of workshops on research activities. These workshops will enhance communication among the research community, the public and Sanctuary staff while helping to disseminate current research results to the public in a timely fashion. CINMS will also develop an annual report, for both print and web media, interpreting research activity in and around the Sanctuary during the past year. Materials will be multilingual when appropriate and necessary.

Status: Implement by year 2

Partners: Sanctuary Advisory Council

(4) Develop A Voluntary Research Registry. CINMS will develop an outreach program to encourage the regional scientific community, who are conducting research in the Sanctuary not requiring a Sanctuary permit to inform CINMS of the nature and intent of their research. The voluntary research registry allows CINMS to spatially track research activities, understand the types of research activities being undertaken, and have the Sanctuary benefit from research and monitoring findings from projects the Sanctuary did not directly assist.

Status – Implement by year 2, maintain thereafter

Partners – California Department of Fish and Game; Channel Islands National Park; US Fish and Wildlife Service; NOAA Fisheries; US Coast Guard

STRATEGY CS.6 - MARINE RESERVES MONITORING

- *Objective:* To demonstrate the biological and socioeconomic effects of CINMS marine reserves.
- *Implementation:* Research and Monitoring staff

Background

In 2001, the Marine Reserves Working Group (MRWG), a community-based working group of the Sanctuary Advisory Council, developed and adopted by consensus a series of management recommendations for the monitoring, evaluation, assessment, and data management of proposed marine reserves (no-take areas). The MRWG's implementation recommendations related to research and monitoring were directed at: 1) improving the understanding of ecosystem functions in order to distinguish natural processes from human impacts; 2) monitoring and evaluating the short and long-term effectiveness of reserves for managing living marine resources (including harvested populations); and 3) widely publicizing the findings of monitoring and evaluation efforts. The MRWG also emphasized the importance of socioeconomic monitoring, to allow for adaptive management and to achieve a stated goal of "maintaining long-term economic viability while minimizing short-term losses."

In response to these recommendations, CINMS staff has since 2001 been working closely with several partner agencies and institutions to develop a comprehensive monitoring program, both biological and socioeconomic, for marine reserves. A large workshop was held in March 2003 to develop recommendations for biological and socioeconomic monitoring programs. A *Channel Islands Marine Protected Areas Monitoring Plan*, released in February 2004 by the California Department of Fish and Game (California Resources Agency, CDFG 2004) is supported by CINMS, and calls on the Sanctuary and other agencies and institutions for significant contributions. Also, in April 2005 a similar monitoring workshop focused on gathering initial information and input for development of a deep water marine reserves monitoring plan.

In addition, where appropriate, select existing research and monitoring programs at CINMS are being modified to incorporate the current system of marine reserves existing in the state waters of the Sanctuary. If additional marine reserves are established in the Sanctuary, this strategy will remain the same; however, any addition of federal marine reserves may require research costs beyond those listed in Table 9. For research and monitoring activities conducted without Sanctuary support or involvement, CINMS will use its research tracking and permitting program (Strategies CS.5 – Research Interpretation and OP.2 - Permitting and Activity Tracking) to track external research projects that may aid in the Sanctuary's marine reserve monitoring efforts.

Activities (3)

(1) Maintain and Expand Marine Reserves Biological Monitoring Program. During year one, CINMS will continue to work closely with the California Department of Fish and Game and other partner agencies and institutions to maintain and further develop biological monitoring programs contributing to evaluating the effectiveness of recently established (2003) marine reserves. Many of these existing or envisioned programs are generally described in the *Channel Islands Marine Protected Area Monitoring Plan*, a multi-agency document that will be revised periodically to direct highest priority reserves

monitoring projects (California Resources Agency, CDFG 2004).²⁷ In years two through five, CINMS will, in partnership with other agencies and institutions, conduct, coordinate and support a variety of monitoring activities and host annual research meetings to evaluate findings.

Status: Program development and coordination in year 1, implementation and evaluation throughout years 2-5

Partners: California Department of Fish and Game; Sanctuary Advisory Council and Research Activities Panel; National Park Service; NOAA Fisheries; Partnership for Interdisciplinary Study of Coastal Oceans (PISCO); various universities and other experts and organizations

(2) Develop and Implement Marine Reserves Socioeconomic Monitoring Program.

CINMS will continue to work closely with NOAA economists, partner agencies and institutions, and Sanctuary users to develop socioeconomic monitoring programs aimed at evaluating the social and economic impacts of recently established (2003) marine reserves. Many of these programs are generally described in the *Channel Islands Marine Protected Area Monitoring Plan*, a multi-agency document that will be revised periodically to direct highest priority reserves monitoring projects (California Resources Agency, CDFG 2004).²⁸ In years two through five, CINMS will, in partnership with other agencies and institutions, conduct, coordinate and support socioeconomic monitoring activities and host annual research meetings to evaluate findings.

Status: CINMS Social Science Coordinator hired in 2005. Stakeholder and expert planning workshops to occur in 2005; program implementation in years 1-5

Partners: NOAA Ocean Service's Special Projects Office; Sanctuary Advisory Council and Working Groups; National Park Service; California Department of Fish and Game; NOAA Fisheries; various universities and other experts and organizations

(3) Utilize Various Existing CINMS Research And Monitoring Programs In Support Of Marine Reserves. Such programs, which are implemented both inside and outside of marine reserves, include but are not limited to:

- The Collaborative Marine Research Project (Strategy CS.4)
- Sanctuary Aerial Monitoring and Spatial Analysis Program (Strategy CS.1)
- Habitat Mapping (See Strategy CS.3)
- Seabird Research (See Strategy CS.3)
- Kelp Forest Monitoring (See Strategy CS.3)

Status: (See status previously listed for each strategy referenced above)

Partners: (See partners previously listed for each strategy referenced above)

²⁷ Available online at http://www.dfg.ca.gov/mrd/channel_islands/monitoring.html

²⁸ Ibid.

Table 5: Estimated Costs For The Conservation Science Action Plan

Strategy	Estimated Annual Cost (in thousands)*					Total Estimated 5 Year Cost
	YR 1	YR 2	YR 3	YR 4	YR 5	
CS.1: SAMSAP	\$30	\$40.5	\$23	\$23	\$23	\$139.50
CS.2: Comprehensive Data Management	\$35	\$35	\$45	\$25	\$20	\$160
CS.3: Characterization & Monitoring	-	\$80	\$80	\$80	\$80	\$320
CS.4: Collaborative Marine Research Project**	-	\$50	\$50	\$50	\$50	\$200
CS.5: Research Interpretation**	-	\$42	\$32	\$32	\$32	\$138
CS.6: Marine Reserves Monitoring	\$14.5	\$100	\$100	\$100	\$100	\$414.50
Total Estimated Annual Cost	\$79.5	\$347.5	\$330	\$310	\$305	\$1,372
* Cost estimates exclude base budget funding requirements (salaries, overhead, etc.).						
** Contributions from outside funding sources also anticipated.						

Addressing the Issues – Strategies From Other Action Plans

In addition to the strategies identified in this Conservation Science Action Plan, there are other strategies from other action plans directly or indirectly addressing the issues associated with conservation science, such as:

- WQ.1 – Offshore Water Quality Monitoring;
- MHR.1 – The Shipwreck Reconnaissance Program;
- BE.1 – Completing the NCCOS Biogeographic Study

Addressing the Issues – Regulations

Existing Regulations

Not applicable. There are no existing regulations associated with the issues in the Conservation Science Action Plan.

Potential New or Modified Existing Regulations

Not applicable. There are no potential new or modified regulations associated with the issues in the Conservation Science Action Plan.

BOUNDARY EVALUATION ACTION PLAN

Overview

The issue of expanding the Sanctuary's boundary was raised by many people during a series of seven management plan public scoping meetings held in 1999, and has since been an issue of continued interest to numerous constituents.²⁹ This action plan describes the continued study of and decision-making process for a possible change to the Sanctuary's boundary. Analysis of the Sanctuary boundary has been ongoing since early in the management plan revision process and resulted in a range of preliminary boundary concepts (see Vol. I, Appendix D). Comments are still being accepted on these concepts, and work will continue until sufficient data and analysis have been completed, at which point a supplemental environmental review process will be initiated that will ultimately lead to a decision about changing the Sanctuary's boundaries.

Description of the Issues

Three main factors have driven the NMSP's interest in considering whether to propose a change to the CINMS boundary: 1) an emerging understanding of how the Sanctuary's living resources are integrally connected to marine areas outside the CINMS boundary, 2) heightened awareness of human activities occurring outside the Sanctuary which could pose threats to CINMS resources, and 3) high public interest in boundary expansion as expressed clearly during the 1999 public scoping meetings. Since 1999, these factors were considered as the management plan review process evolved. Process history and findings to date are summarized below, with additional details provided in Vol. I, Appendix D.

Scoping Comments

Applying an ecosystem approach to Sanctuary management was one of the most prevalent issues identified during the 1999 public scoping process and subsequent meetings with the Advisory Council. Some of the specific ecosystem-based management comments and ideas that emerged were:

- The Sanctuary should apply an ecosystem approach, adaptive management and other marine management tools to the framework for the management plan.
- CINMS must consider the interconnections of habitats and ecosystems when proposing management actions.
- Sanctuary resource management should be based on a thorough understanding of ecosystem management as an alternative to specific species management.
- The management plan should address terrestrial impacts on the Sanctuary (such as the relationship between human activities in the island watersheds and their effect on intertidal habitats).

Some of the most frequent comments heard during the public scoping period were that the Sanctuary boundary should be expanded to incorporate more of the regional marine

²⁹ CINMS consists of an area of approximately 1243 square nautical miles (NM) off the southern coast of California. The Sanctuary boundary begins at the Mean High Water Line of and extends seaward to a distance of approximately six NM from the following islands and offshore rocks: San Miguel Island, Santa Cruz Island, Santa Rosa Island, Anacapa Island, Santa Barbara Island, Richardson Rock, and Castle Rock (the Islands).

ecosystem. Doing so, it was argued, would help CINMS better address management issues associated with coastal watersheds, oil and gas development, water quality, and military activity. It would also provide more opportunities for the Sanctuary to improve overall marine resource protection. Although some did not support an expanded Sanctuary boundary, CINMS received hundreds of comments (including three petitions with over 1500 signatures) in support of expanding the Sanctuary.³⁰ Some of the specific boundary-related comments included:

- CINMS should expand its boundary to include the entire Santa Barbara Channel and Santa Catalina Island.
- CINMS should expand its boundary north to San Luis Obispo and the Santa Lucia Bank to better incorporate regional resources and dynamic attributes (upwelling areas, spawning grounds for certain fish species, etc.).
- CINMS should expand its boundary north to meet the southern edge of the Monterey Bay National Marine Sanctuary.
- CINMS should expand its boundary north to Santa Rosa Creek to better protect biodiversity.
- CINMS should evaluate the advantages for the ecosystem by expanding its boundary.
- To better protect biodiversity, CINMS should redraw its boundary to include the Nipomo Dunes and Point Sal.

Determining a Study Area

Immediately following the public scoping meetings, CINMS staff began compiling updated information about the Sanctuary, including its natural and historical resources, trends in human use and activities, and potential threats to Sanctuary resources and qualities within and adjacent to the CINMS. This was done in response to comments and concerns raised during the public scoping meetings and to gain a better understanding of the larger marine ecosystem and human environment within and surrounding the Sanctuary. Defining a geographical “study area” within which to collect data was the first step in this process. Determining a study area was also required to begin work on the Draft Environmental Impact Statement (DEIS) (Vol. II) so environmental and socioeconomic impacts from any proposed changes to CINMS management could be assessed within and adjacent to the Sanctuary.

In 2000, CINMS contracted Dr. Michael McGinnis to provide recommendations on the location of an appropriate study area. This work was contracted specifically to provide information to the Sanctuary useful for determining a management plan study area. The McGinnis (2002) study, called “*A Recommended Study Area for the CINMS Management Planning Process: Ecological Linkages in the Marine Ecology from Point Sal to Point Mugu*,” evaluated the state of knowledge on oceanographic conditions and processes (e.g., water temperatures, currents and upwelling patterns), the range and distribution of marine species found near the Channel Islands, and the status of marine and coastal habitats within the Sanctuary region. It also evaluated such factors as the extent of interconnectedness between species found within the Sanctuary, their needs for outlying habitats and food sources, and the interplay of oceanographic processes. Of particular importance was the finding that the spatial extent of the Sanctuary’s three overlapping oceanographic bioregions (cold temperate, warm temperate, and transition zone) fluctuates more northward than previously known. As such, McGinnis recommended a study area

³⁰ The majority of these comments encouraged CINMS to expand the Sanctuary boundaries to the mainland coast.

extending from the current Sanctuary boundary to the mainland coast, northward to Point Sal, and southward to Point Dume. Based on this work, CINMS staff and the Sanctuary Advisory Council endorsed the proposed management plan study area (Figure 4).

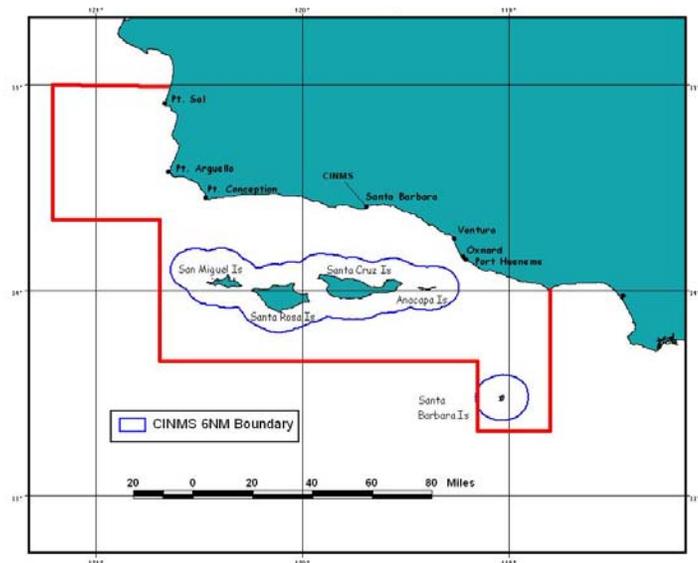
The study area contains a diverse array of natural resources, ecological qualities and cultural resources (detailed information about all of these features is found in the DEIS (Vol. II, Section 3)). Several activities and human-influenced processes occur within the study area as well, including but not limited to:

- Military activities such as training exercises, military testing and evaluation projects for aircraft, ship and missile programs, commercial and military space launches;
- Inputs to coastal marine waters from nonpoint source pollutants (such as coastal watershed runoff) and point-source pollution discharges (including municipal treatment facilities and power plants);
- Offshore oil and gas activities such as exploratory seismic surveys, effluents from oil and gas production, potential spills from pipelines, platforms, and tankers, and the possible decommissioning and potential removal (or not) of platforms;
- Commercial fishing;³¹
- Recreational fishing;³²
- Motorized personal watercraft use; and
- Port and harbor operations.

Considering Preliminary Boundary Concepts

With a better understanding of ecosystem connectivity and human use patterns within the study area, Sanctuary staff and the Advisory Council then began to discuss possible alternatives to the existing Sanctuary boundary. These public discussions with the Advisory Council led to the development a wide range of preliminary Sanctuary boundary concepts within the study area to be further analyzed. These boundary concepts initially included a status quo (no change) boundary configuration along with six expanded boundary configurations. Sanctuary staff then worked with NMSP headquarters staff to refine these

Figure 37: CINMS Management Plan Review Study Area



³¹ To obtain some of this information, CINMS often referred to an ethnographic data survey of long-time mariners familiar with Sanctuary waters (Airame and Simon 2000). This survey characterizes the value of knowledge many of these individuals have about the Sanctuary ecosystems. See the Human Activities action plan for descriptions of these activities and management actions CINMS is proposing to address them.

³² Ibid.

preliminary boundary concepts, which resulted in a suite of alternatives including the status quo configuration plus five boundary concepts. These concepts are described in Vol. I, Appendix D.

In discussing the possibility of expanding the Sanctuary's boundary, and in comparing the various preliminary boundary concepts, several criteria were considered. Table 6 lists some of the main criteria analyzed by staff and reviewed at meetings and special workshops of the Advisory Council.

Table 6: Criteria Used In The Consideration Of A CINMS Boundary Alternatives

Category	Criteria
Ecosystem/ Biogeographic	Contains nationally significant living resources; vital habitats, resources needing protection from human activities, and a definable ecosystem unit.
	Contributes to maintaining, restoring or enhancing living resources, biological diversity, ecosystem structure, and maintenance of ecologically and commercially important species, threatened species or assemblages.
	Contributes to the biogeographic representation of the site.
Social/Cultural	Contains nationally significant non-living or human use resources, nationally significant cultural, archaeological, historical or paleo-ecological resources, areas significant to research, education, and recreation or of aesthetic value.
	Contains resources generating tourism, areas in which human activities are conducted that may need to be managed to protect resources, areas necessary to maintain access to larger areas.
	Future trends in uses depending on or impacting resources
	Impacts to socio-economic uses that may result from Sanctuary designation
Administrative	Provides opportunity for ecosystem-based management.
	Provides opportunity for integrated coastal watershed management.
	Supports, promotes, and coordinates scientific research.
	Cooperates with global programs.
	Contributes to comprehensive and coordinated conservation management.
	Facilitates public and private uses compatible with resource protection.
The area is suitable for monitoring and enforcement.	

Sanctuary Advisory Council Recommendation

In August 2000, after months of deliberation, the Advisory Council delivered a split recommendation to the Sanctuary Manager (now referred to as Sanctuary Superintendent) regarding a preferred boundary concept. One suggested boundary concept extended to the rural Gaviota coast, while avoiding the urban coast (including ports and harbors); the other recommended CINMS consider a relatively unchanged boundary alternative, featuring a "squaring off" of current boundaries and slight expansion to encompass a defunct chemical munitions dumpsite south of Santa Cruz Island.

NOAA Decision to Continue Boundary Analysis

Following the Advisory Council recommendation, NMSP headquarters staff revisited the boundary issue, analyzing criteria (Table 6) and considering input received from the public, stakeholder groups and various agencies. In the summer of 2002, the NMSP concluded conducting additional scientific data collection and analysis was desirable in

order to make a more informed decision on boundary expansion. In particular, it was determined a detailed study of the Channel Islands regional biogeography was needed and would be conducted by NOAA's National Centers for Coastal Ocean Science (NCCOS). It was also determined, because the biogeography assessment was ongoing, no changes to the boundary would be proposed as part of this management plan revision, however, public comment on the preliminary boundary concepts (see Vol. I, Appendix D) is welcomed. Following completion of the biogeography study and the Sanctuary's final management plan, the NMSP will conduct a supplemental environmental review process to consider boundary change options (as well as the status quo boundary), consider additional public comment and Advisory Council input, and identify a preferred boundary alternative.

The remaining work on the biogeographic study and the environmental review steps to follow represent the strategies of this action plan.

Addressing the Issues – Strategies For This Action Plan

The issue of determining the appropriate location of the Sanctuary's boundary is one that has undergone intense scrutiny and study since 1999. The strategies in this action plan present a straight-forward plan for reaching a conclusion on this issue. Basic process steps include the completion of a detailed biogeographic study of the Channel Islands marine region (Strategy BE.1) and the subsequent supplemental environmental review and analysis that will lead to a final determination on the Sanctuary boundary (Strategy BE.2). Both of these strategies are presented below.

It is important to restate that this management plan does not propose any Sanctuary boundary changes at this time, but rather calls for the continuation of a comprehensive, scientifically-based, open public process that will lead to a sound decision in the future. Preliminary boundary concepts previously developed with community input are available for public comment and provided in Vol. I, Appendix D. Additional opportunities for public comment will be provided during the supplemental environmental review. Following the strategies below, Table 7 presents estimated costs for the Boundary Evaluation Action Plan.



Figure 38: Anacapa Island (Glenn Allen)

STRATEGY BE.1 – COMPLETING THE NCCOS BIOGEOGRAPHIC STUDY

- *Objective:* To analyze relevant and comprehensive spatial biological data to evaluate potential implications of boundary expansion concepts previously considered during the management plan revision process.
- *Implementation:* Research and Monitoring staff

Background

In 2003 NOAA's National Centers for Coastal Ocean Sciences (NCCOS) initiated a study entitled "A *Biogeographic Assessment of The Channel Islands National Marine Sanctuary*."³³ The study will be concluded in 2005 (Fig. 8), and will provide a wealth of new information about marine species found in and around the CINMS. The study's information will be critical to attaining a better understanding of the biological implications of expanding, or not expanding, the Sanctuary's boundary.

The CINMS biogeographic study will provide a spatially-articulated characterization of regional marine fauna. The characterization will be based on existing comprehensive and spatially explicit biological and environmental data from all available sources. Data extent, quality, and position will be evaluated. Modeling, data integration, and a quantitative assessment of biotic and habitat resources will then be produced for each of the preliminary boundary concepts previously considered. The results of this work will be used to identify both potentially important ecological areas and time periods.

Activities in this strategy reflect steps the Sanctuary staff will take to assist with the completion of the CINMS biogeographic study.

Activities (3)

(1) Provide project support to NCCOS staff. Sanctuary staff will continue to help assist with the biogeographic study by providing: connections to regional scientists and information sources, in-house GIS data, reviews of preliminary reports and findings, assistance with strategic planning, support for NMSP project funding to NCCOS. Figure 41 below presents an estimated timeline for completion of the NCCOS study.

Status: Completed, 2003-2005

Partners: The Biogeography Team of NOAA's National Centers for Coastal and Ocean Sciences

(2) Refine preliminary study results through public and expert reviews. Sanctuary staff will review preliminary findings of the study and provide comments and suggestions. Staff will also help ensure interested members of the Sanctuary Advisory Council and appropriate regional experts are consulted and have adequate opportunities to review preliminary results.

Status: Completed in 2005

Partners: Sanctuary Advisory Council, select regional scientists and researchers.

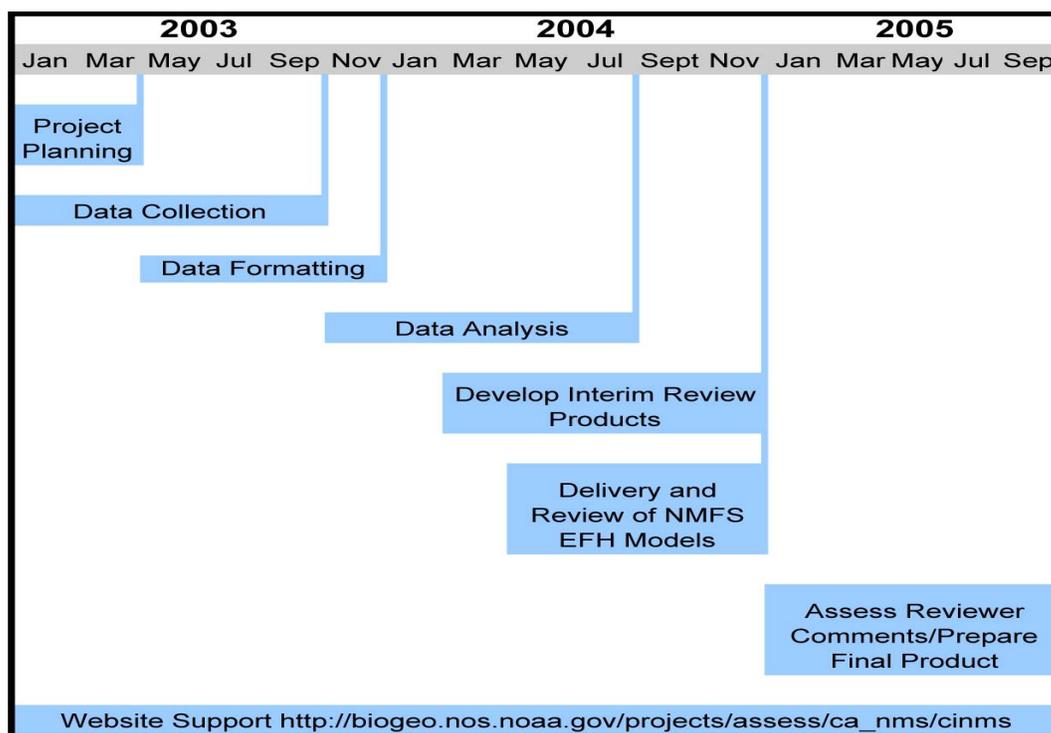
³³ The biogeography report is available on line at <http://ccma.nos.noaa.gov/products/biogeography/cinms/>.

(3) **Complete, distribute and apply findings from the final study.** Upon completion of the study, Sanctuary staff will ensure adequate distribution of the report is provided to interested parties, including the Sanctuary Advisory Council. An important aspect of the study’s completion will be to ensure Sanctuary staff and interested parties understand the results and how best to apply the findings to the ongoing boundary change consideration.

Status: Implemented upon completion of biogeographic study.

Partners: Sanctuary Advisory Council and Working Groups

Figure 39: Steps and Timeline for Completion of the CINMS Biogeography Study



STRATEGY BE.2 – FINAL DETERMINATION ON BOUNDARY ISSUE

- *Objective:* To conduct a scientifically rigorous, open public process to consider, analyze and make a final determination on changing the boundary of the Sanctuary.
- *Implementation:* Research and Monitoring, Education and Outreach, Marine Resource Protection, Technology Integration and Management and Community and Management Planning staff

Background

This strategy presents steps in an environmental review and decision-making process leading to a final decision on changing of the Sanctuary boundary. The environmental review process will build on significant work done to date, as well as new findings from the Biogeography study (see Strategy BE.1). In addition, in compliance with the National Environmental Policy Act (NEPA), the potential environmental and socioeconomic impacts associated with any boundary change alternative will be analyzed, documented in a supplemental environmental impact statement, and made available for public review and comment. The process will be open and transparent to the public, involving significant discussion with and input from the Advisory Council and other interested agencies and parties.

Activities (2)

(1) Prepare and release Draft Supplemental Environmental Impact Statement/ Supplemental Management Plan. This activity encompasses a number of process steps to be taken in sequence, including: a) assimilation of biogeography study findings into a framework for fully analyzing boundary change options; b) development of a draft Supplemental Environmental Impact Statement (SEIS) and draft Supplemental Management Plan (SMP) to support consideration and analysis of various boundary change alternatives, and c) release of the draft SEIS/SMP to solicit and consider public and agency comments and suggestions. The Sanctuary Advisory Council will be an important body to offer review comments, feedback, and recommendations on boundary alternatives proposed within the SEIS/SMP.

Status: To be initiated after completion of final management plan.

Partners: Multiple agencies, Sanctuary Advisory Council

(2) Make final decision on boundary; Issue Final SEIS/SMP and Final Determination. This activity also encompasses a number of process steps leading to a final decision on the Sanctuary boundary. These steps include: a) responding to all comments received on the draft SEIS/SMP, b) developing a final SEIS/SMP; issuance of additional Sanctuary regulations, if necessary.

Status: To be initiated after completion of the draft Supplemental Environmental Impact Statement.

Partners: Internal

Table 7: Estimated Costs For The Boundary Evaluation Action Plan

Strategy	Estimated Annual Cost (in thousands)*					Total Estimated 5 Year Cost
	YR 1	YR 2	YR 3	YR 4	YR 5	
BE.1: NCCOS Biogeographic Study	\$75**	\$0	\$0	\$0	\$0	\$75**
BE.2: Final Determination on Boundary	\$0	\$125	\$125	\$0	\$0	\$250
Total Estimated Annual Cost	\$75**	\$125	\$125	-	-	\$325
* Cost estimates exclude base budget funding requirements (salaries, overhead, etc.).						
** Includes funds expected from the NMSP						

Addressing the Issues – Strategies From Other Action Plans

While this action plan is in some ways unique among those found in this draft management plan, there are some strategies that may serve to better inform the analysis and decision-making processes needed to reach a sound decision on the boundary change issue. Related strategies include:

- EI.1 – Identifying & Assessing Emerging Issues
- CS.3 – Supporting Existing Site Characterization And Monitoring Programs
- CS.5 – Research Interpretation
- WQ.2 – Water Quality Protection Planning
- OP.1 – Sanctuary Advisory Council Operations

Addressing the Issues – Regulations

Existing Regulations

Not applicable at this time. Existing regulations establish the current boundary of the CINMS and the set of regulations applicable to that boundary (see Vol. I, Appendix D).

Potential New or Modified Regulations

Not applicable at this time. The consideration of expanding the CINMS boundary will involve an analysis of the applicability and impact of Sanctuary regulations within any expanded Sanctuary area. The process of developing a Supplemental Environmental Impact Statement (SEIS) will require a comprehensive analysis of regulatory options and impacts with regard to a range of boundary alternatives. Subsequent to analysis and a public review of the SEIS, the issuance of a Final Supplemental Environmental Impact Statement (FSEIS) and Final Rule will establish Sanctuary regulations within the CINMS boundary, if changed.

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MARINE ZONING ACTION PLAN

Overview

Marine zones are discrete areas contained within the boundary of national marine sanctuaries having special guidelines or regulations for activities differing from the guidelines or regulations applying throughout a sanctuary as a whole. By augmenting sanctuary-wide regulations, marine zoning is used to provide additional protection to resources and to manage multiple uses within discrete areas of a sanctuary.

This action plan is focused on the role of marine zoning as a potential tool to improve resource protection and enhance public use and enjoyment of CINMS. Zones implemented by various authorities have been in place in the Sanctuary since 1980 (e.g. large vessel exclusion zones near island shores and overflight zones to limit wildlife disturbance) and the NMSP continues to support their management, monitoring, and enforcement.

The NMSP will continue to consider the use of marine zoning as a potential resource management tool. Future zoning strategies could be used to 1) protect sensitive marine resources, including cultural resources; 2) separate conflicting uses; and 3) focus management in specific areas.

Description of the Issues

Issues that have led CINMS to consider various new zones within the Sanctuary include: 1) the need for improving the Sanctuary's spatially-explicit understanding of marine resources and human activities within CINMS; 2) a need for increased site-specific protection of biodiversity within the Sanctuary; and 3) a need to address concerns about potential negative impacts from motorized personal watercraft.

Limited Spatial Data on Sanctuary Resources and Use

Following designation in 1980, the Sanctuary was managed for many years without the benefit of having access to a comprehensive database of information about the species, habitats, physical features, and human use patterns present within CINMS. In recent years, however, CINMS has begun to develop a growing database of information about many of these resources and human activities. Aided by expertise on staff, state of the art geographic information system (GIS) databases, data-sharing partnerships and data collection programs, CINMS now manages extensive databases of information about physical and biological resources of the Sanctuary, as well some human use patterns. Much of this data is still limited in some ways, however, and requires additional analysis before it can be readily used to help address resource management problems. CINMS staff have acknowledged important work must continue with regard to gathering and analyzing spatial data, and recognize this information will form the basis for future considerations of zoning and other management tools within the Sanctuary.

Zoning and Marine Reserves/Conservation Areas

During scoping, many members of the public and the Advisory Council encouraged CINMS to improve resource protection through the use of new conservation-based

management strategies and tools such as the “precautionary approach” to management,³⁴ managing for sustainability, and marine reserves or “no-take” areas.³⁵ The creation of marine reserves within the Sanctuary was a highly charged issue that ultimately became one of the most ubiquitous subjects at the scoping meetings and the following.³⁶ Although there were many comments not supporting the idea of marine reserves in the Sanctuary, most individuals who brought up reserves supported their use by CINMS as a biodiversity management tool. Some of the specific scoping comments in support of marine reserves included:

- CINMS should establish a network of marine reserves to promote biodiversity, improve scientific understanding, and maintain some areas of the oceans as wilderness.
- CINMS should develop a comprehensive and complete management plan with research areas, no-take zones, and ground truth areas for sampling.
- CINMS should evaluate the resource impacts from commercial fisheries and consider no-take zones as a management tool.
- CINMS should perform economic studies to determine the effects of no-take areas.
- The revised CINMS management plan must clarify and formalize the process for the management plan and marine reserves (including relationships with other agencies).
- Marine reserve should be a fundamental part of the revised CINMS management plan.

From 1999-2003, CINMS worked in partnership with the California Department of Fish and Game to support a stakeholder-based public process to consider the need for establishing marine reserves within the Sanctuary. The Sanctuary Advisory Council and its appointed Marine Reserves Working Group (MRWG) agreed to address the issue and provided for public involvement, scientific input, and stakeholder guidance over a three-year period. Early in the process, the MRWG reached consensus on the development of a problem statement that best represents a description of the issues underlying the Sanctuary’s consideration of marine reserve establishment within CINMS:

The urbanization of southern California has significantly increased the number of people visiting the coastal zone and using its resources. This has increased human demands on the ocean, including commercial and recreational fishing, as well as wildlife viewing and other activities. A burgeoning coastal population has also greatly increased the use of our coastal waters as receiving areas for human, industrial, and agricultural wastes. In addition, new technologies have increased the efficiency, effectiveness, and yield of sport and commercial fisheries. Concurrently there have been wide scale natural phenomena such as El Nino weather patterns, oceanographic regime shifts, and dramatic fluctuations in pinniped populations.

³⁴ The precautionary approach is based on the principle that, "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." (U.N.C.E.D. 1992).

³⁵ Marine reserves (or no-take zones) may be useful components in marine ecosystem management (NRC 2001).

³⁶ Over 6,700 comments were submitted on the subject of reserves during the various public comment periods for the CINMS management review. Comments were submitted via letter, email, phone calls, post cards, and comment forms. Of these, 98% of the comments supported science-based reserves to protect the CINMS ecosystems.

In recognizing the scarcity of many marine organisms relative to past abundance, any of the above factors could play a role. Everyone concerned desires to better understand the effects of the individual factors and their interactions, to reverse or stop trends of resource decline, and to restore the integrity and resilience of impaired ecosystems.

To protect, maintain, restore, and enhance living marine resources, it is necessary to develop new management strategies that encompass an ecosystem perspective and promote collaboration between competing interests. One strategy is to develop reserves where all harvest is prohibited. Reserves provide a precautionary measure against the possible impacts of an expanding human population and management uncertainties, offer education and research opportunities, and provide reference areas to measure non-harvesting impacts. (Marine Reserves Working Group, 1999)

Additional background information on the consideration and implementation of marine reserves within the Sanctuary is found below at Strategy MZ.2. In addition, the state's environmental review document on Channel Islands marine protected areas is on line at http://www.dfg.ca.gov/mrd/ci_ceqa/index.html.

A separate environmental review process, led by CINMS and NMSP headquarters, is now underway to consider the establishment of additional marine reserves and conservation areas within Sanctuary waters to complement marine protected areas established by the California Fish and Game Commission in 2003. This environmental review process is described below at Strategy MZ.2.

Zoning and Motorized Personal Watercraft

Concerns about impacts from the use of motorized personal watercraft (MPWC) were raised during the public scoping process. In 2000, a National Park Service ban on use of MPWCs at units of the NPS went into effect due to the noise impacts on wildlife and impacts on water and air quality (36 CFR 3.24), and as such applied to waters of the Channel Islands National Park (which extend 1 NM from island shores). According to sightings from the Sanctuary's aerial monitoring program, the activity has occurred only



Figure 40: Sea Kayakers Near Santa Cruz Island (CINMS)

rarely within CINMS. However, in recent years the Channel Islands National Park has observed a slight increase in use of motorized personal watercraft within the Park, and Park staff issue several dozen warnings per year for violation of the NPS ban (Fitzgerald 2005). Along the mainland coast motorized personal watercraft use is a popular activity. In 2000, an estimated 8,335 person-days of activity from rental and private boats took place along the shoreline of the management plan study area (extending from Point Mugu to Point Sal), and there was one rental business operating in Santa Barbara (Ehler and Tetra Tech 2002). The National Park Service defines a

motorized personal watercraft as a vessel, usually less than 16 feet in length, which uses an inboard, internal combustion engine powering a water jet pump as its primary source of propulsion, and intended to be operated by a person or persons sitting, standing or kneeling on the vessel, rather than within the confines of the hull (36 CFR 1.4(a)).

Although MPWC use has not been a popular activity within the Sanctuary, more is known today about the threat such craft pose to marine resources. The noise, air, and water quality pollution generated by MPWCs, as well as the nearshore operation of MPWCs, may adversely impact the living marine resources within the CINMS through direct disturbances as well as environmental degradation. MPWCs operate in a manner unique among recreational vehicles and pose a threat to wildlife. Their shallow draft enables them to penetrate areas not available to conventional motorized watercraft (NPS 2000, MOCZM 2002). The high speed and maneuverability of MPWCs, along with the tendency to operate them near the shore and in a repeated fashion within a confined area, results in recurring disturbance to animals and habitats (Rodgers and Smith 1997, Snow 1989). Studies have shown the use of MPWCs in nearshore areas can increase flushing rates, reduce nesting success of certain bird species, impact spawning fish, and reduce fishing success (Burger 1998, Snow 1989). The NPS (2000, 2004) identified several of these impacts along with interruption of normal activity, avoidance and displacement, loss of habitat use, interference with movement, direct mortality, interference with courtship, alteration of behavior, change in community structure, elevated noise levels, and damage to aquatic vegetation. Further, offshore marine mammals or surfacing birds may be unaware of the presence of these vehicles due to their low frequency sound; when the inability to detect the vehicles is combined with their high speed and rapid and unpredictable movements, both animals and operators are at risk (Snow 1989).

Water quality concerns related to use of MPWC, and in particular those with two-stroke engines, include discharge of oil and gas, and air pollutants. MPWC using two-stroke engines may discharge as much as 25 percent of their gas and oil emissions directly into the water (NPS 2000). Two-stroke engines may also expel lubricating oil as part of their exhaust, and emit air pollutants such as volatile organic compounds, nitrogen oxides, particulate matter, and carbon monoxide (NPS 2004).

A review of information currently available from MPWC manufacturers indicates they have made efforts to reduce emissions and noise through use of more efficient four-stroke engines as well as other technology (e.g., Bombardier Recreational Products, Inc. 2005a, 2005b; Personal Watercraft Industry Association 2005). However, it is not clear whether such improvements have rendered emission and noise impacts due to motorized personal watercraft insignificant. While industry sponsored studies indicate MPWCs are no louder than similar motorized vessels under analogous conditions, other studies indicate because MPWCs travel repeatedly in the same area, continually leaving and reentering the water, they create rapid cycles of noise that disturb humans and wildlife (MOCZM 2002). Industry improvements in noise and other emissions do not address impacts associated with the high speed, maneuverability, shallow draft and nearshore operation of MPWC.

Addressing the Issues – Strategies For This Action Plan

Determining the appropriate use of marine zoning within the Sanctuary, specifically with regard to marine reserves and conservation areas, is a management challenge that has undergone intense scrutiny and study since 1999. Strategies in this action plan present a

straight-forward plan for reaching a conclusion on the marine reserves issue. Basic steps include the completion of an environmental review process for the consideration of marine reserves and conservation areas (Strategy MZ.2). Additional forms of zoning may be considered on an as-needed basis (Strategy MZ.1). Both of these strategies are detailed below, followed by a listing of related strategies from other action plans, and existing or proposed CINMS regulations related to zoning within the Sanctuary. Among the Sanctuary regulations listed is a proposed prohibition on use of motorized personal watercraft within 1 nm of island shores, which is intended to complement, strengthen enforcement of, and increase compliance with an existing National Park Service ban within the same area (see Vol. II, DEIS, Sec. 2).

STRATEGY MZ.1 – GENERAL MARINE ZONING

- *Objective:* To consider the use of marine zoning as a tool to protect and enhance biodiversity and manage various uses of the Sanctuary.
- *Implementation:* Marine Resource Protection staff

Background

Zoning represents an important management tool used in the Sanctuary for various purposes since 1980 and is of continued interest to CINMS. CINMS currently contains zoned areas that provide a 1 nm buffer area around the islands prohibiting cargo vessels and vessels engaged in the trade of servicing offshore installations, a 1 nm by 1000 foot high area around the island shores within which aircraft must not disturb marine mammals and seabirds, and a two nm buffer around the islands within which construction upon or drilling into the seabed is restricted. In addition, other resource protection agencies have established and manage marine zones wholly or partially within the Sanctuary, such as state marine reserves and state marine conservation areas established by the California Fish and Game Commission, and the voluntary vessel traffic separation scheme running along the Santa Barbara Channel. The Channel Islands National Park (CINP) also has several zoned areas along the island shores for different public uses, to protect seabird colonies and marine mammal haul outs. More recently, the CINP is instituting a new zoning approach to managing Park lands, coasts and adjacent waters. Where such zoning occurs or is proposed within the Sanctuary, CINMS has worked closely with appropriate agencies to collaborate or partner in improving resource protection and public access.

This strategy calls for CINMS to first improve its baseline of spatial data on physical and biological resources of the Sanctuary, as well as human use patterns. Working from this baseline, CINMS will be in a better position to work with partners on assessing management problems from a spatial standpoint, and will be able to consider the utility of additional marine zoning within the Sanctuary.

Activities (2)

(1) Analyze spatial data. CINMS, in consultation with the Advisory Council and partnership with various agency partners, will analyze spatial data collected on the distribution of marine resources and human activities. This analysis will provide a clearer understanding of the geographic extent of sensitive resources and human activities, and will provide the baseline information necessary for consideration of zoning as a tool to help address specific management issues.

Status: Complete by year four

Partners: Sanctuary Advisory Council, Federal and state agency resource management partners

(2) Evaluate utility of zoning strategies for the Sanctuary. In addition to ongoing activities related to consideration of Federal marine reserves and conservation areas, the Sanctuary (working with the Advisory Council) will evaluate resource management needs and consider the utility of other types of marine zones. If appropriate, a zoning plan will be proposed, to include goals, objectives, implementation strategies, monitoring programs, enforcement plans and performance indicators.

Status: Complete evaluation by year five

Potential Partners: Sanctuary Advisory Council, Channel Islands National Park U.S. Fish and Wildlife Service, U.S Coast Guard, California Department of Fish and Game, Pacific Fishery Management Council and other appropriate local, state and Federal agencies.

STRATEGY MZ.2 – CONSIDERATION OF MARINE RESERVES AND CONSERVATION AREAS

- *Objective:* To conduct a scientifically rigorous, open public process to consider, analyze, and make a final determination on the establishment of marine reserves and conservation areas within the Sanctuary.
- *Implementation:* Marine Resource Protection and Community and Management Planning staff

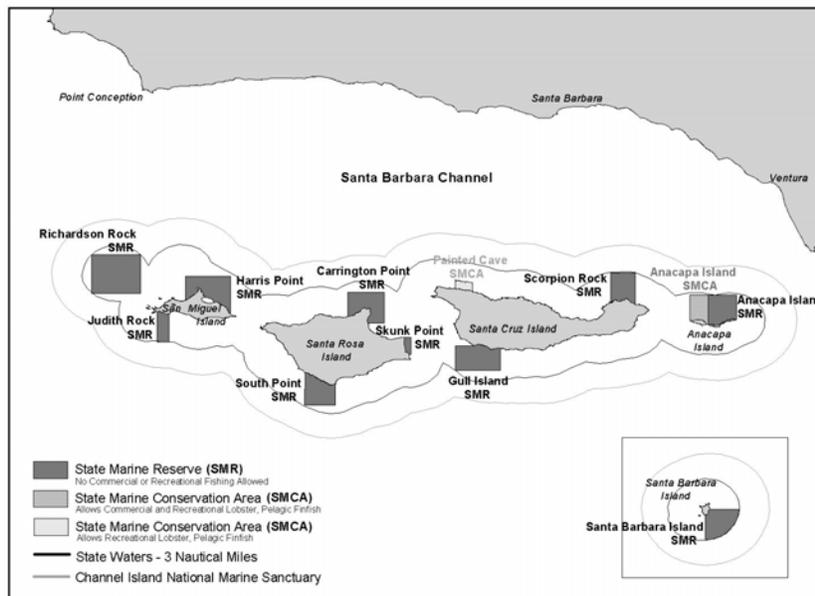
Background

In April 1999, the Sanctuary and the California Department of Fish and Game (CDFG) developed a joint Federal and state partnership to consider establishing marine reserves (no-take zones) within the Sanctuary. The marine reserves process was initiated in July of 1999, when the Sanctuary Advisory Council created a multi-stakeholder Marine Reserves Working Group (MRWG) to seek agreement on the potential establishment of marine reserves within the Sanctuary. Included in the process was an Advisory Council-designated Science Advisory Panel and a NOAA led socioeconomic team made up of scientists, academics and practitioners. Extensive scientific and socio-economic data were collected in support of the reserves process. From July 1999 to May 2001, the MRWG met monthly to receive, weigh, and integrate advice from technical advisors and the public and to develop a recommendation for the Advisory Council. In May 2001, results were forwarded to the Advisory Council, including the MRWG consensus agreements, areas of disagreement, Science Panel advice and socio-economic analysis. A composite map with two marine reserve network options ranging from 12 to 29 percent of the Sanctuary was also forwarded. In June 2001, the Advisory Council transmitted the full public record of the MRWG and the Advisory Council to the CINMS and CDFG, and recommended the agencies craft a final recommendation for consideration by the California Fish and Game Commission (CFGC).

Sanctuary and CDFG staff continued to work with stakeholders in crafting a final recommendation. On August 24, 2001 the Sanctuary and CDFG recommended to the CFGC a network of reserves and protected areas that would include approximately 25% of the Sanctuary. The CDFG prepared environmental review documents pursuant to the California Environmental Quality Act (CEQA), which included an analysis of a range of alternative reserves networks, including identifying the Sanctuary and CDFG recommended option as the preferred alternative. On October 23, 2002, the CFGC approved the preferred alternative and the establishment of a network of ten marine reserves and two marine conservation areas (limited-take zones) within State waters of the Sanctuary (approximately 11%). The State's network went into effect on April 9, 2003.

In 2003, the NMSP initiated a process to consider under the NMSA the establishment of marine reserves and/or marine conservation areas within the Sanctuary to complement the existing state reserves and complete the envisioned reserve network. This process builds upon nearly four years of work to date on this matter, including the information and analyses contained in the State's CEQA environmental documents.³⁷

³⁷ Due to its own complexities and resource requirements, this reserves process is being implemented separately from the management plan revision process. A complete history of the Channel Islands Marine Reserves Process and the State's Environmental Documents is online at www.dfg.ca.gov/mrd/channel_islands/ and www.channelislands.noaa.gov/marineres/main.html.

Figure 41: Marine Reserves and Conservation Areas Within

Strategy MZ.2 identifies the basic steps in this process, which builds on significant work done to date, as well as new findings. It is important to note this process is being developed for a regulatory regime that would be implemented under the NMSA. Currently, an analysis to determine the feasibility of implementing marine reserves in CINMS under

the Magnuson-Stevens Fishery Conservation Act is also being conducted by NOAA Fisheries. Once complete, NOAA will determine which regulatory regime is best suited to meet the goals and objectives for the proposed reserves. At the time of this writing, a decision has not yet been made.

A Notice of Intent to prepare the reserves DEIS under the NMSA, which provides detailed background information on the process to date, is available on the CINMS website at <http://channelislands.noaa.gov/marineres>. Also available on this website is the *Staff Preliminary Working Draft Document for Consideration of a Network of Marine Reserves and Marine Conservation Areas within the Channel Islands National Marine Sanctuary*. This document was prepared as an initial building block for the development of the reserves DEIS under the NMSA and contains descriptions of: the purpose and need for action; the affected environment; a preliminary range of alternatives; and an initial analysis of environmental impacts.

Activities (2)

(1) Prepare Draft Environmental Documents. For the proposed regulatory regime under the NMSA, CINMS and NMSP headquarters staff will prepare a DEIS, any proposed regulations, and any proposed modifications to the Sanctuary's designation document, as warranted. This document will examine a range of management and regulatory alternatives. If implemented under the NMSA, any change to the Sanctuary's terms of designation will be pursuant to the requirements of the NMSA, including necessary

consultations with federal and state agencies, the Pacific Fishery Management Council (PFMC), and others, and submission of the EIS, proposed regulations and any proposed changes to the terms of designation to Congress, the Governor of the State of California, and the public for comment. Further, the PFMC will be provided the opportunity to prepare draft Sanctuary fishing regulations for the Exclusive Economic Zone portion of the Sanctuary for any marine reserve proposal. Finally, any change to a term of designation would not apply to State waters if the Governor objects during the requisite review period. Throughout the process, the Sanctuary Advisory Council will also be an important body to offer review comments, feedback, and recommendations. Upon public release of the draft environmental impact statement, public hearings will be held to gather input from the community on the environmental documentation and alternatives. The public comment period will be at least sixty days.

Status: In progress since 2003

Partners: NOAA Fisheries, Pacific Fishery Management Council, Sanctuary Advisory Council, California Department of Fish and Game

(2) Issue Final Environmental Impact Statement and Final Rule. If CINMS reserves are implemented under the NMSA, a final EIS will be issued. A number of process steps leading to implementation of marine reserves under the NMSA would be completed, including: a) responding to all comments received on the DEIS, b) developing a Final Environmental Impact Statement (FEIS); and c) issuance of new federal Sanctuary regulations, if necessary.

Status: If implemented under the NMSA, FEIS completion expected 2006

Partners: NOAA Fisheries, Pacific Fishery Management Council, Sanctuary Advisory Council, California Department of Fish and Game

Table 8: Estimated Costs For The Marine Zoning Action Plan

Strategy	Estimated Annual Cost (in thousands)*					Total Estimated 5 Year Cost
	YR 1	YR 2	YR 3	YR 4	YR 5	
MZ.1: Marine Zoning	-	-	\$10	\$10	-	\$20
MZ.2: Consideration of Federal Marine Reserves	\$50	\$30	-	-	-	\$80
Total Estimated Annual Cost	\$50	\$30	\$10	\$10	\$0	\$100
* Cost estimates exclude base budget funding requirements (salaries, overhead, etc.).						
** Includes funds expected from the National Marine Sanctuary Program.						

Addressing Zoning Issues – Strategies From Other Action Plans

Five other strategies may serve to better inform the analysis and decision-making processes needed for consideration of zoning with marine reserves or for other purposes. These related strategies include:

- EI.1 – Identifying & Assessing Emerging Issues
- CS.1 – Sanctuary Aerial Monitoring And Spatial Analysis Program
- CS.3 – Supporting Existing Site Characterization And Monitoring Programs

- CS.5 – Research Interpretation
- WQ.2 – Water Quality Protection Planning
- OP.1 – Sanctuary Advisory Council Operations

Addressing Zoning Issues – Regulations

Existing Regulations Related to Zoning (see Vol. I, Appendix C)

- Prohibition on disturbing seabirds or marine mammals by flying aircraft below 1000 feet within 1 nm of island shores, except for enforcement purposes, to engage in kelp bed surveys or to transport persons or supplies to or from an Island.
- Except to transport persons or supplies to or from an Island, prohibition on approach within 1 nm of island shores for vessels engaged in the trade of carrying cargo, including, but not limited to, tankers and other bulk carriers and barges, or any vessel engaged in the trade of servicing offshore installations.
- Within 2 nm of any island, prohibition of constructing any structure other than a navigation aid, drilling through the seabed, or dredging or otherwise altering the seabed in any way, with exceptions for the laying of pipeline for purposes of exploring for, developing, and producing hydrocarbons, to anchor vessels, or to bottom trawl from a commercial fishing vessel.

Potential New or Modified Regulations related to Zoning (DEIS, Vol. II, Section 2)

- Except to transport persons or supplies to or from an Island, prohibition on operating within one NM of an Island any vessel engaged in the trade of carrying cargo, including but not limited to, tankers and other bulk carriers and barges, any vessel engaged in the trade of servicing offshore installations, and any vessel of three hundred gross registered tons or more, except fishing and kelp harvesting vessels.
- Prohibition of motorized personal watercraft within one nm of island shores (same as existing ban already in place at the Channel Islands National Park)

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WATER QUALITY ACTION PLAN

Overview

This action plan describes the Sanctuary's management strategies for understanding and addressing water quality. Traditionally, the Sanctuary's water quality efforts have been primarily limited to supporting select monitoring projects conducted by outside parties, facilitating public discussion and investigation of water quality issues (through the Sanctuary Advisory Council and its working groups) and producing various education and outreach materials aimed at teaching basic water quality and watershed science as well as promoting practices to limit pollution. This action plan addresses the need for and commitment of CINMS to work in partnership with many individuals and entities to find answers to important unanswered questions about water quality, from science to management policies and regulations.

The offshore water quality monitoring strategy contained in this action plan demonstrates the NMSP's ongoing commitment to better understand water quality conditions and dynamics in the Southern California Bight and Santa Barbara Channel. Water quality monitoring data is used to evaluate and understand localized and large-scale spatial and temporal impacts from natural and anthropogenic sources, and their potential or actual impacts on Sanctuary resources. These data may also have utility for evaluating the effectiveness of water quality management efforts over time.

The water quality protection planning strategy explains how the Sanctuary will prioritize threats and look for potential areas of cooperation and integration with existing water quality resources and management programs. CINMS will take a partnership-based approach to water quality protection in order to leverage outside resources and expertise and given many priority Sanctuary water quality issues may be best addressed by management programs already established in the region. A key to making progress on protecting Sanctuary water quality is to recognize which programs are most suitable for addressing water quality issues, and, if necessary, identify how these programs can be enhanced to ensure appropriate water quality conditions. It is also important to determine if any water quality issues warrant the inception of additional Sanctuary-directed water quality protection programs.

Description of the Issues

Sanctuary water quality was a commonly expressed issue at all of the management plan revision public scoping meetings. In recent years, the increased frequency and extent of regional beach and shellfish-bed closures coupled with decreases in local fishing catches are taken as signs of declining water quality in the Sanctuary region. CINMS received scores of comments on water quality issues from various interests in the regional communities. Sanctuary staff, working with the Advisory Council, then synthesized the comments related to water quality, researched the issues more fully, and developed the following list of priority sub-issues:

- CINMS needs a comprehensive, coordinated plan for protecting resources from water quality impairment;
- CINMS should increase water quality public awareness, research and monitoring;
- The Sanctuary should be proactive about terrestrial impacts on water quality;

- CINMS should address water quality impacts from outside the Sanctuary boundary from potential sources such as power plants, vessels, coastal runoff, treatment plants and shipwrecks containing hazardous materials;
- The Sanctuary should increase partnerships with coastal watershed and water quality groups, other regional water quality authorities, and organizations currently collecting water quality data.

These sub-issues indicate water quality in the study area and Sanctuary is affected by pollution from a variety of terrestrial and marine-based activities and land uses. Because many pollutants can be carried to the Sanctuary by ocean currents, the spatial extent of water quality threats is much larger than the Sanctuary itself. This pollution is from both point sources (such as power plants or treatment plants) and nonpoint sources (such as urban runoff), explained in more detail below. These sub-issues also demonstrate a need for greater coordination among the numerous federal, state, and local government entities and other organizations playing roles in water quality protection within the study area. For example, various aspects of water quality in the study area are addressed by the U.S. Environmental Protection Agency Region Nine, the California State Water Resources Control Board, the Central Coast (region three) and Los Angeles (region four) Regional Water Quality Control Boards, the California Coastal Commission, Ventura and Santa Barbara Counties, and many municipalities, to name a few. CINMS will build partnerships with these and other water quality authorities and organizations to determine which programs best address particular water quality issues, to enhance existing water quality protection programs, to identify needs for additional programs, and to address water quality education and outreach, and research and monitoring.



Figure 42: Willows Anchorage, Santa Cruz Island
(Adrian M. Wenner)

Two categories of pollution are the principal factors affecting Sanctuary water quality: point source and non-point source. When it occurs, *point source pollution* can be traced to identifiable sources, such as oil platforms, power plants, ocean dumping and marine debris sites, industrial effluent discharge sites, municipal sewage treatment plants, and surface runoff (including storm outfalls and dry weather flows). *Nonpoint source pollution* originates from diffuse sources, such as atmospheric deposition and agriculture, urban, and industrial activities. As runoff moves over and through the ground

picking up and carrying away natural and human-made pollutants, it deposits them into lakes, rivers, wetlands, and coastal waters.

Point and nonpoint pollution can impact marine resources in a number of ways. Toxic effluents can lead to metabolic impairment or cellular damage, physiological damage or behavioral changes at the organism level, changes in mortality or biomass at the population level, and changes in species distribution or altered trophic interactions at the community level (Klee 1999). Re-suspended sediments may impact benthic marine life by interfering with filter feeding and respiratory functions and causing a loss of food sources and habitats. Organic contaminants in the marine environment may lower photosynthesis and oxygen levels and introduce disease. High nutrient concentrations can lead to eutrophication, causing excess algal growth and oxygen depletion. Some point source discharges have the potential to introduce non-native species into the environment. Marine debris can lead to injury or mortality of marine mammals and seabirds through ingestion and entanglement.

Numerous statutes regulate a variety of issues related to water quality. Many of the programs these acts established, and the agencies charged with implementing them are described in detail in the watersheds and jurisdictional setting sections of the DEIS (Vol. II, Section 3.3 and 5.0).

Point Source Pollution

Approximately 82 percent of municipal wastewater effluents, 70 percent of the power plant-returned cooling waters, 95 percent of the discrete industrial wastes, and 71 percent of the surface runoff in Southern California enters the coastal waters between Point Dume and San Mateo Point (Anderson *et al.* 1993), which incorporate the mainland coast adjacent to the Sanctuary. Anderson *et al.* (1993) also identified 178 discrete sources of contaminant and nutrient input to the Southern California Bight from Point Conception to the Mexican border. Of these, 26 are in the Channel Islands region and consist of oil platforms, sewage outfalls, power plants, ocean dumping sites, industrial waste, and storm water outfalls. Potential impacts to Sanctuary water quality from these sources vary and are described below.

Municipal Treatment Plants

Most of the water used for domestic and industrial purposes in the coastal region adjacent to the Sanctuary enters municipal treatment (or sewage) plants³⁸ and eventually empties into the ocean (Table 10). The largest freshwater inputs (and probably the largest sources of nutrients and contaminants) in the waters in and around the Sanctuary are the Santa Clara and Ventura Rivers and the Oxnard municipal treatment plant (Anderson *et al.* 1993).³⁹

³⁸ Surface runoff is approximately one-third the volume of municipal wastewater discharge (Anderson *et al.* 1993).

³⁹ Pursuant to the FWPCA, municipalities are required to provide secondary treatment (physical and biological) of discharge. However, FWPCA 301(h) allows the EPA to waive the full secondary sewage treatment requirement if a municipality meets certain conditions specified in that section. The EPA has issued such a waiver to the Goleta Sanitation District.

Table 9: Publicly Owned Treatment Works (POTW) Discharging Into The Sanctuary Region

POTW Name	Receiving Water	Level of Treatment	Volume Discharging (mgd)
City of Lompoc	Santa Ynez River	Secondary	3.72
Goleta	Santa Barbara Channel	Primary/Secondary	5.2
Santa Barbara	Santa Barbara Channel	Secondary	8.1
Montecito	Santa Barbara Channel	Secondary	1.1
Summerland	Santa Barbara Channel	Tertiary	0.17
Carpinteria	Santa Barbara Channel	Secondary	<u>1.5</u>
Oxnard	Santa Barbara Channel	Secondary	<u>19.5</u>

Source: Anderson *et al.* 1993

Sewage discharge can result in significant negative impacts to humans and coastal and marine resources. These impacts are typically caused by:

- Introduction of disease-causing bacteria;
- Eutrophication (the introduction of excess nutrients, causing excess algal growth and oxygen depletion);
- Introduction of suspended particulates; and
- Introduction of toxic wastes, heavy metals and PCBs.

Power Plants

Power plants discharge cooling water carrying waste heat, along with a small volume of contaminants such as chlorine. The volume of discharges from power plants is 10 times the volume of discharges from municipal wastewater treatment plants; moreover, power plant discharges yield the largest volume of inflow in the Southern California Bight (Anderson *et al.* 1993). Currently, two power plants (both located in Ventura County) discharge into the Sanctuary region. Power plant discharges may have the following impacts on marine organisms and habitats:

- Effluent toxicity;
- Sediment input and destruction of benthic biota;
- Interference with the filter feeding and respiratory functions of marine organisms;
- Loss of food sources and habitats;
- Impingement of living marine resources on cooling water intake screens; and,
- Thermal impacts from cooling water.

Oil and Gas Activities

Sanctuary water quality is susceptible to potential oil-well blowouts, pipeline leaks, oil tanker spills, activities associated with decommissioning of platforms (see the oil and gas issues description in the Emergency Response Action Plan), and natural seepage. In addition, pollutant discharges are associated with routine operations of oil and gas development, including the release of effluents consisting of drill cuttings and mud, sewage and trash, formation waters, and corrosion products.⁴⁰

⁴⁰ Effluent discharge is permitted from oil and gas platforms located in federal waters. Discharges are not permitted from facilities located in state waters. While all platforms have the potential to discharge drilling muds and cuttings, only Exxon's Platform Heritage is actively drilling.

Ocean Dumping, Disposal and Marine Debris

Active dredged material disposal sites in the Sanctuary region include the Los Angeles/Long Beach LA-2 (Anderson *et al.* 1993) and the base of Hueneme Canyon (NOAA 1996). Inactive sites, which may act as nonpoint source pollution sites, include chemical dumpsites located in the vicinity of the Santa Lucia Bank and south of Santa Cruz Island formerly designated and/or used for government chemical munitions dumping; an area southeast of Santa Barbara Island charted as a disused explosives dumping area (NOAA 1996); and a low-level radioactive waste dumpsite offshore from Point Hueneme (U.S. EPA 1983).

Typically, water quality impacts from dumping and /or disposal are highly dependent on such factors as ocean currents and distribution of contaminants, chemical interactions of dumped/disposed materials in water and associated degradation time, and short-term and long-term biological effects of absorption in living marine resources (such as invertebrates, marine mammals and fish).

Disposal of industrial effluents can include toxic organic chemicals such as detergents, oil and industrial solvents, as well as toxic metals such as mercury and lead. Industrial contaminants can affect marine organisms at several levels, including:

- Metabolic impairment or damage at the cellular level;
- Physiological damage or behavioral changes at the organism level;
- Changes in mortality or biomass at the population level; and
- Changes in species distribution or altered trophic interactions at the community level (Klee 1999).

Most marine debris is land-based in origin and can come from such sources as malfunctioning sewage treatment plants, sewer overflows, inadequate solid waste programs and facilities, beach users, and storm water runoff. This debris may be inadvertently deposited, such as debris lost at sea or blown into the ocean. Marine debris also comes from accidental discard

The Case of the Pacbaroness

A recent example of a toxic accident near the Sanctuary involved the bulk-carrier *Pacbaroness*, which collided with the car carrier *Atlantic Wing* off Point Conception in 1987. The *Pacbaroness*' cargo consisted of over 21 thousand metric tons of bulk copper concentrate. The copper concentrate cargo was observed discoloring the water as the vessel sank. Researchers recently began collecting sediment samples from the vicinity of the vessel to determine the extent of copper contamination, although these have not yet been summarized. The amount of copper concentrate that has entered the environment as a result of this accident remains unknown. Copper concentrate is toxic to marine organisms.

In addition to copper concentrate, the *Pacbaroness* held a combined volume of approximately 379,000 gallons of fuel and lubricating oil. Oil reaching the surface in the first few hours after the *Pacbaroness* sank was estimated at 20,000 to 75,000 gallons. Significant amounts of oil continued to leak for another four days then tapered off to an estimated few gallons a day.



The Pacbaroness Sinking, 1987
(Glenn Allen)

and illegal trash dumping at sea. Illegal dumping poses a threat to human health and safety, and injures and kills marine mammals, seabirds and sea turtles through ingestion and entanglement. A Southern California Coastal Water Research Project (SCCWRP) study found man-made debris occurred in approximately 14 percent of the mainland shelf of the Southern California Bight (Moore and Allen 1999). Man-made debris was most common in the central (urbanized) region on the outer shelf, and in areas near municipal sanitary sewer system outlets (Moore and Allen 1999).

Vessel Discharge/Deposit

Discharge of oil, sewage and other non-biodegradable materials from vessels is an ongoing issue of concern for the Sanctuary. Although pollutant discharge/deposit is strictly regulated in Sanctuary waters, awareness of and compliance with these regulations is an ongoing challenge for CINMS management. In addition, polluting activities occurring beyond the boundaries of the Sanctuary (e.g., spills or discharges) pose a threat to and may negatively impact Sanctuary resources and qualities.

Discharge/Deposit From Shipwrecks

The hazardous cargos, abandoned fuel and possible unexploded ordinance inside the metal hulls of slowly deteriorating deep-water shipwrecks may threaten Sanctuary resources. A recent example of a toxic accident from a shipwreck in the Sanctuary region was the bulk-carrier *Pacbaroness* that sank off of Point Conception in 1987 (see text box above).

Nonpoint Source Pollution

Nonpoint source pollution occurs when rainfall or irrigation runs over the land or through the ground, picks up pollutants and carries them to streams, rivers, wetlands and coastal waters and, during heavy rainfall, further offshore. The U.S. EPA identifies nonpoint source pollutants as the nation's largest source of water quality problems, and urban runoff as the largest source of water quality impairments to the estuaries it surveys (U.S. EPA 2002).

In the Sanctuary region, nonpoint source pollution sources are widespread. All regional watershed drainages include urban and agricultural lands yielding nonpoint source pollution. Dams, forestry, grazing, development, construction, and the physical alteration of streambeds also contribute to nonpoint source pollution. Common nonpoint source pollutants are sediments and nutrients such as fertilizers. Other nonpoint source pollutants in the study area may include:

- Herbicides and insecticides from urban and agricultural runoff;
- Soil, grease, toxic chemicals, and heavy metals from urban runoff;
- Bacteria, viruses, and nutrients from livestock, pet wastes, and faulty septic systems;
- Accidental spills of fuel and other hazardous materials; and
- Air pollutants settling from the atmosphere into the ocean.

Watershed Runoff and Sediment Plumes

The semi-arid climate of Southern California is characterized by intense, intermittent rainfall during winter and seasonal drought during summer and autumn. Floods of coastal watersheds result from intense storms that can be exacerbated by natural phenomena such as El Niño. The time from rainfall to runoff is fairly immediate (within hours) due to the steep terrain of the foothills and Santa Ynez Mountains (Mertes *et al.* 1998). Sediments

enter the coastal lagoons, estuaries, wetlands, marshes, beaches, and coastal waters, and eventually, the Santa Barbara Channel.

During winter storms, the Sanctuary region's four main rivers (the Santa Clara, Ventura, Santa Maria and Santa Ynez) discharge along the mainland coast. The Santa Clara and Ventura Rivers can produce a large sediment plume from the eastward end, moving westward into the Channel and surrounding Anacapa Island. The Santa Maria and Santa Ynez Rivers enter the Channel from the west. Upwelling following major storm events can move fine sediments toward San Miguel Island. During flood years, millions of tons of material containing nutrients and pollutants such as animal wastes, pesticides, fertilizers, PCBs, and oil can be transported into the Southern California Bight in as little as one or two days (Hickey 2000b).

In addition, the coastal mainland includes the San Antonio Creek watershed and 41 small coastal watersheds draining the south side of the Santa Ynez Mountain Range. While providing important nutrients to the Sanctuary environment, the creeks of these watersheds also contribute pollution from agricultural and urban runoff.

Coastal Wetlands

The Sanctuary region's coastal mainland watersheds include wetlands, estuaries, lagoons and other systems important to CINMS resources. These areas serve as fundamental feeding, breeding, and nursery grounds for a wide variety of species while providing natural filtration of land-based pollutants. Roughly 10 percent of the historic wetlands of Southern California remain as most have been destroyed by development (Page 1999).⁴¹ The coastal area between Coal Oil Point and Point Sal composes only 15 percent of Southern California's coast, yet holds approximately 50 percent of its remaining rural and natural coastline. These coastal wetlands are recognized as "significant biological resources" (Zedler 1982) and "environmentally sensitive habitat" (County of Santa Barbara 1982). The ecological productivity of these coastal wetlands is limited by the general impacts of suburban, industrial, and agricultural development. Nutrient input into coastal and marine systems can stimulate algal growth, reduce abundance and diversity of invertebrates, impact bird-feeding behavior, and reduce oxygen concentration in the water column.

Research has detailed the adverse affects of runoff on wetlands. Nitrogen inputs from watersheds may alter wetland functioning by stimulating primary production and algal blooms (Valiela 1983; Coven and Zedler 1988). Zedler and Onuf (1984) argue a winter/spring pulse of dissolved inorganic nitrogen could be traced through successive trophic levels at Mugu Lagoon and thus play a major role in the functioning of Southern California systems. Page (1999) and Page *et al.* (1995) studied nutrient input in the Carpinteria Salt Marsh and found nitrate loading from watersheds (but not ammonium or phosphate) increased as a function of stream discharge. They also demonstrated the Carpinteria Salt Marsh exports nitrate and ammonium to the Santa Barbara Channel.

Community Involvement

Community interest in the protection and improvement of water quality throughout the study area has been high throughout the management plan revision process. Since 1999, the Sanctuary Advisory Council has consistently identified water quality planning and protection as a priority issue of concern, repeatedly incorporating it into their annual work

⁴¹ The study area includes a majority of these remaining wetlands.

plan. At the time of this printing, a draft water quality needs assessment report for CINMS became available for review. The draft report was developed by the Conservation Working Group of the Sanctuary Advisory Council, and is available on line at <http://www.channelislands.noaa.gov/sac/news.html>. This draft report, which will be refined and possibly adopted by the Sanctuary Advisory Council in 2005, is a good source of additional information about water quality threats and gaps in related monitoring, research, education, policies and regulations. This work and continued input from the Advisory Council and its working groups will be integral to the development of Sanctuary programs and actions to address water quality issues.

Addressing the Issues – Strategies For This Action Plan

There are two strategies in the Water Quality Action Plan:

- WQ.1 – Offshore Water Quality Monitoring
- WQ.2 – Water Quality Protection Planning

These strategies address the need for CINMS to support and conduct sound monitoring for pollutants, identify pollutant sources, prioritize Sanctuary water quality threats, work closely with existing and new partners and water quality authorities, and develop and implement Sanctuary programs to address water quality concerns.

STRATEGY WQ.1 - OFFSHORE WATER QUALITY MONITORING

- *Objective:* To better evaluate and understand localized and large-scale spatial and temporal impacts from oceanographic and climatic changes and impacts from increases in human population in the coastal zone and subsequent pressure(s) on offshore marine resources.
- *Implementation:* Research and Monitoring staff

Background

State, county, city and NGO data collection efforts in the Southern California Bight (SCB) are heavily focused on coastal waters and streams. As an offshore site, CINMS is directing its efforts on the Santa Barbara Channel and the waters surrounding the Channel Islands to better evaluate and understand localized and large-scale spatial and temporal impacts from oceanographic and climatic changes (such as El Niño and La Niña events) and impacts from increases in human population in the coastal zone and subsequent pressure(s) on offshore marine resources. The water quality monitoring programs CINMS conducts address a range of water quality issues and impacts on the offshore resources of the Sanctuary.

CINMS currently supports and/or participates in two ongoing water quality data collection efforts (*Plumes and Blooms* and the Southern California Bight Regional Monitoring Surveys) and will continue to do so on a long-term basis. In addition to collecting data, CINMS will support the processing, analysis and integration of additional relevant data for a better understanding of the dynamics of healthy functioning ecosystems and the biological implications of impacts on the resources. Statistically robust and relevant data sets will provide scientists with the ability to develop predictive models to better determine changes over time, allowing resource managers to be proactive instead of reactive to water quality impacts.

In 2005, CINMS partnered with the Santa Barbara Channelkeeper to develop a pilot water quality monitoring project for the waters off of Santa Cruz and Anacapa Islands. Goals of the pilot program were to: assess and identify suitable monitoring locations for longer term water quality assessment in the Channel Islands National Marine Sanctuary; collect water samples throughout the summer months in both high use and low uses areas, as well as areas supporting large marine mammal or seabird colonies; and analyze samples for bacterial indicators including total coliform, *Escherichia coli* (E. coli) and *Enterococcus*. The pilot program was a cooperative effort to better understand existing conditions and potential water quality issues associated with boating within the Sanctuary, especially at anchorages. The initial pilot project wrapped up at the close of summer 2005. Continuation of the program is uncertain at this time (thus it is not listed as an activity below), and will be based on a forthcoming analysis of initial results and a determination of appropriate next steps (per Strategy WQ.2)

Activities (2)

(1) Continue Support for Plumes and Blooms and Assess Management Implications. *Plumes and Blooms* is a study of the impacts of storm runoff on the marine environment of the Santa Barbara Channel. Part of an ongoing study, UCSB scientists are attempting to ground-truth SeaWiFS (Sea-Viewing Wide-Field-of-Vision Sensor) satellite acquired

ocean-color data using the Sanctuary's vessel. One of the primary goals is to develop, apply and validate state-of-the-art tools for quantifying concentrations of suspended sediments, phytoplankton pigments and dissolved organic materials, using satellite ocean color imagery. *Plumes and Blooms* research provides valuable ocean color data for CINMS to better understand and manage freshwater and terrestrial inputs in the marine environment. The principal investigator for this project is UC Santa Barbara, with partnerships in NOAA, NASA, ONR, CSC and COP. Sanctuary staff will work with project leaders to appropriately incorporate *Plumes and Blooms* findings into water quality protection planning efforts (see Strategy WQ.2 below).

Status: CINMS vessel support ongoing since 1996, expected to continue aboard the R/V *Shearwater* on a competitive award basis for vessel time.

Partners: UC Santa Barbara; NASA; ONR; CSC; COP

(2) Continue Support for Southern California Bight Regional Monitoring Surveys.

Bight '98 was a regional monitoring survey of the SCB coordinated by the Southern California Coastal Water Research Project (SCCWRP) to assess cumulative impacts of contaminant inputs and evaluate relative risks among different types of stresses. In 1998, more than 55 agencies coordinated efforts to sample 416 sites between the Mexican border and Point Conception. Multiple indicators were measured at each site to relate contaminant exposure, biological response, and habitat condition. Thirty-one trawl samples and thirty-seven benthic samples were collected off the Sanctuary's vessel at randomly selected sites in the Sanctuary. Useful comparative data about the relative health of the Sanctuary to the mainland coastal region were collected. A second survey was conducted in 2003, during which the same methods were used to gather additional data on the status of resources in the Southern California Bight.

This research will assist the Sanctuary and other resource managers in answering questions about: 1) which areas do or do not meet water quality standards; 2) geographic distribution of impacts; 3) comparison of relative risk from point and nonpoint discharges; 4) the relationship between contaminant exposure and biological response; and 5) understanding historical trends at selected sites. The principal investigator for this project is the SCCWRP with partners including over 50 agencies and institutions.

Status: CINMS involvement and support began in 1998 (for Bight '98), then again in 2003 (for Bight '03), and will continue within years 2 through 5 as future projects are planned.

Partners: SCCWRP as coordinator; over fifty other agencies and institutions

STRATEGY WQ.2 - WATER QUALITY PROTECTION PLANNING

- **Objective:** To protect the chemical, physical and biological integrity of the Sanctuary by restoring and maintaining water quality.
- **Implementation:** Marine Resource Protection staff, Water Quality Coordinator for West Coast Sanctuaries

Background

This strategy will be implemented to protect the chemical, physical, and biological integrity of the Sanctuary by restoring and maintaining water quality. To do so, the Sanctuary, working with the Water Quality Coordinator for West Coast Sanctuaries and the Advisory Council, will 1) partner with local and state agencies and constituent groups in a comprehensive and coordinated effort for water quality protection and 2) better define the Sanctuary's role in water quality protection through policy development, research, and education. To accomplish these objectives the Sanctuary will use, to the extent appropriate, the existing Monterey Bay National Marine Sanctuary Water Quality Protection Program as a model (see www.montereybay.noaa.gov). The Sanctuary will also rely on assistance from the NMSP's Regional Water Quality Coordinator, hired in 2005 to help west coast national marine sanctuaries build water quality protection plans. The sanctuary will also rely on the extensive research and documentation, and continued involvement, contributed by the Advisory Council's Conservation Working Group, who developed and delivered in 2005 a draft water quality needs assessment report.

Activities (3)

(1) Compile And Synthesize Information On Jurisdictional Water Quality Authorities And Responsibilities. Building on Advisory Council assessments (via a water quality needs assessment report from the Conservation Working Group), Sanctuary staff will work with the NMSP Regional Water Quality Coordinator to compile and synthesize information on jurisdictional water quality authorities and responsibilities as it pertains to water quality issues affecting the Sanctuary (including point source pollution and nonpoint source pollution, dredging, waste water management, HAZMAT response, freshwater flow, storm water permitting, etc.). This will also involve drafting descriptions of existing agencies and management programs with responsibility for addressing water quality issues affecting the Sanctuary.

Status: To be completed by year 1

Partners: Advisory Council; other regional water quality authorities and organizations

(2) Review State and Regional Water Quality Management. Work with interagency committees to evaluate and comment on management of existing and emerging water quality issues. Evaluate and develop recommendations on regional projects and permits that may impact Sanctuary water quality.

Status: Currently underway; expected to be implemented across years 1 through 5

Partners: Advisory Council; state and federal agencies; county agencies; NGOs

(3) Develop And Propose Priority Corrective Actions For Managing Sanctuary Water Quality Impacts. Building on significant needs assessment work from the Advisory Council’s Conservation Working Group, the Sanctuary will identify and prioritize water quality threats to Sanctuary resources, and identify needs and opportunities to coordinate and/or develop partnerships with existing authorities and interested public and private groups concerning improving Sanctuary water quality management efforts. CINMS will determine the need for and feasibility of implementing additional water quality management strategies using existing resources and programs, and ascertain the need for any additional resources to develop a Sanctuary water quality management program (to include grant proposals, public-private partnerships, volunteers, memoranda of agreement, etc.). This will also involve coordinating with Sanctuary education and outreach staff to determine water quality outreach needs. All planning activities will be led by the NMSP’s Regional Water Quality Coordinator, and be based on significant input from and involvement by the Advisory Council and its working groups.

Status: Planning estimated to be complete by year 2 with implementation to follow
Partners: Sanctuary Advisory Council

Table 10: Estimated Costs For The Water Quality Action Plan

Strategy	Estimated Annual Cost (in thousands)*					Total Estimated 5 Year Cost
	YR 1	YR 2	YR 3	YR 4	YR 5	
WQ.1: Offshore Monitoring	\$15**	\$43**	\$43**	\$43**	\$43**	\$187**
WQ.2: WQ Protection Planning	\$20	\$20	\$20	\$20	\$20	\$100
Total Estimated Annual Cost	\$35	\$63	\$63	\$63	\$63	\$287
* Cost estimates exclude base budget funding requirements (salaries, overhead, etc.).						
** Contributions from outside funding sources also anticipated.						

Addressing the Issues – Strategies From Other Action Plans

In addition to the strategies identified in this Water Quality Action Plan, there are other strategies from other action plans either directly or indirectly addressing the issues associated with conservation science:

- Strategy AU.1 – Education Program Development
- Strategy CS.1 – Sanctuary Aerial Monitoring and Spatial Analysis Program
- Strategy EE.1 - Emergency Response Planning
- Strategy EI.1 – Identifying and Assessing Emerging Issues

Addressing the Issues – Regulations

Existing Regulations

There are two existing Sanctuary regulations directly associated with CINMS water quality issues:

- Prohibition on discharging or depositing any material or other matter except: (i) Fish or fish parts and chumming materials (bait); (ii) Water (including cooling water) and other biodegradable effluent incidental to vessel use of the Sanctuary generated by: (A) Marine sanitation devices; (B) Routine vessel maintenance, e.g., deck wash down; (C) Engine exhaust; or (D) Meals on board vessels; (iii) Effluents incidental to hydrocarbon exploration and exploitation activities otherwise allowed by CINMS regulations.
- Prohibition on exploring for, developing, and producing hydrocarbons except pursuant to leases executed prior to March 30, 1981, and except the laying of pipeline.

Potential New or Modified Existing Regulations

- Several modifications to the existing discharge and deposit regulation would:
 - Specify that the existing exception for discharging or depositing fish, fish parts, or chumming materials (bait) applies only when used in or resulting from lawful fishing activity within the Sanctuary, provided that such discharge or deposit is during the conduct of lawful fishing activity within the Sanctuary;
 - Remove an exception for discharging or depositing meals on board vessels
 - Prohibit discharges and deposits of any material or other matter from beyond the boundary of the Sanctuary that subsequently enters the Sanctuary and injures a Sanctuary resource or quality
 - Clarify that discharges allowed from marine sanitation devices apply only to Type I and Type II marine sanitation devices
- Several other minor language improvements and clarifications are proposed to the existing regulation on discharging and depositing in the Sanctuary. For details and full analysis, see the DEIS (Vol. II, Section 2).



Figure 43: Understanding links between regional terrestrial and marine systems is important to protecting Sanctuary water quality.
(Brian D. Bresolin)

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EMERGENCY RESPONSE & ENFORCEMENT ACTION PLAN

Overview

Effectively responding to hazardous spills or other emergencies and ensuring compliance with Sanctuary regulations requires a series of coordinated activities among multiple agencies, vessel and aircraft operations, and adequate staff and volunteer training. Utilizing these and other approaches, this action plan presents strategies and actions for addressing the Sanctuary's enforcement and emergency response needs.

Description of the Issue

The remote offshore location of CINMS presents challenges for enforcement of regulations and response to resource emergencies. While CINMS does not employ its own Sanctuary enforcement officers, Sanctuary regulations are enforced by NOAA's Office for Law Enforcement and via a series of agreements with other state and Federal agencies. CINMS staff also work with other federal and state response agencies and resource trustees to ensure prompt and effective response to emergencies such as oil and hazardous substance spills, grounded or sunken vessels, vessel collisions, and downed aircraft. Such emergencies have the potential to injure Sanctuary resources, and may sometimes jeopardize human safety or involve loss of life.

Oil spills are a primary concern among many Sanctuary constituents, which is due in large part to the extent and history of oil and gas production in the Santa Barbara Channel (for one example of an oil spill in the Sanctuary region, see the text below on the 1969 Unocal platform blowout). Of the 79 Federal oil and gas leases off the coast of Southern California 43 are developed or active (California Resources Agency, California Coastal Commission 1999), 39 of which are in the Channel Islands region. Two of these lease tracts overlap the Sanctuary at its eastern boundary. Emergency response issues raised by Sanctuary constituents during scoping focused on oil and gas production:

- The Sanctuary should better evaluate the negative impacts from oil drilling, such as vessel strikes, pipe bursts and other accidents, and potential platform blowout;
- CINMS should evaluate and eliminate the potential for increased drilling in the Sanctuary (renewal of existing leases)
- CINMS regulations should be strengthened so that oil and gas activities continue to be prohibited in the Sanctuary;
- CINMS should evaluate potential impacts of new leases on regional economies, such as fishing and tourism.

Emergency Response Issues

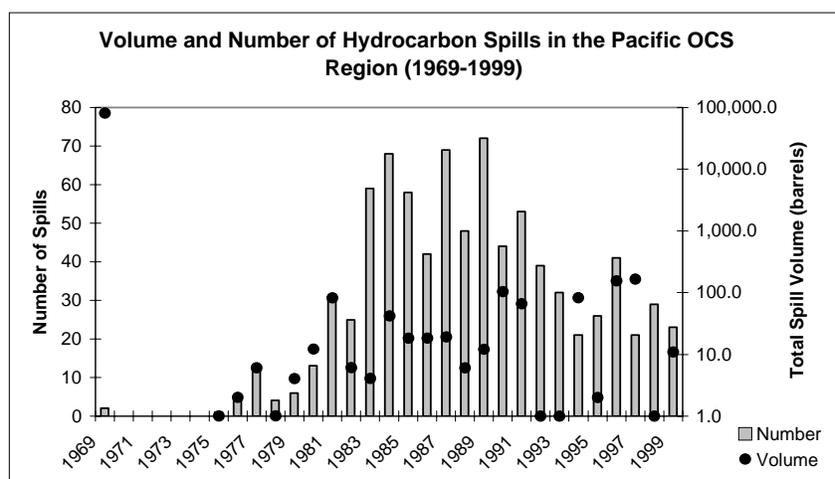
Oil and Hazardous Spills

Spills of oil or other hazardous materials in the Sanctuary and surrounding marine environment may come from a variety of vectors, including: accidents at oil and gas platforms, land-based accidents, and vessel and aircraft accidents. Spills from vessel accidents may result from vessel-to-vessel collisions, vessel collisions with oil and gas

platforms or other stationary facilities, groundings, fires or explosions on board vessels, and aircraft crashes. The potential for spills from each of these vectors exists within the Sanctuary and its immediate surroundings due to: the close proximity of the Sanctuary to several oil rigs, the overlap of two oil leases with the Sanctuary, the close proximity of major air traffic flight paths, oil tanker traffic to the south of the islands, high use of the

Figure 44: Volume and number of hydrocarbon spills in the Pacific OCS Region due to oil and gas activities between 1969 and 1999. * Note: In years 1975, 1978, 1992, 1993, and 1998 the total volume of hydrocarbon spilled was greater than zero. It should be noted that there is also a large amount of natural hydrocarbon seepage in the Pacific OCS Region, particularly in the Santa Barbara Channel. However, hydrocarbons released by natural seepage are dispersed over large spatial and temporal scales, whereas spills due to oil and gas activities occur in concentrated amounts in small spatial and short temporal scales (County of Santa Barbara 2003).

* Minerals Management Service. 2001. Delineation Drilling Activities in Federal Waters Offshore Santa Barbara County, California. Department of the Interior, Minerals Management Service. EPA number: 010227D, 631 pages, June 18, 2001.



Sanctuary by recreational and commercial vessels, and the Sanctuary's close proximity to and overlap with major shipping lanes.

The impact of oil spills may be both physical and biological, and depends on the type of oil spilled and natural factors such as weather or current patterns that may spread the spill across a greater area. Oil spills caused by vessels or aircraft may include fuel oil, and/or cargo oil, while spills resulting from oil and gas platform accidents may include crude oil and other hydrocarbon products found in natural gas. Heavier petroleum products, such as crude oil and bunker fuel, last for a long duration but are less toxic than lighter hydrocarbons. Although most spilled crude oil initially floats, a percentage of the surface slick dissolves and penetrates the water column. Currents may then carry the slick onshore, fouling the coastline. In contrast, light petroleum products typically evaporate quickly but are more toxic.

Effects of oil on marine organisms vary with the extent and nature of exposure (e.g., ingestion vs. external exposure), coincidence with activities such as feeding or breeding, the overall health of the affected animals, the species affected, and the type of oil. Heavy

crude oil tends to be very sticky, adhering to fur, feathers and skin. Volatile compounds in oil can burn eye, nose and mouth membranes of various marine organisms. Lighter hydrocarbons (e.g., benzene, propane and toluene) enter the bloodstream and damage red blood cells, immune system, liver, kidneys, spleen and the reproductive organs. In general, impacts may include disruption of normal feeding behavior, breeding and locomotion, reduced resistance to stress, toxic disease, loss of buoyancy, reproductive failure, and internal and external injury. Foraging seabirds may suffer contamination of feathers, which reduces flying and swimming ability, compromises buoyancy and thermal insulation, and often results in high mortality rates. Preening birds experience reproductive failure, unviable eggs or the transfer of oil to eggs or chicks from ingestion of toxic hydrocarbons. Diving birds, such as murrelets, guillemots, murrelets, loons, grebes and cormorants, are particularly susceptible to contact with oil given the additional exposure they receive when diving through the water column. Seals and sea lions may suffer loss of buoyancy and thermal insulation. Whales may suffer from fouled baleen (impeding feeding ability), and oil collecting in their callosities (rough, cornified patches of skin). While animals in the water column may be able to avoid or exit areas impacted by oil, benthic marine organisms, especially those that are non-mobile, are highly susceptible. Internal injury to marine animals may also result from ingestion of oil during feeding, and/or grooming. Potential external injuries to animals may include skin and eye damage.

Effects of hazardous spills vary extensively depending on the nature of the hazardous agent involved. A regional example of a hazardous spill is the case of the *Pacbaroness*, which collided with a car carrier off Point Conception in 1987 while carrying a toxic cargo of copper ore. This example is described in further detail in The Case of the *Pacbaroness* text box within the Water Quality Action Plan.

Other Emergency Response Issues

Aside from oil and hazardous spills, other emergency issues of concern to the Sanctuary result from vessel and aircraft accidents, and natural disasters. While vessel and aircraft accidents may be a source of hazardous materials and oil spills, they may also result in resource damages from impacts other than spills, as well as human safety threats and loss of life. Grounded vessels, and sunken vessels and aircraft may result in resource damage due to wildlife and habitat disturbance (e.g., loss of benthic organisms due to abrasion from vessels grounded on rocky reefs). Although issues related to human safety and loss of life fall within the mandates of other agencies such as the U.S. Coast Guard, CINMS sometimes acts as a partner in responding to such emergency issues when they occur within or near the Sanctuary and Sanctuary resources such as aircraft and vessels, computer models, oceanographic data, and staff

The Unocal Spill of 1969

The 1969 blowout and oil spill from Unocal's platform A in the Santa Barbara Channel received international attention and was a major catalyst in the development of modern environmental law in the United States and the designation of the Channel Islands National Marine Sanctuary. The spill led to the spread of 200,000 gallons of crude oil into an 800 square mile slick. Incoming tides carried dead seals and dolphins as oil had clogged lungs and blowholes. Animals that ingested the oil were poisoned and in the following months, migrating gray whales avoided the channel on their way south. Over 3600 birds were estimated to have died because of contact with oil. Aerial surveys a year later found only 200 grebes in an area that had previously drawn 4000 to 7000.

The spill influenced the passage of major state and federal legislation, such as the National Environmental Policy Act (NEPA), Federal Water Pollution Control, California Environmental Quality Act (CEQA), California Coastal Initiative in 1972 (Proposition 20), and California Coastal Act of 1976. Pursuant to these and other statutes, development permits for onshore or offshore oil and gas facilities may not be issued without provisions to protect terrestrial, marine, visual, recreational, and air resources.

trained in first aid or paramedics may be of assistance. For example, CINMS staff aided in the search and salvage response efforts where Alaskan Airlines Flight 261 was lost off of Anacapa Island in February 2000.

Need for Coordinated Enforcement

Enforcement of CINMS and other resource agency regulations is essential for providing long-term protection to Sanctuary resources. As an offshore site, CINMS is a difficult area to patrol and enforce, requiring challenging use of available vessels, aircraft and other resources from among multiple agencies.

Sanctuary regulations are enforced through two principal means: the NOAA Office for Law Enforcement (OLE) and cooperative agreements allowing NOAA to deputize enforcement officers from other Federal and state agencies. The Sanctuary currently has individual enforcement agreements with the US Coast Guard, California Department of Fish and Game, and the National Park Service. In order to ensure coordinated and comprehensive law enforcement services around the Channel Islands, CINMS needs to continue playing a lead role in developing and updating these cooperative agreements among enforcement agencies.

Public Involvement in Sanctuary Stewardship

In addition to providing law enforcement of regulations, CINMS seeks to take an interpretive enforcement approach to informing the public and encouraging voluntary compliance. Interpretive enforcement is an enforcement strategy in which voluntary compliance and stewardship are stressed through educational messages and literature about responsible behavior. Because CINMS covers a vast area of open waters, the boating public can play an important role in helping to keep an eye on the Sanctuary, and, where appropriate, trained volunteers can assist in raising visitor awareness of the Sanctuary's regulations. To successfully and safely employ volunteers in this way, CINMS needs to provide leadership, training, and other support to develop an effective interpretive enforcement program.

Addressing the Issue – Strategies For This Action Plan

There are two strategies in the Emergency Response and Enforcement Action Plan:

- EE.1 – Emergency Response Planning and Implementation
- EE.2 – Expanding Enforcement Efforts

Each of these strategies is detailed below.

STRATEGY EE.1 – EMERGENCY RESPONSE PLANNING AND IMPLEMENTATION

- ***Objective:*** To be prepared for response to oil spills, hazardous material spills, grounded vessels or natural disasters.
- ***Implementation:*** Marine Resource Protection staff

Background

CINMS staff will continue to develop an emergency response plan for oil spills, hazardous material spills, grounded vessels or natural disasters. With assistance from NOAA's Office of Response and Restoration (OR&R), the plan will be developed to link with the Incident Command System and the U.S. Coast Guard's Area Contingency Plan and will strive to initiate a seamless operation in cooperation with various federal, state and local emergency response agencies in California. The Emergency Response Plan will be reviewed, evaluated and updated on an annual basis and volunteers will be trained to assist in the event of an emergency.

The National Marine Sanctuary program has designed and utilizes innovative emergency response tools to increase response capabilities at CINMS and other national marine sanctuaries in responding to resource protection emergencies. Two of these tools are the Sanctuaries Hazardous Incident Emergency Logistics Database System (SHIELDS) and the Resources and Under Sea Threats (RUST) database. SHIELDS is a comprehensive web-based tool that, in the event of a resource emergency, provides Sanctuary and headquarters staff with immediate access to information about habitats and species at risk, any additional threats, resources available to help, notification contacts, maps and agency jurisdictions. RUST is included within SHIELDS and allows NMSP and CINMS staff to inventory and assess the relative threat of shipwrecks, pipelines, platforms, munitions, radioactive wastes, chemical warfare agents and industrial wastes.

Activities (5)

(1) Identify Specific Emergency Response Duties For CINMS Staff. Staff will be trained in the Incident Command System, the area contingency plan, emergency response duties, emergency response drills and resource damage assessment skills. Training will be ongoing, with regular updates and refresher courses.

Status: Existing project; training is ongoing and will continue at appropriate intervals through years 1-5

Partners: US Coast Guard; NOAA OR&R; regional oil companies; other regional authorities

(2) Implement SHIELDS and RUST. CINMS staff will continue to work with NMSP headquarters on implementing and improving the various aspects of both the SHIELDS and RUST initiatives (see description above). CINMS staff has received training on both of these emergency response tools and will receive additional training as it is made available.

Status: Project began in 2003; implementation and training will continue across year 1 through 5

Partners: NOAA OR&R, USCG, CDFG OSPR

(3) Train Additional Emergency Response Volunteers. A minimum of 30 volunteers will be provided training on hazardous waste operations and emergency response (HAZWOPR) procedures, as well as shoreline cleanup and assessment techniques, to be readied for service by the end of year three. In the event of a spill or other resource emergency, these volunteers would be located at affected coastal and island shorelines to inventory impacts on living marine resources and habitats during and after an incident.

Status: Implementation by year 3

Partners: NOAA OR&R; CDFG OSPR

(4) Develop An Emergency Response Manual. CINMS will develop a manual containing a site safety plan checklist, responsibilities of CINMS staff, command, operations, planning, logistics and a glossary of terms.

Status: Existing project; updated manual completed by year two

Partners: US Coast Guard; NOAA OR&R; CDFG OSPR

(5) Develop a Modeling Program As Part Of SAMSAP To Assist In Emergency Response And Assessment. Using Global Positioning Satellite (GPS), modified survey software and Geographical Information System (GIS), CINMS can now plot a spill's perimeter, identify oil types and endangered resources, transmit findings and produce color maps and GIS data output immediately after landing. CINMS is currently prototyping a near real-time program using cellular telephony to send maps and data directly from aircraft to Incident Command Centers via e-mail. The next phase of this program includes the acquisition of additional data to input into a model for real-time analysis for increased accuracy of trajectory models. In addition, CINMS would like to make these capabilities available for vessel use.

Status: Implementation began in 1998; next phase implemented by year 2

Partners: Internal



Figure 45: Grounded or sunken vessels may release harmful substances such as fuel and oil into the environment, as at this site of a sunken fishing vessel off of Santa Rosa Island, 2003. (CINMS)

STRATEGY EE.2 – EXPANDING ENFORCEMENT EFFORTS

- ***Objective:*** To promote resource protection through compliance with Sanctuary regulations and other applicable state and federal statutes and regulations.
- ***Implementation:*** Marine Resource Protection staff

Background

The objective of this strategy is to promote resource protection through compliance with Sanctuary regulations and other applicable state and Federal statutes and regulations. The mission of Sanctuary enforcement is to ensure compliance with the NMSA and Sanctuary regulations. Section 307 of the NMSA authorizes the Secretary of Commerce to conduct activities for enforcing the Act, delineates civil penalties and powers of authorized officers, and provides for recovery of penalties by the Secretary. The CINMS enforcement program will achieve its goals through: 1) the use of interpretive enforcement⁴² as a means to inform the public and encourage voluntary compliance with Sanctuary regulations and 2) the active enforcement of the NMSA and CINMS regulations. Together, these approaches should result in a regular and ongoing enforcement presence in Sanctuary waters and compliance with Sanctuary regulations.

Activities (3)

(1) Plan and Implement Interpretive Enforcement Via Sanctuary Marine Watch (Team OCEAN). Team OCEAN (Ocean Conservation Education Action Network), a volunteer-based, peer education program will conduct outreach and interpretation activities to affect behavior and values to achieve voluntary compliance with Sanctuary regulations. Volunteers will impart information about Sanctuary resources, the purpose of Sanctuary regulations, the benefits of protection and the potential impact of activities on the environment. Additional information on Team OCEAN can be found in Strategy AU.3 of the Public Awareness and Understanding Action Plan.

Status: Initial planning efforts began in 2002, implementation of pilot project planned for year two or three with full implementation to follow.

Partners: Volunteer participants

(2) Maintain Current Vessel and Aircraft Surveillance Operations. The law enforcement component of this strategy includes both aerial and ship-based patrols. Weather permitting, the Sanctuary Aerial Monitoring and Spatial Analysis Program (SAMSAP) performs simultaneous data collection and enforcement surveillance on a weekly basis in the Sanctuary. Using the Sanctuary's Lake Renegade Sea Wolf as a platform, SAMSAP tracks visitor use and compliance using its aerial vantage point (see Strategy CS.1) while ship-based patrols will be carried out by the Sanctuary's vessel. In addition, CINMS will maintain an active enforcement relationship with the USCG and the Civil Aeronautical Patrol.

Status: Began in 1998; marine reserves surveillance started in 2003; continued operations planned throughout years 1 through 5.

Partners: Civil Aeronautical Patrol; CA Department of Fish and Game; Channel

⁴² Interpretive enforcement is an enforcement strategy in which voluntary compliance and stewardship are stressed through educational messages and literature on responsible behavior.

Islands National Park; NOAA Fisheries – Office of Law Enforcement; US Coast Guard.

(3) Cross-Deputize Other Regional Enforcement Personnel. Partnerships with state and Federal agencies are vital to a successful enforcement program. To ensure sufficient patrol presence in the Sanctuary, various interagency agreements have been developed or are under development by CINMS and NOAA’s Office for Law Enforcement. Such partnerships may provide for the cross-deputization of officers with the CDFG and CINP.

Status: Some agreements already in place; complete implementation by year 2 (or sooner) and maintain thereafter

Partners: CA Department of Fish and Game; Channel Islands National Park; NOAA Fisheries – Office for Law Enforcement; US Coast Guard



Figure 46: CINMS staff onboard the CDFG enforcement vessel *Swordfish*.
(Robert Schwemmer)

Table 11: Estimated Costs For The Emergency Response & Enforcement Action Plan

Strategy	Estimated Annual Cost (in thousands)*					Total Estimated 5 Year Cost
	YR 1	YR 2	YR 3	YR 4	YR 5	
EE.1: Emergency Response Planning & Implementation	\$14	\$23	\$23	\$14	\$14	\$88
EE.2: Expanding Enforcement Efforts	\$24**	\$16.5**	\$16.5**	\$16.5**	\$90**	\$163.5**
Total Estimated Annual Cost	\$38	\$39.5	\$39.5	\$30.5	\$104	\$251.5
* Cost estimates exclude base budget funding requirements (salaries, overhead, etc.).						
** Includes funds expected from the National Marine Sanctuary Program.						

Addressing the Issues – Strategies From Other Action Plans

In addition to the strategies identified in this Emergency Response and Enforcement Action Plan, there are several strategies from other action plans either directly or indirectly addressing the issues associated with responding to emergencies and violating Sanctuary regulations:

- Strategy AU.3 - Team OCEAN
- Strategy AU.4 - Developing Outreach Technology
- Strategy AU.8 - Marine Reserves Education
- Strategy CS.1 - Sanctuary Aerial Monitoring and Spatial Analysis
- Strategy OP.2 - Permitting and Activity Tracking
- Strategy OP.3 - Relationships With Other Authorities
- Strategy OP.4 - Vehicle, Boat and Aircraft Operations

Addressing the Issues – Regulations

Existing Regulations

- Strategy EE.2 (Expanding Enforcement Efforts) is related to the provision of law enforcement for *all* existing Sanctuary regulations (see Vol. I, Appendix C).

Potential New or Modified Existing Regulations

- Strategy EE.2 (Expanding Enforcement Efforts) is related to the provision of law enforcement of *all* proposed new and modified Sanctuary regulations. See the DEIS (Vol. II, Section 2).

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MARITIME HERITAGE RESOURCES ACTION PLAN

Overview

Maritime heritage resources (MHRs) of the Sanctuary may represent as much as 13,000 years of human history. These resources consist of Native American artifacts, shipwrecks, aircraft wrecks, material associated with wharves, piers and landings, and paleontological remains. MHRs are typically divided into two categories: 1) cultural, consisting of Native American artifacts and 2) historic, consisting of artifacts from non-Native American cultures. Cultural material in the Sanctuary dates as far back as 13,000 years while historic materials span history from Juan Rodriguez Cabrillo's European voyage of discovery (1542 to 1543) up to the mid 20th century. In addition, the Sanctuary likely contains submerged paleontological remains. Collectively, Sanctuary MHRs represent a remarkable cross-section of our regional and national heritage. Note that Sanctuary regulations (15 CFR 922.3) define "historical resource" to include cultural and paleontological resources. The cultural maritime heritage of the Sanctuary is also embodied by the contemporary Chumash community, with whom the Sanctuary has and will continue to work closely with to promote public education of Chumash Native American history and to assist in a Sanctuary-related cultural revitalization among regional Chumash communities.



Figure 47: In 2001 Chumash Maritime Association members paddled to Anacapa Island in a traditional tomol. (CINMS)

Launched in 2002, the NMSP's Maritime Heritage Program has made great strides toward meeting the mandates of the National Marine Sanctuary Act and the goals of President Bush's Preserve America Executive Order. The program has successfully worked in partnership with numerous government agencies and private groups to locate, document, inventory, and/or protect more than a dozen historically significant shipwrecks, from the famed Civil War ironclad USS Monitor to the 19th century steamer Portland, known as "New England's Titanic." Also, the program distributes mini-grants aimed at discovering, exploring, preserving, and protecting maritime heritage in the sanctuaries. NOAA will open a Maritime Archaeology Center in Newport News, Virginia to serve as a central coordination point for the protection of cultural resources within national marine sanctuaries. CINMS staff play an integral role in the Maritime Heritage Resources Program, which will be a critical component to the continued success and growth of the CINMS Maritime Heritage Resources Program and the accomplishment of strategies and actions presented in this Action Plan.

Description of the Issues

The history of California's northern Channel Islands and its contiguous waters is predominantly a maritime one. From the days of Chumash inhabitants to modern times of island commerce, and serving as a major waterway for coastal and international shipping, the history up until recently has been shared with only a small population. Although the sport diving community frequently visits the Sanctuary for recreation, knowledge of the region's maritime heritage and protection status of its submerged resources is generally unknown. The same is true for the non-diving public who visit the islands and local community visitor attractions along the central coast. The Santa Barbara region alone receives over eight million annual visitors. Public understanding of the national and regional significance of Sanctuary maritime resources will not only enhance visitor experiences, but is essential for the protection of the resources for present and future generations. In addition to enhancing the need for public awareness about the region's Chumash cultural and historic maritime heritage, opportunities exist for the public to participate in the important role as stewards for the protection of these resources. The NMSP and NMSA provide through its educational and outreach provisions the opportunity to enhance public appreciation of this special region.

To gain a better understanding of the past, researchers strive to study MHRs in their original context. The relationship of one artifact to another is important and if an artifact is moved or altered, it can affect the way researchers understand and interpret an MHR site.

There are two principal threats to submerged cultural and historic resources: human behavior and natural phenomena. While little can be done to minimize the injury from natural events (with the exception of removing delicate artifacts for conservation and research), human behavior may be managed through education, adequate regulations and effective enforcement. Evaluating the threats to submerged cultural and historic resources in the Sanctuary requires further research because so few sites have been located and thoroughly surveyed. As such, NOAA recognizes the removal of historical artifacts is sometimes necessary. The conditions in which removing an artifact may be necessary include:

- Protecting artifacts from harsh environments;
- Conducting more research helping to educate the public;
- Making these artifacts more readily available to the public;
- Researching to improve the scientific understanding of the Sanctuary environment.

Human Threats

Site looting (where objects are intentionally pilfered from submerged sites) may pose a major threat to submerged archeological resources. This act has the potential to be more injuring than controlled salvage since it is an act of wanton destruction and theft. Artifacts that are small and light enough for divers to carry are pilfered most often. Larger structures of shipwrecks are less likely to be stolen, but may be vandalized, intentionally defaced, or destroyed in search of recoverable artifacts. Most events go unnoticed, while some cases occurring in the Sanctuary have been documented with evidence for successful prosecution.

Sometimes through the process of recovery, important archaeological contexts are destroyed. Attempted conservation by over-zealous cleaning may remove important evidence about the artifact, its usage and the associated site, or destroy the protective coatings enabling it to survive in the first place. Some artifacts are discarded when they are found to have little or no monetary value and/or the novelty of discovery has worn off, while others are neglected and allowed to fall into decay (Robinson 1998).

Divers who may not have any intentions to loot or vandalize artifacts may still cause injury through poor diving techniques or tampering. Divers may inadvertently injure resources by kicking up sand from the bottom, holding onto artifacts or accidentally breaking fragile resources when striking them with scuba tanks. Even if the intent was not to steal or damage the resources, permanent destruction to non-renewable artifacts can be inflicted.

Vessel activity can also cause serious injury to submerged archaeological resources. An anchor dropped on an artifact can result in serious and permanent injury or drag it away from the context of its original site location. Seabed disturbance by mobile bottom fishing gear has emerged as a concern due to the injurious effects of heavy trawl doors and nets dragging through archaeological sites.

Modern ship groundings can have seriously impacted archaeological resources in various sites worldwide. A large vessel grounding on an archaeological site may destroy and permanently bury historic artifacts under tons of modern steel and debris. The impacts of oil spills from bunker fuels and petroleum cargoes covering historical resources have largely been overlooked. Sinking petroleum products can physically smother resources.

Loss of the Winfield Scott

The Winfield Scott departed San Francisco upon its last voyage on 1 December 1853, with a full load of passengers and a shipment of gold bullion. Selecting the Santa Barbara Channel rather than a passage outside the islands in an effort to save time, Captain Simon F. Blunt entered the passage as a fog developed. Evidently intending to steam between Anacapa and Santa Cruz islands the Winfield Scott piled into Middle Anacapa Island at full speed, probably around 10 knots, at eleven o'clock that evening. Amid general confusion, a boat was launched and located a nearby land place. The entire ship's company, more than 300 persons, left the vessel that evening for a small pinnacle 200 yards offshore from Anacapa Island. The following morning, the ship's boats transferred the group to the island proper. There a temporary camp sheltered most of the group for the next week. The majority of the passengers left on December 10, when the California plucked them from the beach and took them on their way to Panama. The ship's company remained on the island for two more days, concentrating on recovery of the mail and baggage carried aboard. They also recovered some furniture and "small portions of machinery." Other salvors removed foodstuffs and other items. Captain Horatio Gates Trussell of Santa Barbara salvaged wood that became incorporated into the home now preserved as the Trussell-Winchester Adobe, which also contains two brass thresholds from the ship.



Due to the increase in carbon, oil contamination from a modern shipwreck may also impede the radiocarbon dating processes.

The process of trenching communications cables can have permanently damaging effects to submerged archaeological resources during grappling and (sea) cable installation. To mitigate such a threat, qualified archaeologists are required to conduct archaeological resources inventories and avoidance plans with supervised magnetometer and side-scan surveys of the proposed regions.

The laying of oil pipelines and other structures supporting offshore oil and gas processing facilities can destroy cultural and historic resources. Dredging operations to clear harbor entrances can destroy and/or dislodge submerged archaeological resources, thus losing important clues to their history.

Natural Threats

Although there is little that can be done to protect artifacts from natural processes, the Sanctuary recognizes these threats and, when possible, will attempt to mitigate their impacts, or when necessary remove “at risk” items as part of the Shipwreck Reconnaissance Program. Most injury to shipwrecks occurs in the first few decades of their sinking. Sanctuary staffs have observed shipwrecks tend to stabilize with the environment (sustaining fewer injurious effects) after twenty or thirty years.

Shipwrecks in shallow water environments within higher energy zones are much more likely to be subjected to injury by waves, shifting sands and strong currents. Wave action carries a tremendous amount of energy that can easily break up a shipwreck and physically pull it apart; whereas shipwrecks in deeper and calmer waters are generally in a more stable environment (limiting physical effects). Cold and deep-water environments tend to have fewer biological processes accelerating ship degradation as that found in shallower sites.

Shipworms (*Teredo diegensis*) inhabit and burrow through wood material, rapidly destroying its structure. Evidence of these shipworms is common among wooden shipwrecks in the Sanctuary. Sea urchins secrete acid that dissolves small, cup-shaped depressions into rocky reef ledges. Creatures living on the surface of historical resources also have the potential to inflict damage. Rock-boring clams, tubeworms and other organisms can have destructive results, even on stone artifacts.

Raising Public Awareness

Public awareness is a key for a better understanding and protection of the unique MHRs of the Sanctuary. With additional MHR knowledge visitors to the Sanctuary can enjoy their experience while mitigating impacts to these resources and potentially engaging in a stewardship role. Visitors to regional learning centers will also be informed of the region’s maritime heritage and the role of the Sanctuary Program in protecting and managing these resources.

Contemporary Chumash Native American Culture

The Sanctuary has a history of working closely with the Chumash community to help revitalize and teach others about Chumash culture as it relates to the ocean and the Sanctuary, such as funding activities like the construction of a tomol (traditional Chumash plank canoe) and providing support and assistance during historic tomol Channel crossings to the Channel Islands. In 2004 CINMS added a Chumash Community seat to the Sanctuary Advisory Council and has since been helping to form a related Chumash

Community Working Group. However, there is still a need for CINMS to do more in partnership with this important community in order to more fully understand and promote public education about the special cultural relationship of Chumash people to the Sanctuary (both historical and contemporary) and to help the Chumash people become more connected to their heritage and involved in Sanctuary management.

Addressing the Issues – Strategies For This Action Plan

With the development of underwater technologies bringing the public physically and virtually closer to the marine environment, there is increasing interest in the protection of MHRs. Management of these historically significant resources can provide the public with a variety of education, research, and recreation opportunities. The continuing discovery, exploration, documentation, and study of these resources provide a richer understanding of the region's maritime community, which is an important component of the larger ecosystem CINMS is protecting. MHRs provide an excellent historical record to past human behavior patterns and uses in the Sanctuary.

Submerged maritime heritage resources are subject to irreversible injury and can be severely compromised by human and environmental impacts. Although the Sanctuary allows certain compatible activities, it must assess multiple-use against the over-riding responsibility for protecting both maritime heritage resources and natural resources for current and future generations.

With the Maritime Heritage Resources Action Plan, CINMS will continue to inventory, monitor and protect these archaeological resources. The public will be engaged and informed through volunteer efforts, exhibits and access through Website technologies. Partnerships with Chumash community members and organizations will be fostered to further goals of the program.

There are six strategies designated for this Maritime Heritage Resources Action Plan:

- Strategy MHR.1 – The Shipwreck Reconnaissance Program
- Strategy MHR.2 – Maritime Heritage Resources Volunteer Program
- Strategy MHR.3 – Partnering With the Santa Barbara Maritime Museum
- Strategy MHR.4 – Implementing a Coordinated MHR Protection Outreach Effort
- Strategy MHR.5 – Upgrading the MHR Protection Website
- Strategy MHR.6 – Promoting Public Education of Chumash Native American Culture

STRATEGY MHR.1 - THE SHIPWRECK RECONNAISSANCE PROGRAM

- *Objective:* To contribute to scientific knowledge and enhancement of management practices related to underwater historic resources by encouraging research and monitoring efforts.
- *Implementation:* Maritime Heritage Resources Protection staff

Background

The NMSRP adheres to the Federal Archaeology Program as established by the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470f). Federal agencies with land management responsibilities for public lands must inventory their holdings (Sec. 110) and ensure mitigation of any federally funded activities threatening historical and cultural resources on those lands (Sec. 106). In 1971, Executive Order 11593 required all agencies create programs to facilitate the protection of cultural resources on protected lands. The Shipwreck Reconnaissance Program contributes to scientific knowledge and enhancement of management practices related to underwater archaeological resources by encouraging research and monitoring efforts.

Activities (3)

(1) Maintain The CINMS MHR Inventory. A comprehensive inventory of MHRs began at the time of CINMS' designation in 1980 and continues today. To date, 30 of the 140 known historic sites in the Sanctuary have been recorded. The inventory process includes: 1) literature searches of secondary and primary source documentation; 2) interviews with local sport and commercial diving/fishing communities and local residents; 3) field searches to locate probable submerged sites; 4) systematic recording of submerged sites establishing site maps, still photography and videography; 5) monitoring sites for new discoveries and evaluation of human disturbance; 6) identifying partners to perform research and field studies for publication; 7) presentation of findings to the public and scientific community; 8) conversion of site maps to GIS format and 9) evaluation of sites for National Register of Historic Places (NRHP) designation.

Status: Implemented 1980; remains an ongoing project to be conducted annually

Partners: Channel Islands National Park and CMAR

(2) Continue Year-Round Monitoring Of Known Sites. Utilizing federally certified scuba divers, the Shipwreck Reconnaissance Program provides year-round monitoring of submerged sites. Periodically emergent beach shipwrecks are viewed during routine SAMSAP flights. To date, major submerged archaeological sites have been recorded within recreational diving depths. Through a cooperative partnership, the program has qualified archaeologists to oversee field studies. Underwater artifacts are recorded and mapped providing archaeologists with an accurate reconstruction of sites. To augment field studies, archival research is conducted which broadens the historical context of each site. CINMS and CINS, working with Coastal Maritime Archaeology Resources (CMAR) personnel, are prepared to respond and investigate new discoveries on short notice. The response team mitigates possible injury to sites and can provide emergency documentation and recovery for artifacts at risk. To secure "at risk" artifacts, CINMS has established a system for conserving, cataloging, displaying and curating items through the Santa Barbara Maritime Museum and State of California. Over the next 5 years, the Sanctuary would like to employ deep-water technology, such as remotely operated vehicles (ROVs)

or manned submersibles to investigate sites at greater depths.

Status: Implemented 1997; remains an ongoing project to be conducted annually

Partners: CINP; CMAR; SBMM; CSLC

(3) Produce Various MHR-Focused Outreach Materials. Such materials include underwater site maps of selected shipwreck sites, such as: 1) artifact identification for public use; 2) an updated and reprinted *Shipwrecks of The Channel Islands* brochure; 3) documentation on qualifying sites for nomination to the National Register of Historic Places; 4) *CINMS Maritime Heritage Resources* brochure; 5) an expanded CINMS MHRs website, including shipwreck database curriculum and 6) a published assessment of the current status of CINMS MHRs.

Status: Ongoing function since designation; several upgraded products and web offerings since 2000; additional materials produced from years 2 through 5.

Partners: Internal

STRATEGY MHR.2 – MARITIME HERITAGE RESOURCES VOLUNTEER PROGRAM

- *Objective:* To provide an opportunity for individuals most interested in maritime heritage resource protection to become stewards and representatives of the CINMS.
- *Implementation:* Maritime Heritage Resources Protection staff

Background

CINMS looks to the community for providing additional expertise and assistance in recording and inventorying MHRs. The Maritime Heritage Resource Volunteer Program provides an opportunity for individuals most interested in maritime heritage resource protection to become stewards and representatives of the Sanctuary. This program engages the public in the management and protection of resources, allowing individuals to participate in research and interface with the public in presenting discoveries.

The Shipwreck Reconnaissance Program success is due in part to its partnership with Coastal Maritime Archaeology Resources (CMAR), an avocational archaeological organization. Through volunteer efforts, this team of qualified historians and avocational archaeologists has successfully recorded several submerged sites in the Sanctuary. Beyond archival research and recording of sites, CMAR volunteers will present their findings in both academic and professional settings as well as to the public.

Activities (3)

(1) Work With Volunteers In The Production Of Waterproof Shipwreck Maps. CMAR members have years of experience in recording and developing underwater site maps. Upon completion of recording artifacts in the field, the information is transformed into Design CAD computer software for use in Arch View GIS applications and supports the production of waterproof slate imagery.

Status: Ongoing partnership; Implementation of first slates by year 3

Partners: CMAR; Santa Barbara Maritime Museum

(2) Support Volunteer Photo And Video Documentation Of Sites. The annual recording and monitoring of underwater sites of historic significance is an important process in establishing a baseline of site conditions and documenting future changes brought on by environmental or human impact. CMAR members utilizing CINMS and CINP underwater video equipment help document established monitoring stations at designated sites.

Status: Ongoing activity to continue in years 1 through 5

Partners: CMAR; CINP; State of California

(3) Support Volunteers In The Production Of Annual MHR Reconnaissance Reports. Upon completion of each Field Reconnaissance Expedition to record submerged resources in the Sanctuary, reports documenting site conditions require processing. CMAR provides invaluable site evaluation and documentation included in the production of the reports.

Status: Ongoing activity to continue in years 1 through 5

Partners: CMAR, CINP

STRATEGY MHR.3 - PARTNERING WITH THE SANTA BARBARA MARITIME MUSEUM

- *Objective:* To promote the stewardship role of CINMS, Channel Islands National Park and the State of California in providing research, developing public awareness, overseeing visitor use and protecting MHRs.
- *Implementation:* Maritime Heritage Resources protection staff

Background

The recently opened Santa Barbara Maritime Museum (SBMM) anticipates 100,000 local, national and international visitors each year. CINMS has accepted an opportunity to partner with the museum to create interactive exhibits providing museum visitors with a hands-on approach to learning about the Sanctuary's maritime heritage.

CINMS and SBMM are developing exhibits featuring shipwrecks of the Sanctuary and NOAA has agreed to provide Procurement, Acquisition, and Construction (PAC) funding for exhibit development. Exhibits will explain the stewardship role of CINMS, Channel Islands National Park and the State of California in providing research, developing public awareness, overseeing visitor use, and protecting MHRs. In addition to permanent shipwreck exhibits, Sanctuary staff will participate in an ongoing lecture series at the museum.

Activities (3)

(1) Maintain and Update the NOAA Exhibit. This exhibit provides information pertaining to the role and responsibility of the Sanctuary, the National Park and the State of California in protecting MHRs. The exhibit includes images of Native American Chumash watercraft, field research, historic research, and a video presentation on the Shipwreck Reconnaissance Program.

Status: Phase 1 installed in 2000, future maintenance and upgrades as necessary.

Partners: Santa Barbara Maritime Museum; CMAR; CINP

(2) Maintain the Winfield Scott Exhibit. The *Winfield Scott* Shipwreck Exhibit tells the story of the California gold rush-era, side-wheel steamer *Winfield Scott*, which was stranded on Anacapa Island in 1853 with over 400 passengers onboard. The steamer's history and marooning is presented by survivors' first-person accounts.

Status: Install in December 2005, future maintenance and upgrades as necessary.

Partners: SBMM; CMAR; CINP

(3) Maintain the Central California and Channel Islands Shipwrecks Exhibit. The Central Coast and Channel Islands Shipwrecks Exhibit will highlight individual shipwrecks and tell the story of how hundreds of shipwrecks have been lost in the region. The historic profiles of each shipwreck will include contemporary shipwreck images, modern underwater images and historic artifacts.

Status: Exhibit planned for 2007, future maintenance and upgrades as necessary.

Partners: SBMM; CMAR; CINP

STRATEGY MHR.4 - IMPLEMENTING A COORDINATED MHR PROTECTION OUTREACH EFFORT

- *Objective:* To enhance the quality of visitor usage and avoid injury to archaeological resources by providing the sport and commercial diving communities with interpretive information on MHRs.
- *Implementation:* Maritime Heritage Resources staff; Education and Outreach staff

Background

This strategy seeks to enhance the quality of visitor usage and avoid injury to archaeological resources by providing the sport and commercial diving communities with interpretive information on MHRs. Important points of contact when reaching out to these diving communities include dive clubs, dive shops, and commercial dive boat operators. CINMS is developing a coordinated outreach effort to make contact with these communities through printed materials, presentations, and diving aids.

Activities (3)

(1) Create And Distribute Shipwreck Interpretive Underwater Slates. Slates will contain underwater maps, descriptions of significant artifacts, historical profiles of vessel history and loss, and information on location, depth, relevant regulations, and dive protocol.

Status: Slates produced and in use by year 3

Partners: Internal

(2) Create And Distribute Video Of CINMS Shipwrecks. This interpretive video will feature *Shipwrecks of The Channel Islands* and will be distributed to local dive shops, dive clubs and commercial dive boat operators.

Status: Video produced and distributed by year 3

Partners: Internal

(3) Establish A Shipwreck Trail Guide And Mooring System. CINMS will work with other local resource management agencies and organizations to develop and maintain a mooring buoy system providing safe access to selected shipwrecks and mitigates impacts to marine resources. Each proposed site will be evaluated to meet a criterion that human visitation will not compromise the protection of Sanctuary resources.

Status: Work will begin in year 3 and will be ongoing thereafter

Partners: CINP; State of California

STRATEGY MHR.5 – UPGRADING THE MHR WEBSITE

- **Objective:** To promote understanding of, appreciation for and involvement in the protection and stewardship of MHRs to a wide spectrum of the public
- **Implementation:** Maritime Heritage Resources protection staff

Background

The current CINMS MHR website hosts an overview of selected shipwrecks and Chumash history. Upgrading the website will promote public understanding of, appreciation for, and involvement in the protection and stewardship of MHRs targeting to students, educators, researchers and sport divers. This strategy calls for development of a dynamic website emphasizing recent discoveries and real-time uplinks to current events.

The website will include interactive features such as live underwater uplinks from field sites, living journals of students and researchers, and TV uplinks of maritime heritage resource lectures. Electronic versions of all maritime heritage resource printed materials, such as the *Shipwrecks of the Channel Islands* brochure and the *CINMS Maritime Heritage Resource Assessment* publication may be downloaded from the website. Shipwreck site information will be available including maps, vessel histories, artifact descriptions and historic images. SBMM shipwreck exhibit information will also be on the website.

Activities (3)

(1) Incorporate SBMM Exhibits Into The Website. Images of the shipwreck exhibits and the stories they tell can provide an interactive experience for visitors to the CINMS MHR website. Several of the exhibits will include underwater video footage recorded at the shipwreck sites that can be incorporated onto the CINMS MHR website.

Status: Significant website updates in 2003; more to follow across years 1-5

Partners: internal

(2) Incorporate Shipwreck Profiles And Site Maps Into Website. Providing lesson plans online allows students from several different schools across the nation to access the curriculum any time of day. A “West Coast Shipwreck Database” curriculum was established to raise public awareness about the importance and value of historic shipwrecks. This website will serve the diving community by providing underwater site maps, artifact descriptions, regulations, and diver protocol for visiting MHR sites.

Status: Significant website updates in 2003; more to follow across years 1-5

Partners: CMAR; CINP; State of California

(3) Incorporate “Living Journals” Into Website. The CINMS MHR website will feature visitors’ recollections after visiting the Sanctuary’s MHRs. The West Coast Shipwreck Database, in addition to providing an online curriculum, will assist families searching for information about shipwrecked vessels their relatives may once have served on. Family members are encouraged to share with the public their living journals associated with the shipwreck histories for dissemination on the MHR website.

Status: Significant website updates in 2003; more to follow across years 1-5

Partners: Various authors

STRATEGY MHR.6 – PROMOTING PUBLIC EDUCATION OF CHUMASH NATIVE AMERICAN HISTORY

- *Objective:* To assist in cultural revitalization among regional Chumash communities while inspiring understanding and stewardship of the Sanctuary
- *Implementation:* Maritime Heritage Resources staff; Education and Outreach staff

Background

CINMS has promoted education of Chumash heritage primarily through a partnership with the Chumash Maritime Association (CMA), a non-profit organization dedicated to raising self-esteem and community building through the Chumash *tomol* (a traditional plank canoe). This ongoing partnership provides a unique opportunity to assist the CMA in cultural revitalization among regional Chumash communities tied to sacred stewardship traditions regarding the Santa Barbara Channel. Through support of CMA education and outreach opportunities, CINMS will help accomplish this goal. In 2004, the Sanctuary Advisory Council to CINMS was expanded to include a Chumash Community seat. With Sanctuary staff assistance, representatives to that seat have been promoting awareness of and raising interest in CINMS among Chumash community members, and with continued Sanctuary support they plan to convene an active Working Group. Through these Advisory Council efforts CINMS is helping to support a cultural revitalization of Chumash communities linked to the Channel Islands and surrounding Sanctuary waters.

Activities (3)

(1) Support Various Watercraft-Paddling Excursions. CINMS will continue to assist the CMA and others in providing various paddling excursions for educational and resource awareness purposes. These excursions will include Channel crossings to the islands on a semi-regular basis, as well as long paddles up and down the coast, and may also include one and two-person kayaking excursions. CINMS provided support for the first contemporary *tomol* Channel crossing excursion in 2001. A common fiber joins Native Americans, their watercraft and the Pacific West Coast national marine sanctuaries. A paddling excursion joining the Chumash *tomol* and Makah watercraft at the Olympic Coast National Marine Sanctuary (OCNMS) during Makah Days will unite the sanctuaries through traditional Native American watercraft and their peoples.

Status: Initiated in 2001, repeated in 2004. CINMS support for additional paddle excursions across years 1-5 will be based on CMA plans.

Partners: CMA; SBMM; CINP and OCNMS

(2) Support Ocean Skills And Safety Program. As a joint CINMS/CMA partnership, Year one will include a *Getting On The Water* program for Chumash participants, which will include: 1) water safety; 2) physical conditioning; 3) CPR; 4) information on tides, currents, weather, and boating rules.

Status: Begin program in year one; repeat as needed in years 1-5.

Partners: CMA, Advisory Council Chumash Working Group

(3) Develop Outreach Opportunities. CINMS to help the CMA and Chumash Working

Group provide opportunities to educate the larger regional community regarding Chumash and environmental issues. Community outreach will seek to gain support from Chumash communities as well as the community at large. By year two, a “*Reconnecting All The Parts*” program will be launched. This program would be designed primarily for Chumash people to teach other Chumash community members the value of respecting where they live and what they use. Chumash community members could be educated on such topics as: 1) the geophysical features of the Chumash homeland; 2) the life cycle of plant communities; 3) respectful gathering skills; 4) navigation of the Chumash homeland; 5) healthy habitats for the animal community; 6) dispute resolution, negotiation skills and group decision-making; 7) how to find, prepare and share traditional Chumash foods; 8) a traditional craft for gift making. The third through fifth years of the program would focus on connecting communities (past and present) through hand crafting and utilizing a tomol, followed by inter-tribal and inter-community gatherings.

Status: New program planning in year one, implement education and education and training activities in year 2, focus on Chumash inter-community connections across years 3-5

Partners: CMA, Advisory Council Chumash Working Group

Table 12: Estimated Costs for the MHR Action Plan

Strategy	Estimated Annual Cost (in thousands)*					Total Estimated 5 Year Cost
	YR 1	YR 2	YR 3	YR 4	YR 5	
MHR.1: Shipwreck Reconnaissance Program	\$20**	\$71.5 **	\$51.5 **	\$51.5 **	\$61.5 **	\$256 **
MHR.2: Cultural Resources Volunteer Program	\$3.5	\$3.5	\$3.5	\$3.5	\$3.5	\$17.5
MHR.3: Santa Barbara Maritime Museum	\$90 ^	\$118 ^	\$16 ^	-	-	\$224
MHR.4: MHR Outreach Effort	\$6	\$36	\$17.5	\$7.5	\$3	\$70
MHR.5: Upgrading The MHR Website	\$1.5	\$1.5	\$1.5	\$1.5	\$1.5	\$7.5
MHR.6: Promoting Public Education Of Chumash History	\$12.5	\$12.5	\$12.5	\$12.5	\$12.5	\$62.5
Estimated Total Annual Cost	\$133.5	\$243	\$102.5	\$76.5	\$82	\$637.5
* Cost estimates exclude base budget funding requirements (salaries, overhead, etc.).						
** Contributions from outside funding sources also anticipated.						
^ Includes funding from NMSP Capital Facilities allocations.						

Addressing the Issues – Strategies From Other Action Plans

In addition to the strategies identified in this Maritime Heritage Resources action plan,

there are strategies from other action plans either directly or indirectly addressing the issues associated with submerged archaeological resources, such as:

- Strategy BE.2 – Final Determination on Boundary Issue
- Strategy AU.6 – Developing Education and Outreach Tools and Products
- Strategy AU.7 – Visitor Center Support and Development
- Strategy EE.1 – Emergency Response Planning and Implementation

Addressing the Issues – Regulations

Existing Regulations

There is one existing Sanctuary regulation directly associated with CINMS submerged maritime heritage resource issues:

- Prohibition on removing or damaging any historical or cultural resource (15 CFR 922.71(a)(6)).

Potential Modifications to Existing Regulations

- Prohibition on moving, removing, injuring, or possessing, or attempting to move, remove, injure, or possess a Sanctuary historical resource.

Potential New Regulations

There are no potential new regulations associated with this action plan

EMERGING ISSUES ACTION PLAN

Overview

This action plan focuses on development of a framework to identify and address future Sanctuary resource protection issues. With an ecosystem-based approach to resource management, CINMS examines and evaluates resource management issues that may emerge within or adjacent to the Sanctuary. This approach requires CINMS staff accurately identify, research, and assess the significance of new issues and threats, and provide for ongoing tracking of such issues. With timely and proper issue assessment and analysis, appropriate actions can be taken by the Sanctuary in order to reduce the potential for negative impacts on CINMS resources and qualities, and/or in order to maintain the public's appropriate use and enjoyment of the Sanctuary.

Description of the Issues

Although a wide range of specific issues have been discussed in other action plans, several emerging issues are not addressed. Emerging issues for CINMS may include those that are currently considered to have relatively small impacts, but could grow to have large impacts in the future, as well as issues that have arisen in other coastal and marine areas but have not yet appeared in the Sanctuary. Such issues also include those currently unknown or unforeseen but which may emerge in the future due to technological advances, changes in operations, growing population sizes, or other factors.

The level of CINMS staff attention and responsiveness to emerging issues has increased over time, especially over the last six years. Such improvements have resulted from increases in staffing levels, improved monitoring of and knowledge about the ecosystem, greater public awareness of the Sanctuary, and the 1998 formation of the Sanctuary Advisory Council. However, an important need for CINMS is to become more consistent and coordinated in efforts to learn about, track, analyze, and respond to emerging issues. Ultimately, improved responsiveness to new issues will help head off potential negative consequences to Sanctuary resources.

There are a number of known issues that, while not yet impacting the Sanctuary, could emerge as significant concerns for CINMS. Other known issues may be affecting Sanctuary resources or qualities, but require additional research or monitoring before such impacts can be known. Below is a partial list of several issues the Sanctuary is currently aware of, each of which may emerge more fully in the future. However, there are many other issues, either partly known or wholly unforeseen which are not listed here.

Acoustics (Noise)

Noise pollution in the ocean comes from a variety of sources, including seismic exploration, military activity, recreational and commercial boats, motorized personal watercraft, and acoustic thermometry. Sound travels approximately 4.5 times faster in seawater than in air, with low-frequency sounds (sounds below 1000 Hz) traveling the farthest (Richardson et al. 1995).

Potential impacts on marine resources from noise are of increasing concern. Impacts from high decibel noise, especially at close range, can cause acute physiological effects in living marine resources, such as tissue damage in lungs and ears and ruptured or hemorrhaged body parts. Other effects include masking of important signals (such as those

used for echolocation, intra-species communication, and predator-prey cues), altering migration patterns or abandonment of important habitats, and negatively affecting energy and physiology (Ketten 1998; Scheifele 2000). Fish and invertebrates may experience damage to eggs, reduced reproduction rates, and physiological or morphological damage (Lagardère 1982; Myrberg 1990; Hastings 1991).

In September, 2004 the Sanctuary Advisory Council unanimously adopted a set of recommendations put forth by their Conservation Working Group advising the CINMS on how to begin addressing potential marine life impacts from anthropogenic noise sources such as large vessel traffic. Leading up to this action, the Advisory Council took an educational approach to understanding this complex issue, and the Conservation Working Group developed a comprehensive report on the subject (available at: <http://www.channelislands.noaa.gov/sac/pdf/7-12-04.pdf>). The Advisory Council advised that progressive steps be taken with regard to promoting greater scientific understanding of the issue and investigating policy-based options for mitigating noise impacts. These recommendations call for increased research on noise sources and associated effects on marine life, investigation of partnership development between CINMS and other agencies and industries, and consideration of policy options for mitigating threats from noise sources such as large vessel traffic. In 2005 CINMS began initial discussions with the NOAA Fisheries' Office of Protected Resources aimed at developing a partnership-based inquiry into many of the Advisory Council's recommendations.

Aquaculture

Aquaculture is generally described as the raising of fish or shellfish subject to some controls in ponds, pens, tanks or other containers (Leet *et al.* 2001). The primary goal of many hatchery programs is to either a) create a positive economic or conservation effect through enhancing the numbers of a commercially valuable species or b) rejuvenate a species considered rare, threatened or endangered. Aquaculture regulations within state waters are promulgated by the California Fish and Game Commission.

Aquaculture containment facilities may be located within or separate from natural marine and aquatic environments. Hatcheries are a particular type of aquaculture facility typically used to rear marine organisms for subsequent intentional release into the environment. The California Department of Fish and Game's Ocean Resources Enhancement and Hatchery Program facilities in Carlsbad rear white seabass and California halibut and are researching the potential for rearing giant sea bass, all of which occur naturally within the Sanctuary (Leet *et al.* 2001).

Aquaculture facilities do not presently occur within the CINMS boundary but several facilities occur within the study area. 85% of mussel aquaculture production and 91% of abalone aquaculture production in the State of California occurs along the mainland adjacent to the study area ([California] Resources Agency of California 1997). In addition, the Ecomar company collects naturally settled mussels and other invertebrates from several oil and gas structures in the study area. Potential future developments in regional aquaculture may include in-situ ocean-based abalone aquaculture facilities as well as oyster aquaculture.

In 2003, the Hubbs-SeaWorld Research Institute announced plans to pursue permitting approvals for installation of an aquaculture facility located at an offshore oil platform (Platform Grace) adjacent to the eastern boundary of CINMS. The proposed operation, called the Grace Mariculture Project, would culture white seabass, striped bass, rockfish,

bluefin tuna, California yellowtail, and shellfish such as abalone and mussels (Hubbs Sea-World Research Institute 2004). It is uncertain when permitting approvals for the project are expected.

Since aquaculture operations have the potential to impact resources and qualities beyond their immediate environs, operations adjacent to and within the Sanctuary region, or release hatchery-raised organisms into the area, may impact Sanctuary resources and qualities. For example, aquaculture operations may disturb the seabed or introduce disease pathogens, chemicals (such as algicides and antibiotics) and/or introduced species (Kay and Alder 1999).

Artificial Reefs

Currently, there are a number of oil rigs just outside the Sanctuary boundaries that may reach the end of productive operation within then next several years or longer. If these rigs are decommissioned, there is interest in using all or part of these rigs for artificial reefs instead of removing them. The Sanctuary will investigate the issue of decommissioning rigs as part of the upcoming SEIS process for Sanctuary boundary evaluation (see Strategy BE.2).

Introduced Species

The Sanctuary defines introduced species is defined to mean: (1) a species (including but not limited to any of its biological matter capable of propagation) that is non-native to the ecosystems protected by the Sanctuary; or (2) any organism into which genetic matter from another species has been transferred in order that the host organism acquires the genetic traits of the transferred genes. This prohibition is designed to help reduce the risk from introduced species, including their seeds, eggs, spores, and other biological material capable of propagating as introduced species may threaten the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agriculture, aquaculture, or recreational activities dependent on such waters. Introduced species can have several types of impacts on native coastal marine species (for addition details, including references, see Vol. II, DEIS, Section 3.5.5.1):

- Replacement of a functionally similar native species through competition;
- Reduction in abundance or elimination of an entire population of a native species, which can affect native species richness;
- Inhibition of normal growth or increased mortality of the host and associated species;
- Increased intra- or interspecies competition with native species;
- Creation or alteration of original substrate and habitat;
- Hybridization with native species;
- Other genetic effects;
- Transfer of new parasites and diseases; and
- Direct or indirect toxicity (e.g., toxic diatoms).

According to the International Maritime Organization (IMO 2000), the introduction of introduced species into new environments has been identified as one of the four greatest threats to the world's oceans, along with land-based sources of marine pollution, overexploitation of living marine resources, and physical alteration/destruction of marine habitat. Introduced species have negatively impacted over 45 percent of listed threatened or endangered species in the United States; the establishment of introduced species is

second to habitat loss as the major threat to native species diversity (Government Accounting Office 2002; Kimball 2001; Wilcove *et al.* 1998). The California Department of Fish and Game (CDFG) asserts “invasive species are the number two threat to rare, threatened or endangered species nationwide, second only to habitat destruction,” (Leet *et al.* 2001). At least 500 non-native species have invaded marine and estuarine habitats within the U.S. (deRivera *et al.* 2005). A 2005 report on non-native species monitoring in west coast national marine sanctuaries and National Estuarine Research Reserves identified 16 non-native sessile invertebrate species in the Channel Islands region originally introduced elsewhere on the west coast through vectors including shipping (hull-fouling), fisheries (accidental introduction via oysters), and ballast water (deRivera *et al.* 2005).

Commercial and recreational vessel traffic is a vector for the spread of introduced species. Ballast water, vessel hulls, rudders, propellers, seawater piping systems, intake screens, ballast pumps and sea chests are capable of inadvertently transporting species. Once introduced species have become established in a vessel they may be transported from the affected port to other international and domestic ports or simply by drifting as planktonic larvae in ocean currents. Introduced species are also transported by dredging/drilling equipment, dry docks, buoys, seaplanes, canals, marine debris, and recreational equipment (Carlton 2001). Animals purposely transported for research, restoration, education and aquarium activities also have potential for illegal release, whether intentional or accidental. For more information on the impacts of introduced species, see the DEIS (Vol. II, Section 3.4).

Introduced species issues for CINMS include determining: a) the extent of introduced species invasions, b) sources of species introduction and relative risks, and c) the role of public and industry outreach and education in preventing or detecting species introduction. Working with key partners, such as the California Department of Fish and Game, Department of Boating and Waterways, and other agencies and experts, CINMS would like to play a role in strengthening efforts to control the release of introduced species in the Channel Islands region. There is a regulatory prohibition on introduced species release within CINMS proposed as part of this management plan review (see DEIS, Vol. II, Section 2.1.13).

Marine Bioprospecting

Biodiversity prospecting, or bioprospecting, is the activity of seeking a useful application, process, or product in nature. Removal of marine life or plants from the Sanctuary has the potential to alter the balance and function of local ecosystems. In addition, collection methods could injure or destroy habitat features.

Although marine bioprospecting has not occurred within the Sanctuary, to the knowledge of the NMSP, the Minerals Management Service and UCSB are engaged in a collaborative marine bioprospecting research project at oil rigs adjacent to the Sanctuary. Due to the limited extent of marine bioprospecting in this area, the implications from this activity are not fully understood, but CINMS will continue to monitor this activity as it occurs.

Marine Mammal Strikes

Heavy vessel traffic creates the possibility of collision with large marine mammals. Although all types of vessels can strike marine mammals, size and speed are the most important variables in assessing the potential for a fatal collision. In a study of historical, world wide strikes between motorized ships and large whales, Laist *et al.* (2001) found

most documented lethal or severe ship strikes occurred with vessels over 264 feet in length. Eighty-nine percent of lethal or severe ship strikes were caused by ferries traveling over 12 knots, cargo ships over 14 knots or cruise ships over 29 knots (Laist *et al.* 2001).

The majority of in-transit cargo vessels travel through the Santa Barbara Channel at speeds greater than 14 knots. During their southern migration, gray whales cross the shipping lanes and navigate past dozens of large commercial vessels each day. In addition, the Santa Rosa and San Miguel escarpment is heavily populated by blue, fin and humpback whales during the late summer and fall months, making it another area where the potential for a collision with a ship is high.

NOAA Fisheries data shows ten suspected incidents of vessel collisions with whales were reported between January 1983 and May 1998 within or in close proximity to the Santa Barbara Channel (U.S. Department of Commerce, NOAA, NMFS, Southwest Region, Protected Species Management Division, California Marine Mammal Stranding Network Database).⁴³ Involved in these collisions were three whale species including: gray (4), fin (3), blue (1) and unidentified (2). The collisions resulted from various vessels types including: three navy vessels, three freighters, and one whale-watching vessel. The remaining three incidents were stranded whales bearing propeller lacerations assumed to have been a consequence of collisions with unidentified vessels.

There has also been direct evidence of vessel strikes with sea turtles. Stranding records show evidence of vessel strikes with leatherback and green sea turtles primarily. (USDOC 2003)

Additional Issues

Additional potential emerging issues may include: a) construction of liquified natural gas offshore port facilities adjacent to the Sanctuary; b) wildlife disturbance from artificial lighting; and c) possible future sea otter migration into Sanctuary habitats.

Addressing the Issues – Strategies From This Action Plan

There are two strategies designated for this Emerging Issues Action Plan:

- EI.1 - Identifying & Assessing Emerging Issues
- EI.2 – Responding To Identified Issues



Figure 48: The Santa Barbara Channel is an important route for both shipping traffic and migrating whales, as demonstrated by this container ship and blue whale (circled) in the southbound shipping lane near Anacapa Island. (US Govt./NOAA)

⁴³ While in most cases it is almost impossible to determine the actual location of a collision, these incidents are thought to have occurred within or in close proximity to the Santa Barbara Channel.

STRATEGY EI.1 - IDENTIFYING & ASSESSING EMERGING ISSUES

- ***Objective:*** To identify, understand and prioritize emerging issues posing potential threats to Sanctuary resources or qualities.
- ***Implementation:*** Resource Protection; Research and Monitoring; Education and Outreach; Maritime Heritage Resources; Community (Sanctuary Advisory Council) and Management Planning.

Background

In order to provide long-term ecosystem-based protection to the Sanctuary, while allowing public use compatible with the Sanctuary's primary purpose of resource protection, CINMS staff must keep abreast of new activities and changing natural processes within and around the Sanctuary. It is essential CINMS staff be able to gain a quick and accurate understanding of new issues, and assess the priority for research or response based on sound criteria. Such criteria should be generally based on the degree of threat potentially posed to CINMS resources, consider the urgency of possible impacts, and also be based on the Sanctuary's appropriate capabilities, resources and jurisdictional authority. This strategy provides a framework and process for identifying new or emerging issues, assessing priorities, and keeping track of those issues over time.

Activities (3)

(1) Develop Comprehensive List Of Issues. Drawing on existing knowledge and with input from the Sanctuary Advisory Council, develop a list of potential emerging issues. This list should be created in conjunction with development of the Advisory Council's annual work plan and revised as new potential issues are identified.

Status: Complete in year one, maintain annually thereafter

Partners: Internal task, with input from Sanctuary Advisory Council and others

(2) Periodically Assess And Prioritize Emerging Issues List. Assessment of the issues list should be based on clearly defined criteria for determining issue importance, such as:

- Intensity, duration, and geographic extent of potential threat to CINMS resources or qualities
- Whether the issue falls within the Sanctuary's mandate
- Rate at which the issue or potential threat is growing or emerging
- Degree of public or Advisory Council interest in Sanctuary involvement in issue

Issue prioritization should also be based on input from the Advisory Council. This activity should be repeated at least annually.

Status: Complete by year two, maintain thereafter

Partners: Internal, with input from Sanctuary Advisory Council

(3) Track Emerging Issues. Identify effective means to track those potential issues most likely to emerge and become priorities for action.

Status: Implement improved tracking by year two and maintain thereafter

Partners: Internal

STRATEGY EI.2 – RESPONDING TO IDENTIFIED ISSUES

- ***Objective:*** To provide necessary protection to Sanctuary resources by responding in a timely and effective manner to emerging issues posing potential threats to Sanctuary resources.
- ***Implementation:*** Resource Protection; Research and Monitoring; Education and Outreach; Maritime Heritage Resources; Community (Sanctuary Advisory Council) and Management Planning.

Background

CINMS's observation of Sanctuary ecosystems has revealed a more complex and dynamic state of affairs than previously encountered, due to factors including significant population growth in counties adjacent to the Sanctuary, rapid technological changes affecting the nature and extent of commercial and recreational maritime activities, and improvements in monitoring and detection capabilities within the ocean environment. As new resource protection issues and challenges emerge, or knowledge about existing issues alerts us to new concerns, CINMS staff must be ready to respond appropriately in accordance with the Sanctuary's mandate to provide long-term resource protection. This strategy calls for CINMS staff to consult with the Sanctuary Advisory Council on new issues and take appropriate action to address emerging issues of concern.

Activities (2)

(1) Consult With The Sanctuary Advisory Council. Staff will inform the Sanctuary Advisory Council about emerging issues, arrange for presentations by experts, and seek the Council's advice on management actions.

Status: Occurring since 1998, to continue at bi-monthly meetings across years 1-5

Partners: Sanctuary Advisory Council

(2) Respond to Issues. Based on issue research and prioritization (see Strategy EI.1) and, where appropriate, consultation with the Sanctuary Advisory Council, staff will respond to emerging issues in a number of ways, including but not limited to:

- Consultation with local, state, or federal agencies with a leading or shared authority for addressing the issue;
- Commenting on local or regional private sector or government projects;
- Formation of a working group, via the Advisory Council, to develop options for addressing the issue;
- Applying existing CINMS programs (e.g., education, outreach, research, or monitoring) to address the issue; and
- Formation of an action plan, particularly for large, complex, long-term issues with multiple interested parties to be developed by staff or a multi-stakeholder working group.

Status: Occurring since designation; process improvements implemented in year 1 and maintained thereafter

Partners: Internal, various partner agencies, Sanctuary Advisory Council

Table 13: Estimated Costs For The Emerging Issues Action Plan

Strategy	Estimated Annual Cost (in thousands)*					Total Estimated 5 Year Cost
	YR 1	YR 2	YR 3	YR 4	YR 5	
EI.1: Identifying & Assessing Emerging Issues	-	-	-	-	-	-
EI.2: Responding To Identified Issues	-	-	-	-	-	-
Estimated Total Annual Cost	-	-	-	-	-	-

* Other than base budget funding requirements (salaries, overhead, etc.), which are not included in this table, future programmatic costs are unknown given the unpredictable nature of emerging issues.

Addressing the Issues – Strategies From Other Action Plans

In addition to the strategies identified in this Emerging Issues Action Plan, there are strategies from other action plans either directly or indirectly addressing the issues:

- AU.2 - Community Involvement/Volunteer & Intern Program Development
- AU.3 - Team OCEAN
- AU.4 - Developing Outreach Technology
- AU.6 - Developing Education & Outreach Tools & Products
- CS.1 - Sanctuary Aerial Monitoring and Spatial Analysis Program
- CS.3 - Supporting Existing Site Characterization & Monitoring Programs
- CS.4 - Collaborative Marine Research Project
- MZ.1 - General Marine Zoning
- WQ.2 - Water Quality Protection Planning
- EE.1 - Emergency Response Planning & Implementation
- OP.1 - Sanctuary Advisory Council Operations
- OP.2 - Permitting and Activity Tracking
- OP.3 - Relationships With Other Authorities

Addressing the Issues – Regulations

Existing Regulations

Many of the Sanctuary's existing regulations (Vol. I, Appendix C) are or may, in part, be related to some of the emerging issues mentioned in this action plan, including:

- Prohibition on exploring for, developing, and producing hydrocarbons except pursuant to leases executed prior to March 30, 1981, and except the laying of pipeline
- Prohibition on discharging or depositing any material or other matter except: (i) Fish or fish parts and chumming materials (bait); (ii) Water (including cooling water) and other biodegradable effluent incidental to vessel use of the Sanctuary generated by: (A) Marine sanitation devices; (B) Routine vessel maintenance, e.g., deck wash down; (C) Engine exhaust; or (D) Meals on board vessels; (iii) Effluents incidental to hydrocarbon exploration and exploitation activities otherwise allowed

by CINMS regulations.

- Prohibition on disturbing seabirds or marine mammals by flying aircraft below 1000 feet within 1 nm of island shores, except for enforcement purposes, to engage in kelp bed surveys or to transport persons or supplies to or from an Island.
- Except to transport persons or supplies to or from an Island, prohibition on approach within 1 nm of island shores for vessels engaged in the trade of carrying cargo, including, but not limited to, tankers and other bulk carriers and barges, or any vessel engaged in the trade of servicing offshore installations.
- Within 2 nm of any island, prohibition of constructing any structure other than a navigation aid, drilling through the seabed, or dredging or otherwise altering the seabed in any way, with exceptions for the laying of pipeline for purposes of exploring for, developing, and producing hydrocarbons, to anchor vessels, or to bottom trawl from a commercial fishing vessel.

Potential New or Modified Existing Regulations

Several modified or new Sanctuary regulations being considered (see the DEIS, Vol. II, Section 2) are or may, in part, be related to some of the emerging issues mentioned in this action plan, including:

- Except to transport persons or supplies to or from an Island, a prohibition of operating within one NM of an Island any vessel engaged in the trade of carrying cargo, including but not limited to, tankers and other bulk carriers and barges, any vessel engaged in the trade of servicing offshore installations, or any vessel of three hundred gross registered tons or more, except fishing (including kelp harvesting) vessels.
- Prohibition on operating a motorized personal watercraft within waters of the Channel Islands National Park, established by 16 U.S.C. 410(ff) (same as existing ban already in place at the Channel Islands National Park)
- Prohibition on taking any marine mammal, sea turtle, or seabird within or above the Sanctuary, except as expressly authorized by the Marine Mammal Protection Act, as amended, (MMPA), 16 U.S.C. 1361 et seq., Endangered Species Act, as amended, (ESA), 16 U.S.C. 1531 et seq., Migratory Bird Treaty Act, as amended, (MBTA), 16 U.S.C. 703 et seq., or any regulation, as amended, promulgated under these acts.
- Prohibition on possessing within the Sanctuary (regardless of where taken from, moved, or removed from) any marine mammal, sea turtle, or seabird, except as expressly authorized by the MMPA, ESA, MBTA, or any regulation, as amended, promulgated under the MMPA, ESA, or MBTA.
- Prohibition on introducing or otherwise releasing from within or into the Sanctuary an introduced species, except striped bass (*Roccus saxatilis*) released during catch and release fishing activity.

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OPERATIONS ACTION PLAN

Overview

While NMSP headquarters provides oversight and coordination among the thirteen national marine sanctuaries, setting priorities for addressing resource management issues, and directing program and policy development, Sanctuary staff are responsible for onsite management and day-to-day operation of the Sanctuary. The purpose of this action plan is to outline the means and support necessary for CINMS to implement the activities and objectives contained in the other action plans.

The Operations Action Plan describes the Sanctuary's day-to-day administrative and operational activities. These activities are designed to effectively, efficiently, and safely utilize the Sanctuary's existing administrative, infrastructure, fiscal, and human resources. Some operational activities are designed to augment such resources through means such as contracts, partnerships, volunteers, and community involvement programs, or through assessments to identify other viable options for achieving Sanctuary objectives. In addition, given the Sanctuary is one of many entities involved in the management of resources within the Sanctuary, partnerships and community involvement programs aid in achieving comprehensive and coordinated management of Sanctuary resources.

Description of the Issues

The Sanctuary's primary operational issues fall within the following three categories: 1) working with the community and other authorities; 2) building human resources capacity; and 3) improving Sanctuary facilities. A number of specific issues regarding sanctuary operations were raised during 1999 public scoping meetings, such as:

- The Sanctuary should identify the financial resources needed to meet current and future management objectives;
- There is a need for the Sanctuary to further coordinate, collaborate and partner with federal, state and local agencies, as well as with other entities; and
- Community action and citizen representation in Sanctuary management is critical.

Additional operational issues recognized by the Sanctuary Advisory Council, CINMS and NMSP headquarters staff include:

- Existing office facilities are inadequate;
- Visitor center facilities should be expanded;
- Existing staff resources do not provide sufficient capacity to fully address issues related to socioeconomic research and monitoring, multicultural education, and water quality.

Working With The Community And Other Authorities

The Sanctuary is one of many authorities responsible for managing resources and human activities in the Channel Islands. As such, CINMS places a high value on working with the community and other regional authorities. Effective management requires an understanding of each authority's roles and responsibilities, as well as coordination among

them. This understanding is important not only for staff of the various authorities, but also for their constituents. Given the diversity of interests among Sanctuary stakeholders, it is important for CINMS to consider a wide range of perspectives when making management decisions, while ensuring consistency with the purposes of the NMSA.

Building Human Resources Capacity

Building human resources capacity is important not only to enabling the Sanctuary to build upon its existing programs, but to address issues and develop programs not sufficiently met with current human resources.

For example, current Sanctuary staff have expertise in a wide variety of fields. To continually address the issues in this draft management plan, however, there is a need for on-site expertise in additional fields, such as water quality, multicultural education, and enforcement. In addition, some Sanctuary program areas are currently operated by a single staff person; in some instances, one staff position oversees multiple sanctuary program areas. Thus, existing program areas may also benefit from additional human resources. CINMS is subject to federal limitations on hiring additional General Schedule (GS) positions as well as budgetary limitations on contracting additional services. As a result, CINMS must continue to utilize other mechanisms to augment its existing GS staff positions.

Improving Sanctuary Facilities

Another operational issue for the Sanctuary is its limited facilities. The CINMS headquarters office is located at the harbor in Santa Barbara while a southern satellite office is located at the Channel Islands Harbor in Oxnard. In 2003 Booz Allen Hamilton, a strategy, management and technology consulting firm, produced a Facilities Master Plan for CINMS. This plan contains an assessment of existing sanctuary facilities, future staffing and space requirements, and an analysis of two alternatives for expanding Sanctuary facilities. According to the Plan, sanctuary office space is too small to accommodate existing staff and does not provide any capability for expansion.

Currently, the CINMS headquarters office houses fifteen work stations with an occupancy rate of 117 square feet per person, which is well below the occupancy rate of approximately 150 square feet per person suggested by industry standards and the General Services Administration (GSA). This plan also indicates a need for dedicated space to house a conference room, library, copy room, laboratory, and storage. Since neither Sanctuary office location has dedicated storage space, the Sanctuary rents public storage units for storing inventory, supplies and equipment. While CINMS does not maintain its own visitor center, it maintains exhibits at visitor centers and similar facilities operated by partner organizations (see the Public Awareness and Understanding Action Plan). In addition, Sanctuary headquarters in the Santa Barbara Harbor Waterfront Center are subject to local ordinances preventing the installation of additional signs outside the building, rendering CINMS offices effectively “invisible” and difficult to find. Although the plan indicates a need for expanded interactions with visitors, it also indicates large numbers of visitors would create serious operational problems given the crowded conditions of the existing offices.

Addressing the Issues – Strategies For This Action Plan

There are seven strategies in this Operations (OP) Action Plan:

- OP.1 – Sanctuary Advisory Council Operations
- OP.2 – Permitting and Activity Tracking
- OP.3 – Relationships with Other Authorities
- OP.4 – Vehicle, Boat and Aircraft Operations
- OP.5 – Administrative Initiatives
- OP.6 – Human Resources
- OP.7 – Office Space Expansion

Each of these strategies is detailed below.

STRATEGY OP.1 – SANCTUARY ADVISORY COUNCIL OPERATIONS

- *Objective:* The Advisory Council will continue to play a leading role in advising the Sanctuary on resource management issues.
- *Implementation:* Community and Management Planning, Resource Protection, Education and Outreach, Research and Monitoring, Maritime Heritage Resources

Background

The CINMS Advisory Council was established in December 1998 to ensure continued public participation in management of the Sanctuary. Since its establishment, the Council has played a vital role in decisions affecting the Sanctuary, bringing valuable community advice and expertise to the task of assuring effective Sanctuary management. The Council provides a public forum for consultation and community deliberation on resource management issues affecting the Sanctuary.

One of the Council's most important strengths comes from the diversity of its membership. The Council consists of twenty-one voting members and twenty-two alternates representing the general public, tourism, business, recreational fishing, commercial



Figure 49: Sanctuary Advisory Council members meet bi-monthly to discuss CINMS issues and advise the Sanctuary Superintendent. (CINMS)

fishing, non-consumptive recreation, education, research, conservation and Chumash community interests, as well as local, state and federal government agencies. In addition, the managers of three California national marine sanctuaries (Channel Islands, Gulf of the Farallones and Monterey Bay) participate as non-voting members of the Council. The in-depth and varied knowledge of these individuals, especially related to Sanctuary resources and values, combines to form a highly valuable collective body of expertise and experience.

The Council's objectives are to provide the Sanctuary Superintendent with advice on:

- Protecting natural and historical resources, and identifying and evaluating emergent or critical issues involving Sanctuary use or resources;
- Identifying and realizing the Sanctuary's research objectives;
- Identifying and realizing educational opportunities to increase the public knowledge and stewardship of the Sanctuary environment; and
- Assisting to develop an informed constituency to increase awareness and understanding of the purpose and value of the Sanctuary and the NMSP.

Non-governmental Advisory Council representatives are appointed competitively by the NOAA and serve voluntary two-year terms. The Council meets bi-monthly in open public

sessions located throughout Ventura and Santa Barbara counties. Public participation at these meetings is welcomed and encouraged.

The Council is supported by a number of active working groups: the Conservation Working Group, Sanctuary Education Team (SET), Commercial Fishing Working Group, Recreational Fishing Working Group, Research Activities Panel, and Chumash Community Working Group. These working groups are created by and operate under the purview of the Council, and help to bring additional community members and experts to the Advisory Council to focus on specific issues or stakeholder group concerns. Some working groups meet as often as bi-monthly, while others meet less frequently.

CINMS will continue to offer full support for the successful operation of the Advisory Council, and will increase efforts to improve its effectiveness and public accessibility.

Activities (3)

(1) Support the Operation and Administration of the Advisory Council. Sanctuary staff, primarily the Advisory Council Coordinator, will continue to provide support to the Advisory Council to ensure the effective handling of Advisory Council and working group meetings, public outreach, council communications, membership turnover, council documentation and outreach materials, web site information, budget tracking, and annual planning and reporting.

Status: Ongoing activity since 1998, to continue through years 1-5

Partners: Advisory Council

(2) Improve The Effectiveness Of The Advisory Council. The function of the Advisory Council will be strengthened by evaluating and developing improved organizational strategies to enhance the Council's level of participation and overall effectiveness. This support will involve improving assistance provided to the Advisory Council with:

- Increased media communications;
- Strategic planning of meetings;
- Annual planning;
- Formation and operation of working groups and subcommittees;
- Timely and appropriate provision of education materials, training and presentations;
- Effective recruitment of candidates for membership.

Status: Ongoing activities since 1998, improved approaches to begin in year 1

Partners: Advisory Council

(3) Sponsor Advisory Council-Hosted Issue Forums. Staff will support the Advisory Council in hosting public forums where Sanctuary resource management issues are discussed with the public. Such forums will seek wide public participation and will enable the community to learn from experts, hear a diverse range of perspectives and opinions, and offer input to the Advisory Council and CINMS. Through the Advisory Council, these public outreach efforts will be focused in two areas: 1) keeping the public informed about Sanctuary issues through periodically scheduled community forums; and 2) engaging the scientific community by inviting physical, biological and social scientists, as well as other subject matter experts, to publicly share knowledge about the Sanctuary and

select management issues.

Status: Institute in year 2 and repeat annually in years 2-5

Partners: Advisory Council, research institutions, resource management agencies.

STRATEGY OP.2 – PERMITTING AND ACTIVITY TRACKING

- ***Objective:*** To ensure information gained through research, education, salvage, and management activities conducted in the Sanctuary benefits CINMS programs and/or natural resources.
- ***Implementation:*** Staff from all seven functional areas

Background

Tracking research, education, salvage, and management activities, and where appropriate, permitting such activities otherwise prohibited by Sanctuary regulations is important to Sanctuary operations. By developing a means to track activities not requiring a permit, Sanctuary management may benefit from the voluntary sharing of valuable knowledge and experience gained through the use of the Sanctuary. In addition, the CINMS permit program provides a mechanism to allow appropriate research, education, salvage, and resource management activities that may benefit Sanctuary management but would otherwise be prohibited by Sanctuary regulations (current CINMS regulations, proposed revised regulations, and new regulations are discussed in the DEIS, Vol. II, Section 2.0), while requiring modifications to or conditions for proposed activities to reduce their impacts upon Sanctuary resources and qualities. The permit program also provides a mechanism for denying permit requests in order to protect CINMS resources and qualities. Additional background on Sanctuary permits is provided in Section II, Part D.

Activities (3)

(1) Continue Careful Oversight And Issuance Of Permits. Permitting will be conducted and coordinated by Sanctuary staff. The Sanctuary Superintendent will approve permits with the oversight of NMSP headquarters staff, provided some permits require headquarters approval. When evaluating an activity proposed to be conducted in the Sanctuary, the potential for injury is evaluated against the expected benefits of the outcome or use of the data. Proposed activities that may result in injury to Sanctuary resources must be of the highest quality and of benefit to the Sanctuary. The permitting process will remain straightforward and will usually not require substantial resources from either CINMS or the applicant. The results of all permitted research, as appropriate, will be made available to the Sanctuary and the public.

Status: Ongoing activity; will continue across years 1-5

Partners: CA Dept. of Fish and Game; Channel Islands National Park; US Fish and Wildlife Service; NOAA Fisheries; US Coast Guard

(2) Develop A Voluntary Research Registry. CINMS will develop an outreach program to encourage the regional scientific community, who are conducting research in the Sanctuary not requiring a Sanctuary research permit, to inform CINMS of the nature and intent of their research. The voluntary research registry will allow CINMS to spatially track research activities, understand the types of research activities being undertaken and benefit from research and monitoring findings from projects the Sanctuary did not directly assist or permit.

Status: Implement by year 2, maintain thereafter

Partners: CA Dept. of Fish and Game; Channel Islands National Park; US Fish and Wildlife Service; NOAA Fisheries; US Coast Guard; Academic and independent

researchers

(3) Consider Developing Voluntary Registries For Other Activities. Based on the initial success of the voluntary research registry CINMS staff will consider developing voluntary registries for other types of activities that may benefit Sanctuary management such as education activities. As in the research registry additional registries may allow CINMS to spatially track activities, understand the types of activities being undertaken, and benefit from the knowledge and experienced gained during registered projects the Sanctuary did not directly assist or permit.

Status: Implement in year 3

Partners: Internal



Figure 50: The voluntary research registry will help CINMS track the nature and extent of non-permitted research conducted in the Sanctuary. (Brad Doane)

STRATEGY OP.3 – RELATIONSHIPS WITH OTHER AUTHORITIES

- **Objective:** To work in a coordinated, complementary, and comprehensive manner with authorities with which CINMS has similar or overlapping mandates, jurisdiction, objectives, and/or interests.
- **Implementation:** Staff from all seven functional areas

Background

Since many local, state, and federal authorities have mandates, jurisdiction, objectives, and interests similar to or overlapping with those of CINMS, the Sanctuary maintains relationships with many of these entities. These relationships enable the Sanctuary and its partners to share resources and expertise, and to work in a coordinated, complementary, and collaborative manner to the extent practicable. The authorities with which CINMS maintains relationships, as well as the mechanisms used to formalize such relationships, are described in Section II, Part D. These relationships may also facilitate the transfer of knowledge regarding participating authorities' (including CINMS) resource protection, education and outreach, community involvement, and research programs, along with policies and regulations.

Activities (5)

(1) Conduct Outreach To Agencies And Stakeholders. CINMS staff will provide ongoing and increased guidance to local, state, and federal agencies, private sector stakeholders, and the public at large through targeted outreach programs and products.

Status: Ongoing activity; will continue across years 1-5

Partners: Internal, Advisory Council members, volunteers

(2) Comment At Public Hearings On Issues Affecting The CINMS. CINMS staff will increase efforts to offer comment at public workshops or hearings where decisions are being made or input is being sought regarding a decision with the potential to affect the resources or qualities of the CINMS.

Status: Ongoing activity; will continue across years 1-5

Partners: Internal

(3) Review And Comment On Relevant Plans And Projects. CINMS will review and comment on plans, projects, proposals, and policies that may impact Sanctuary resources. Such items may include coastal program updates, fishery management plans, and environmental review documents. As required by law, and when otherwise possible, CINMS staff will consult with other authorities to ensure proposed policies, plans, and projects (whether conducted directly by that authority, or permitted by it) do not violate Sanctuary regulations, are designed to minimize impacts to Sanctuary resources, and do not unduly impact appropriate public access and enjoyment of the CINMS.

Status: Ongoing activity; will continue across years 1-5

Partners: Numerous

(4) Enhance Partnership With The Channel Islands National Park. Since the park and sanctuary were established in 1980 the two entities have maintained a partnership based on

their overlapping boundary and shared mandate to protect the northern Channel Islands resources. As of 2003 CINMS and CINP have combined their volunteer interpretive programs into one joint program known as the Channel Islands Naturalist Corps. In addition, CINMS and CINP held a joint all-staff meeting in 2003, and management plan review staff from both agencies have consulted with one another regarding information to be provided in one another's new draft management plans. The Sanctuary plans to continue these aspects of the relationship with the park, as well as to look for new ways to strengthen the partnership.

Status: Ongoing activity; will continue across years 1-5

Partners: CINP

(5) Utilize And Maintain Tools To Formalize Relationships With Other Authorities.

The CINMS manager may draw from a selection of standard management tools to formalize interactions with other Federal, State and local agencies or the private sector including: memoranda of understanding/memoranda of agreement (MOUs/MOAs), interagency agreements, grants, cooperative agreements, contracts, joint project agreements, and consultation. These tools are explained in the Sanctuary Operational Setting (Section II). Beyond initially employing such tools, the Sanctuary must periodically review the terms contained within existing tools to determine whether, for example, the objectives of an old MOU have been met or are no longer relevant and if a new MOU should be developed with a given authority.

Status: Ongoing activity; will continue across years 1-5 and applied as appropriate

Partners: Numerous



Figure 51: CINMS Manager Chris Mobley and CINP Superintendent Russell Galipeau at a 2003 joint Sanctuary/Park staff meeting. (Robert Schwemmer)

STRATEGY OP.4 – VEHICLE, BOAT AND AIRCRAFT OPERATIONS

- Objective: To operate Sanctuary vehicles, vessels and aircraft in a safe and efficient manner.
- Implementation: Staff from all seven functional areas

Background

CINMS currently maintains a fleet of five vehicles, two vessels and one aircraft. Fleet maintenance is crucial to supporting Sanctuary activities from transporting staff, displays, and equipment to community events to conducting research and educational trips aboard Sanctuary vessels and conducting reconnaissance and research flights aboard aircraft. Fleet maintenance operations include determining when craft need to be repaired and/or replaced, overseeing maintenance and repair work, procuring new craft and associated equipment, training staff in the proper use and safety protocols for each type of craft and associated equipment, and keeping required records for all fleet craft.

Activities (3)

(1) Acquire And Maintain Sanctuary Vehicles. The Sanctuary Vehicle Control Officer (VCO) acquires vehicles as necessary through the General Services Administration (GSA) or other sources as appropriate. The VCO oversees maintenance, repairs, and replacement of vehicles as required by GSA. The VCO maintains records of vehicle use and type and amount of fuel. These records are sent to NOAA's Western Administrative Services Center (WASC) quarterly or as requested by WASC.

Status: Ongoing activity; will continue across years 1-5

Partners: WASC

(2) Maintain And Renovate Sanctuary Vessels. Sanctuary staff oversee vessel safety, scheduling, maintenance, training and drills, along with planning and executing vessel missions for both the *R/V Xantu* and *R/V Shearwater*. Vessel safety includes arranging safety inspections by authorized inspectors for all vessel systems at required intervals. Vessel staffing requirements for daytrips on the *Shearwater* are one licensed captain and one deckhand, while daytrips on the *Xantu* require one licensed captain. Staffing requirements for overnight trips, conducted on the *Shearwater* only, are two licensed captains and one deckhand. As part of vessel scheduling sanctuary staff will develop a competitive project proposal program and allocate vessel time to selected projects when vessels are not required for CINMS use.

Status: Ongoing activity; will continue across years 1-5

Partners: NOAA Marine and Aviation Operations, NMSP Small Boat Program

(3) Maintain Sanctuary Aircraft. Sanctuary staff oversee minor repairs and maintenance of the sanctuary's aircraft. Scheduled maintenance and other repairs are conducted at NOAA's Aircraft Operations Center on the MacDill Airforce Base in Tampa, Florida.

Status: Ongoing activity since 1998; will continue across years 1-5

Partners: NOAA Aircraft Operations Center

STRATEGY OP.5 – ADMINISTRATIVE INITIATIVES

- **Objective:** To administer the Sanctuary in a safe, consistent, and effective manner, ensuring basic site needs are met.
- **Implementation:** Sanctuary Superintendent, Site Operations and Office Administration staff, Designated Safety Officer

Background

Sanctuary administrative initiatives are overseen by the Sanctuary Superintendent and carried out primarily by site operations and office administration staff. Administrative initiatives address basic administrative support activities essential to day-to-day operations, with the exception of human resources and vehicle/vessel operations, described in their own strategies. Administrative initiatives include oversight of finances, services, and basic equipment and supplies. In addition, ensuring staff are provided with a safe and secure work environment is a basic requirement of administrative support. Two activities aimed at aiding the Sanctuary in meeting its basic administrative support needs are also included in this strategy: 1) working with the regional NOAA administrative support center, and 2) enhancing the Sanctuary's partnership with its affiliated non-profit foundation.

Activities (5)

(1) Continue To Manage Sanctuary Finances. CINMS will continue to perform budget planning and tracking, and produce an annual operating plan. The management plan will be used as a guide to help set budget and project priorities outlined each year in the annual operating plan.

Status: Ongoing activity since designation; will continue across years 1-5

Partners: Internal

(2) Ensure A Safe And Secure Working Environment. CINMS will continue to maintain a designated Safety Officer assigned to brief staff regularly on safety and emergency response measures for offices, vehicles, vessels, and aircraft. Safety and emergency response measures address emergency and health risks, homeland security requirements and natural disasters. The Safety Officer will continue to oversee the provision of safety materials in sanctuary offices, vehicles, vessels, and aircraft; coordinate with various agencies for safety inspections; and keep appropriate and required training and administrative records. Staff, contractors, and interns will continue to complete safety courses as required by the NOAA Environmental Compliance and Safety Office, along with NOAA security awareness courses.

Status: Ongoing activity; will continue across years 1-5

Partners: Internal, NOAA Environmental Compliance and Safety Office

(3) Work with the NOAA Western Administrative Support Center (WASC). WASC provides a comprehensive suite of administrative services including procurement, personnel services, health and safety, administrative payments, space management, regional engineering, environmental compliance, publications, information technology (IT) support, and security. CINMS will continue to work with WASC as needed for these

services.

Status: Ongoing activity; will continue across years 1-5

Partners: Internal NOAA

(4) Identify, Prioritize, And Fill Equipment And Service Needs. The Sanctuary will continue to prioritize equipment, supplies, and service needs, and attempt to procure funds to meet these needs.

Status: Ongoing activity; will continue across years 1-5

Partners: Internal

(5) Enhance Partnership With The Channel Islands Marine Sanctuary Foundation. The Channel Islands Marine Sanctuary Foundation is a nonprofit organization founded in 1995 with a mission to support the management, research and educational goals of the Channel Islands National Marine Sanctuary. CINMS will look for opportunities to enhance the partnership between the Sanctuary and foundation.

Status: Partnership began in mid-1990s; will continue across years 1-5

Partners: Channel Islands Marine Sanctuary Foundation, National Marine Sanctuary Foundation



Figure 52: CINMS staff regularly attend safety briefings as well as trainings in the use of safety equipment such as survival suits. (CINMS)

STRATEGY OP.6 – HUMAN RESOURCES

- Objective: To manage sufficient human resources for implementing existing and planned Sanctuary activities.
- Implementation: Sanctuary Superintendent, Office Administration staff

Background

The NMSPP places a high value on human resources. Ensuring Sanctuary human resources are sufficient, well managed, trained, and supported is a critical part of Sanctuary operations. Providing sufficient Sanctuary human resources may require recruitment of new staff, including NOAA Corps officers, to fill GS positions. Due to restrictions in adding and hiring for GS positions, along with budgetary limitations, CINMS supplements its existing staff resources through contracts, internships, volunteer programs, and partnerships. These additional human resources may contribute skills and expertise, and/or provide services and products for various sanctuary programs and projects as needed. The activities in this action plan focus on the Sanctuary's primary paid human resources: GS position staff, and contractors. More information specific to sanctuary interns and volunteers, and partners, is provided in Strategies AU.2 and OP.3.

Activities (4)

(1) Provide human resources services for staff. CINMS will continue to provide human resources services for staff including: recruitment and retention; training and career enhancement; administrative oversight of payroll, benefits, and travel; oversight of time and attendance; employee performance evaluations; and recognition for staff achievements.

Status: Ongoing activity; will continue across years 1-5.

Partners: Internal, NOAA Western Administrative Support Center (WASC)

(2) Maintain Sanctuary contracts. The Sanctuary currently maintains contracts with individuals who provide products and services such as web site development, database coordination, information technology (IT) support, planning, scientific support, administration, and vessel operations and maintenance. Maintaining contracts requires administrative oversight of procurement, invoices, and quarterly performance reports.

Status: Ongoing activity; will continue across years 1-5.

Partners: Internal, NOAA Western Administrative Support Center (WASC)

(3) Identify mechanisms to augment and stabilize paid human resources. Sanctuary staff will work to identify mechanisms to augment and stabilize its staff and contractor workforce. Mechanisms may include: detail and rotational assignments from within NOAA, NMSPP headquarters or other agencies; longer-term contracts; and partnering with the National Marine Sanctuary Foundation and Channel Islands Marine Sanctuary Foundation which may provide support for Sanctuary-related programs and projects.

Status: Ongoing since 2000; will continue across years 1-5

Partners: Channel Islands Marine Sanctuary Foundation, internship and fellowship programs

(4) Continue partnership with the NOAA Corps. CINMS has traditionally filled higher-level sanctuary positions with officers from the NOAA Corps. These officers are trained in engineering, earth sciences, oceanography, meteorology, fisheries science, and other related disciplines. Throughout NOAA they operate ships, fly aircraft, manage research projects, conduct diving operations, and serve in staff positions. Commissioned officers generally serve for two years on each assignment, though they may serve for short durations on specific projects as well. Commissions and benefits for officers on assignment at the sanctuary are paid for by the NOAA Corps rather than by the sanctuary. CINMS will continue its partnership with the NOAA Corps and will continue to fill select staff positions with NOAA Corps officers.

Status: Ongoing activity; will continue across years 1-5.

Partners: NOAA Corps

STRATEGY OP.7 – OFFICE SPACE EXPANSION

- Objective: To provide adequate office space for Sanctuary staff and operations
- Implementation: Education and Outreach staff, Office Administration staff

Background

The main CINMS office space facility is located at Santa Barbara Harbor (CINMS headquarters), supporting approximately 14 work stations. Additional smaller offices are located in Oxnard at the Channel Islands Harbor (4 work stations) and in downtown Santa Barbara in the Balboa Building (4 work stations). The CINMS headquarters space has been occupied at or beyond capacity for several years, and lacks feasible options for further expansion either on site or at other office locations. The CINMS headquarters office also lacks such basic features as a conference room and storage space, and local ordinances restrict most Sanctuary public signage. In addition, staff workstations are sized well below the approximately 150 square feet per person suggested by industry standards.

Facing these conditions, the NMSP hired in 2003 a consultant (Booz Allen Hamilton) to conduct a study of CINMS facilities needs. The study resulted in the development of a Facilities Master Plan for CINMS analyzing options for securing additional office space, placing signage, and locating educational exhibits. With regard to office space, the Facilities Master Plan considered factors such as current and future staffing levels, future space requirements, moving and annual costs, and decentralized vs. centralized office configurations. The study found the best value option for securing additional office space while also enhancing exhibits and visitor center services would be to pursue a proposal emerging from the University of California at Santa Barbara (UCSB).

UCSB's Marine Science Institute (MSI) has for several years partnered and collaborated with CINMS on many research, monitoring and educational programs and projects. With plans already in place to construct a marine education and outreach center, MSI approached CINMS in 2002 with the idea of constructing such a center on campus at a site next to the MSI building that might also provide the needed additional CINMS office space. From this initial idea UCSB took the lead on fundraising. In 2004 the NMSP provided some initial funding for preliminary design and feasibility work. Then, in fiscal year 2005, Congress awarded \$4 million to the project. These funds are currently being applied toward development of a detailed design of the combined CINMS office space and Outreach Center for Teaching Ocean Sciences (OCTOS). Fundraising by UCSB and MSI continues. CINMS would ultimately not own the new facility, but would enter into a long term lease with UCSB.

Activities (3)

(1) Participate in Building Design CINMS staff will continue to play a leading role in design work for the new office space and education center. Staff will continue to co-chair the project's Building Committee and serve as a liaison to CINMS and NMSP staff involved in or affected by the project.

Status: Staff assistance with design phase began in 2004 and will continue through years 1-2.

Partners: UCSB, MSI, hired architects

(2) Assist UCSB with Project Management During Building Construction. Upon completion of final design work, approval of all necessary permits, and assuming adequate additional funding has been secured (through UCSB sources and fundraising efforts), CINMS staff will assist with a variety of project oversight duties during the construction phase. This will involve close partnership and collaboration with project participants from UCSB and MSI, NMSP, and hired contractors, and other tasks as needed and appropriate.

Status: Expected to occur during years 2-4.

Partners: UCSB, MSI, hired contractors

(3) Develop CINMS Moving Plan and Conduct Move. Prior to the completion of construction, CINMS will develop a plan for the reallocation of staff and resources. This will likely involve the redesign of space at the Santa Barbara Harbor office (which will be kept as part of CINMS facilities) and decisions about the placement of individual staff, departments, equipment and other assets. When completion is completed, the moving plan will be implemented and use of the new office will commence.

Status: Planning in year 4, moving in year 4 or 5.

Partners: University of California, UCSB, MSI.

Table 14: Estimated Costs for the Operations Action Plan

Strategy	Estimated Annual Cost (in thousands)*					Total Estimated 5 Year Cost
	YR 1	YR 2	YR 3	YR 4	YR 5	
OP.1: Advisory Council Operations	\$18	\$18	\$18	\$18	\$18	\$90
OP.2: Permitting and Activity Tracking	-	-	-	-	-	-
OP.3: Relationships With Other Authorities	-	-	-	-	-	-
OP.4: Vehicle, Boat & Aircraft Operations	\$270	\$279	\$279	\$279	\$279	\$1386
OP.5: Administrative Initiatives	\$32.5	\$32.5	\$32.5	\$32.5	\$32.5	\$167
OP.6: Human Resources	-	-	-	-	-	-
OP.7: Office Space Expansion	**	**	**	**	**	**
Total Estimated Annual Cost	\$320.5	\$329.5	\$329.5	\$329.5	\$329.5	\$1638.5

* Cost estimates exclude base budget funding requirements (salaries, overhead, etc.).

** Costs covered by the NMSP capital facilities fund (not the CINMS budget) and with the University of California

Addressing the Issues – Strategies From Other Action Plans

The Operations Action Plan links to each of the strategies in the other action plans since it outlines the activities necessary for implementing all other Sanctuary activities. However, the Operations Action Plan is strongly linked to several particular strategies from other action plans also addressing Sanctuary operational issues:

- Strategy AU.2 – Community Involvement/Volunteer & Intern Program Development
- Strategy AU.3 – Team OCEAN
- Strategy AU.5 – Greater Southern California Outreach
- Strategy AU.6 – Developing Education & Outreach Tools & Products
- Strategy AU.7 – Visitor Center Support & Development
- Strategy CS.3 – Supporting Existing Site Characterization & Monitoring Programs
- Strategy CS.4 – Collaborative Marine Research Project
- Strategy WQ.2 – Water Quality Protection Planning
- Strategy EE.2 – Expanding Enforcement Efforts
- Strategy MHR.2 – Maritime Heritage Resources Volunteer Program
- Strategy MHR.3 – Partnering With The Santa Barbara Maritime Museum

Addressing the Issues – Regulations

Existing Regulations

- Strategy OP.2 (Permitting and Activity Tracking) is guided by the Sanctuary’s existing regulation on permitting (see Vol. I, Appendix C), which addresses terms and conditions for issuance of Sanctuary permits.

Potential New or Modified Regulations

- Strategy OP.2 (Permitting and Activity Tracking) would be guided by the Sanctuary’s proposed revised regulation on permitting (See the DEIS, Vol. II, Section 2), which addresses terms and conditions for issuance of Sanctuary permits.

PERFORMANCE EVALUATION ACTION PLAN

Overview

As part of an effort to improve overall management of sanctuaries, ongoing and routine performance evaluation is a priority for the NMSP. Both site-specific and programmatic efforts are underway to better understand the NMSP's ability to meet stated objectives and to address the issues identified in this management plan. Beyond these principal goals, performance evaluation has many other benefits, including:

- Highlighting successful (or not so successful) efforts of site management;
- Keeping the public, Congress, and other interested parties apprised of Sanctuary effectiveness;
- Helping managers identify resource gaps so they may better manage their sites;
- Improving accountability;
- Improving communication among sites, stakeholders and the general public;
- Fostering the development of clear, concise and, whenever appropriate, measurable outcomes;
- Providing a means for managers to comprehensively evaluate their sites in both the short and long term;
- Fostering an internal focus on problem-solving and improved performance;
- Providing additional support for the resource-allocation process; and
- Motivating staff with clear policies and a focused direction.

Throughout the management plan review process, CINMS staff have been working with NMSP staff to develop performance measures for the action plans in this draft management plan. The principal objective of these measures is to present a set of performance targets demonstrating progress towards strategy objectives for each action plan.

Description of the Issue

Evaluating performance as part of the regular cycle of management is a relatively new concept for the NMSP. Periodic reviews have taken place over the course of the NMSP's existence, but a process for integrating a system for performance evaluation has not been implemented up to now. With the NMSP's new focus on the management plan review process, the importance of this system was elevated and the fact very little had been done to measure management performance was an issue staff (both site and headquarters), the Advisory Councils and the public recognized as one that should be addressed.

As a result, NMSP headquarters staff began working on models for integrating performance measurement into the management plan review process as well as for evaluating overall performance of the national program. The idea behind these models was simple, but implementing them has been challenging due to the inherent difficulties of performance measurement (developing quantifiable outcome-based targets, projecting outward for results, estimating needs, relying on outputs or products for results reporting, etc.). With the measures in this draft management plan, however, CINMS is initiating the performance measurement process for the Sanctuary and, therefore, beginning to establish a baseline of information the NMSP can use to evaluate effectiveness of both the site and

the Program over time. Strategy EV.1-Measuring Sanctuary Performance Over Time describes this process in more detail.

Addressing the Issues - Strategies For This Action Plan

There is one strategy in this Evaluation (EV) Action Plan:

- EV.1 – Measuring Sanctuary Performance Over Time

This strategy is detailed below.

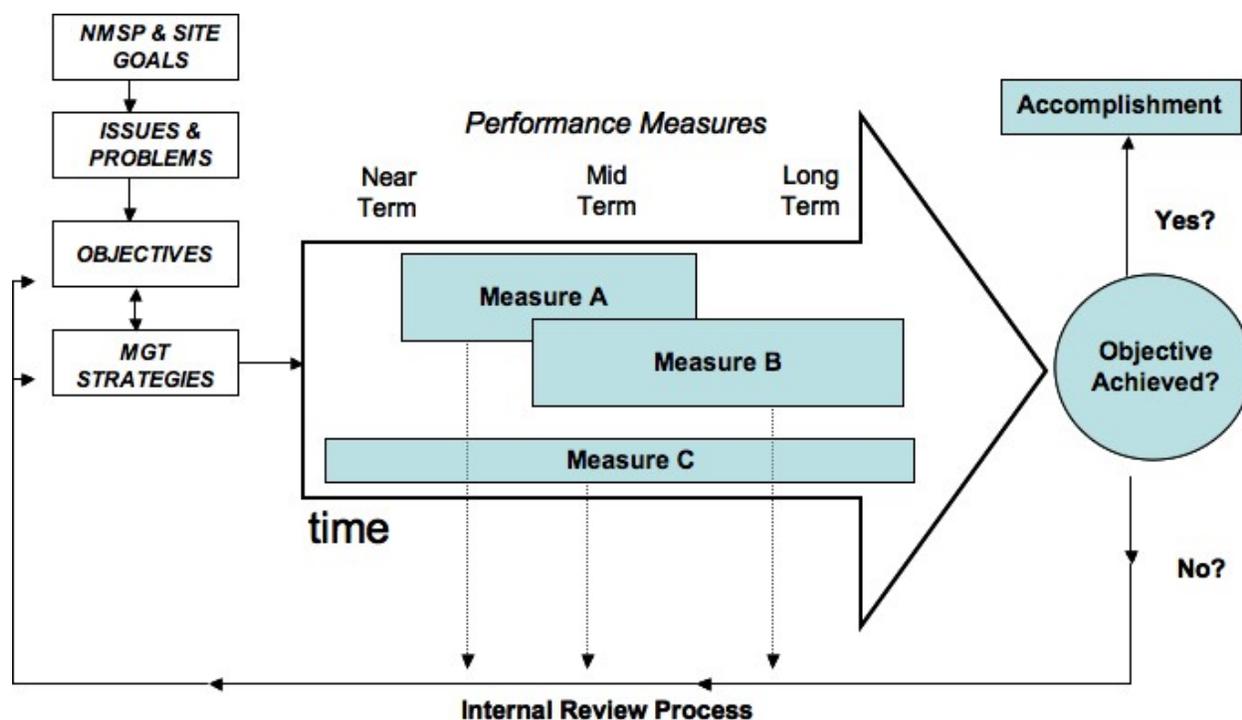
STRATEGY EV.1 - MEASURING SANCTUARY PERFORMANCE OVER TIME

- **Objective:** To effectively and efficiently incorporate performance measurement into the regular cycle of NMSP management.
- **Implementation:** Staff from all functional areas

Background

This strategy details the process by which the Sanctuary will measure its management performance over time. Figure 58 depicts the basic idea behind this process, which will be implemented in all sanctuaries undergoing management plan review.

Figure 53: NMSP Performance Evaluation Logic Model



Issues and problems are identified during the scoping process relative to NMSP and site goals. Staff then work to develop objectives relative to proposed management strategies (as identified in each of the action plans). Performance measures are then drafted, which identify the means by which the sanctuary will evaluate its progress towards achievement of the objectives. As represented by the large arrow in Figure 58, measures can (and should) be developed to provide information on results over time, from the near term (within one year, for example) to the long term (over the span of ten years or more, for example). As these measures are monitored over time, data is collected on progress towards the achievement of outcomes and the production of outputs (or products). Objectives achieved and outputs produced are reported as accomplishments; inability to achieve objectives or produce outputs are also reported, but as areas falling short of

targets. In these areas, staff will work to identify the issues preventing management from reaching targets (represented in Figure 58 by the arrow running along the bottom of the graphic). This internal review is one of the primary benefits of performance evaluation process as it provides an opportunity for staff to think carefully about why particular actions are not meeting stated targets and how they can be altered to do so.

All performance measures for this draft management plan are found in a series of ten tables (one for each action plan) at the end of this action plan. Each table identifies (1) the action plan's proposed management strategies, (2) the objectives identified for each of those strategies, (3) the performance measure(s) to track the achievement of the desired outcome, and (4) the specific metrics of the performance measure.

The information produced by performance measures in sanctuary management plans will be used not only to improve the management of individual sanctuaries, but to inform programmatic performance evaluation as well. Currently, there are nineteen program performance measures for the NMSP.

There are two activities in this action plan. Each is designed to carry the Sanctuary through the performance evaluation process and integrate performance measurement into the regular cycle of site management. In the case of this action plan, it is not anticipated there will be any additional costs beyond core operational expenses (labor and administrative overhead).

Activities (2)

(1) Monitor existing performance measures consistently over time. CINMS staff will conduct routine performance evaluations to collect and record data on Sanctuary performance over time. Using this data, staff will determine effectiveness by a) evaluating progress towards achievement of each action plan's desired outcomes and b) assessing the role or added value of those outcomes in the overall accomplishment of site goals and objectives.

Status: Begins with implementation of this management plan and continues through years 1-5

Partners: Internal

(2) Report Results. Results from performance monitoring will be collected, analyzed and used to populate and inform the NMSP Report Card and, when necessary, NOS or NOAA-wide performance requirements. Performance data may also be presented in a site-specific annual report explaining each measure, how it was evaluated, the site team conducting the evaluation, and next steps. Based on this analysis, site staff, in cooperation with the Advisory Council, will identify accomplishments as well work to determine those management actions needing to be changed to better meet their stated targets. The targets themselves may also be analyzed to determine their validity (if, for instance, they are too ambitious or unrealistic given current site capacities). The public may have opportunity to comment on the Sanctuary's perception of its performance, ways in which the site could be more effective and methods for improving performance measurement when evaluation is on the agenda at future Advisory Council meetings.

Table 15: Estimated Costs For The Performance Evaluation Action Plan

Strategy	Estimated Annual Cost*					Total Estimated 5 Year Cost
	YR 1	YR 2	YR 3	YR 4	YR 5	
EV.1: Measuring Sanctuary Performance	-	-	-	-	-	-
Total Estimated Annual Cost	-	-	-	-	-	-

*Because this is an internal exercise, it is estimated that costs for implementing this strategy will involve base budget funding only (staff time), which is not reflected in this table.

Addressing the Issues – Strategies From Other Action Plans

The purpose of the Performance Evaluation Action Plan is to evaluate the effectiveness of the various strategies contained within this draft management plan. In this regard, all strategies from the other action plans are associated with the Performance Evaluation Action Plan.

Addressing the Issues – Regulations

Existing Regulations

Not applicable. There are no existing regulations associated with the issues in the Performance Evaluation Action Plan.

Potential New or Modified Regulations

Not applicable. There are no potential new or modified regulations associated with the issues in the Performance Evaluation Action Plan

Table 16: Performance Measures for the Public Awareness and Understanding Action Plan

Strategies	Objective	Performance Measures	Metrics
AU.1 Education Program Development	To link local teachers with national efforts to improve ocean literacy	Increased public participation in CINMS education programs.	Number of K-12 teachers participating in Sanctuary education workshops.
			Number of K-12 teachers requesting Sanctuary education tools and materials.
			Number of regional participants in LiMPETS program.
		Increased awareness about the CINMS in the K-12 community	Number of national initiatives & events sponsored by CINMS over next 5 years.
			Number of presentations given by CINMS education staff at regional/ national conferences.
AU.2 Community Involvement	To increase community awareness about the National Marine Sanctuary Program through the development of CINMS volunteers and interns.	Growing number of public opportunities to learn about CINMS goals, programs and issues.	Number adult education classes offered/number students enrolled.
		Increased citizen participation in marine conservation efforts at CINMS.	Number of surveys in REEF database.
		Improved volunteer/intern program effectiveness and efficiency.	Number of volunteers and interns participating in Sanctuary programs.
			Number of intern or volunteer applications submitted.
			Biannual evaluation of volunteer programs.
		AU.3 Team OCEAN	To build on the success of Team Ocean Programs at other national marine sanctuaries by fully achieving the Network's three primary goals.
Increased interest in use of Naturalist Corps volunteers	Number of marine excursion businesses participating in SNC program and attending legal/regulatory workshops.		
	% of commercial outfitter passengers exposed to Sanctuary Naturalist Corps volunteers.		
	Satisfaction of marine excursion captains with SNC volunteers (survey).		
Increased knowledge base of SNC volunteers	Scope of sanctuary resource knowledge by SNC volunteers.		
Improved interpretive enforcement results within the Sanctuary	Number of boaters and contacts made by Marine Watch volunteers.		
	Number of citations issued for environmental disturbance.		

Table 16: Performance Measures for the Public Awareness and Understanding Action Plan

Strategies	Objective	Performance Measures	Metrics
AU.4 Developing Outreach Technology	To provide immediate and direct information about the Sanctuary's natural resources, issues and activities as they occur	Well organized, reliable and comprehensive information on CINMS provided in a timely manner.	Annual evaluation of quality and utility of web site.
		Increased public access to information via web site, web-based tools and kiosks.	Web site hits and use levels of remote kiosks
		Improved performance record of website, kiosks and remote systems	Ratio of system uptime to downtime
			Number of weather-related vessel problems.
Expanded range for outreach technology	Number and location of new kiosks installed.		
AU.5 Greater Southern California Outreach	To establish a presence and identity for the Sanctuary and its various programs in the Ventura and Los Angeles region.	Established Sanctuary presence and identity in the Ventura and LA County region.	Size and diversity of audiences reached with education and outreach programs
		Increased awareness of Sanctuary by constituents in the Ventura and LA County region.	Number of Sanctuary outreach products installed and distributed.
			Extent of regional education and outreach programs provided.
Strengthened Sanctuary constituency in the Ventura and LA County region.	Number of new regional education partners		
AU.6 Developing Education & Outreach Tools and Products	To provide Sanctuary information to a widely diverse audience.	Expanded subscriber base and distribution of publications	Number of new product subscribers.
			Number of materials distributed.
		Maintained quality of publications and other materials/tools.	Audience feedback on quality of publications and materials.
			Frequency of inventory, review and update of publications and materials.
AU.7 Visitor Center Support & Development	To maximize the Sanctuary's regional public exposure.	Increased regional public exposure to CINMS	Number of visitors at various facilities; use level of kiosks
			Extent of "repeat business" at visitors centers.
AU.8 Marine Reserves Education	To raise public awareness and increase support for the system of marine reserves in the Sanctuary.	Marine reserves fully incorporated into existing educational outreach products and services.	Percentage of existing products modified to incorporate marine reserves
		Community-based, long-term educational strategies for marine reserves implemented.	SAC strategic recommendation received
			Number of reserves education strategies implemented over next five years

Table 16: Performance Measures for the Public Awareness and Understanding Action Plan

Strategies	Objective	Performance Measures	Metrics
			User knowledge/awareness of reserve regulations.
AU.9 Multicultural Education	To encourage non-English speaking users to pursue higher education, advanced degrees, and careers in fields related to marine resource management and raise general public awareness of Sanctuary issues.	Educational strategy for reaching the Latino community understood by CINMS education and outreach staff.	Audiences, themes and tools for multicultural education in the region identified.
		Increased awareness in the regional Latino community of marine science, conservation and management as well as CINMS resources.	Extent of regional education and outreach programs provided to Latino audiences.

Table 17: Performance Measures for the Conservation Science Action Plan

Strategies	Strategy Objective	Performance Targets	Metrics
CS.1 SAMSAP	To analyze historical data and create predictive models for resource management through near real-time data collection.	Statistically reliable SAMSAP data is collected on a weekly basis (on average), provided to agencies and external entities, and packaged for Sanctuary management needs.	Database of SAMSAP missions
			Record of SAMSAP data distribution, reports, and papers
CS.2 Comprehensive Data Management	To develop a well-designed information management and dissemination tool to facilitate conservation science-based decision-making.	CINMS spatial data is NSDI standardized in a readily distributed format.	Frequency of internal data access and use.
			Web-based statistical tracing of public access to data.
CS.3 Support Existing Site Characterization and Monitoring Programs	To continue supporting existing monitoring programs and build a historical database on Sanctuary resources.	As made available, research program findings are obtained and analyzed for CINMS management purposes.	Connection between research projects and relevant current management issues.
CS.4 Collaborative Marine Research Project	To foster research collaboration among scientists, various agencies and fishers.	Program funding secured; a minimum of two new collaborative projects selected and implemented within 5 years	Funding sources and levels.
			Progress toward project implementation.
CS.5 Research Interpretation	To communicate and interpret for the public, NOAA, the scientific community and other resource managers, the research activities taking place in and around Sanctuary waters.	Progressive increase in projects interpreted and people reached.	Number of interpreted projects
			Web site visitation and meeting/seminar participation levels.
CS.6 Marine Reserves Monitoring	To demonstrate the biological and socioeconomic effects of CINMS marine reserves.	Full establishment of multi-agency/organization monitoring partnerships.	Identification of funding needs and sources
			Status of monitoring program operations.
		Monitoring results reported in a consistent and usable fashion.	Quantity and quality of data.
			Consistency of data collection and analysis efforts.

Table 18: Performance Measures for the Boundary Evaluation Action Plan

Strategies	Strategy Objective	Performance Targets	Metrics
<p>BE.1 Completing the NCCOS BioGeo Study</p>	<p>To analyze relevant and comprehensive spatial biological data to evaluate potential implications of boundary expansion concepts previously considered during the management plan revision process.</p>	<p>Understand the biogeographic distribution of key species within and around the CINMS</p>	<p>Progress reports from the Biogeography team; review sessions with experts and knowledgeable stakeholders</p>
<p>BE.2 Final Determination on Boundary Issue</p>	<p>To conduct a scientifically rigorous, open public process to consider, analyze and make a final determination on changing the boundary of the Sanctuary.</p>	<p>Establish the appropriate Sanctuary boundary.</p>	<p>Review of preliminary and draft materials with the Sanctuary Advisory Council; responses to public, SAC and agency comments</p>

Table 19: Performance Measures for the Marine Zoning Action Plan

Strategies	Strategy Objective	Performance Targets	Metrics
MZ.1 General Marine Zoning	To determine appropriate uses of marine zoning as a tool to protect and enhance biodiversity and manage various uses of the Sanctuary.	Improved decision-making capacity in the application of specific management tools, such as marine zoning.	Data analysis and zone utility evaluation
			Spatial distribution of resources and activities within the Sanctuary.
			Analysis and description of alternative management tools
MZ.2 Consideration of Federal Marine Reserves	To conduct a scientifically rigorous, open public process to consider, analyze and make a final determination on the establishment of marine reserves within the Sanctuary.	Appropriate use of marine zoning for purposes of providing adequate long-term protection to CINMS resources	Review of preliminary and draft materials with the Sanctuary Advisory Council and Pacific Fishery Management Council; responses to public, SAC and agency comments

Table 20: Performance Measures for the Water Quality Action Plan

Strategies	Strategy Objective	Performance Targets	Metrics
WQ.1 Offshore Water Quality Monitoring	To better evaluate and understand localized and large-scale spatial and temporal impacts from oceanographic and climatic changes and impacts from increases in human population in the coastal zone and subsequent pressure(s) on offshore marine resources.	Improved knowledge of Sanctuary water quality characteristics and associated human influences	Documented Sanctuary-relevant water quality monitoring results.
WQ.2 Water Quality Protection Planning	To protect the chemical, physical and biological integrity of the Sanctuary by restoring and maintaining water quality.	Improvement in efforts at addressing Sanctuary water quality issues	Consultation effort with water quality protection agencies and organizations.
		Improvement in knowledge of water quality issues, management and needs	Ability to identify existing jurisdictional authorities and needed protections.

Table 21: Performance Measures for the Emergency Response and Enforcement Action Plan

Strategies	Objective	Performance Measures	Metrics
EE.1: Emergency Response Planning	To be prepared for response to oil spills, hazardous material spills, grounded vessels or natural disasters.	On call volunteers and CINMS staff fully trained and available for response.	Staff and volunteer training readiness.
		Improved understanding of CINMS role in regional emergency response efforts.	Frequency of emergency response plan review, evaluation and updates.
EE.2: Enhance Existing Enforcement Efforts	To promote resource protection through compliance with Sanctuary regulations and other applicable state and Federal statutes and regulations.	Progressive increase over time in enforcement presence within the Sanctuary.	Progress towards Marine Watch program establishment
			Number of enforcement vessel hours spent in Sanctuary.
		Progressive increase over time in knowledge of quality and quantity of user group data.	Number of Marine Watch volunteer boaters
			Number of documented enforcement incidents.

Table 22: Performance Measures for the Maritime Heritage Resources Action Plan

Strategies	Objective	Performance Measures	Metrics
MHR.1 Shipwreck Reconnaissance Program	To contribute to scientific knowledge and enhancement of management practices related to underwater historic resources by encouraging research and monitoring efforts.	Improved knowledge of cultural and historic resources in the Sanctuary.	Number of known cultural and historic sites recorded in the CINMS SCR inventory.
		Improved documentation and protection of CINMS SCRs.	Number of CINMS SCR sites monitored regularly
		Increase in CINMS SCR outreach opportunities	Number of outreach products requested
			Number of facilities providing outreach products to the public.
Use of SCR website.			
MHR.2 Maritime Heritage Volunteer Program	To provide an opportunity for individuals most interested in maritime heritage resource protection to become stewards and representatives of the Sanctuary.	Maintain volunteer contribution to the CINMS SCR program.	Number of trained participants in SCR volunteer program.
			Database tracking the number of artifacts and shipwrecks documented by CINMS SCR volunteers in the form of: underwater maps, photos, videos, and the SCR reconnaissance report.
MHR.3 Partnering with the Santa Barbara Maritime Museum	To enhance visitor usage and mitigate damage to archaeological resources by providing the sport and commercial diving communities with interpretive information on MHRs.	Increase in public opportunities to learn about CINMS MHRs at the SBMM.	Number of public SBMM lectures provided by Sanctuary staff.
			Number and duration of Sanctuary-based exhibits on display.
MHR.4 Implementing a Coordinated MHR Protection Outreach Effort	To enhance visitor usage and mitigate damage to archaeological resources by providing the sport and commercial diving communities with interpretive information on MHRs.	Improved user awareness of Sanctuary MHR sites.	Number of SCR sites developed into underwater slates
			Number of underwater slates requested by divers.
			Distribution of/requests for shipwreck video.
		Improved SCR protection and damage mitigation.	Number of visitors using mooring system
Level of human-induced disturbance to sites tracked by monitoring programs.			

Table 22: Performance Measures for the Maritime Heritage Resources Action Plan

Strategies	Objective	Performance Measures	Metrics
MHR.5 Upgrading the Heritage Resources Website	To promote understanding of, appreciation for and involvement in the protection and stewardship of MHRs to a wide spectrum of the public	CINMS SCR information disseminated to an increasingly wider audience (e.g., students, educators, researchers, and divers).	Number of SCR website hits/hits to specific SCR pages.
MHR.6 Promoting Public Education of Chumash Native American History	To assist in the cultural revitalization among regional Chumash communities.	Maintained support of Chumash paddling excursions and ocean skills and safety programs.	
		Increased opportunities for public awareness of Chumash history.	Number of visitors to/participants in cultural outreach events.

Table 23: Performance Measures for the Emerging Issues Action Plan

Strategies	Objective	Performance Measures	Metrics
EI.1 Identifying and Assessing Emerging Issues	To identify and understand all emerging issues affecting the Sanctuary.	Improved issue identification and quality of risk assessment.	Credibility and relevance of scientific information
EI.2 Responding To Identified Issues	To provide timely and appropriate response to issues of high priority.	Improved response time to prioritized issues.	Response time to new issues.
			Documented audit trail of responses to issue.

Table 24: Performance Measures for the Operations Action Plan

Strategies	Objective	Performance Measures	Metrics
OP.1 SAC Operations	The Advisory Council will continue to play a leading role in advising the Sanctuary on resource management issues.	More efficient SAC operations.	Number of tasks accomplished in SAC annual plan
		More informed and active Advisory Council on CINMS policy issues	Average member attendance level at SAC meetings over next 5 years.
			Number of SAC recommendations and advice provided on policy issues
OP.2 Permitting and Activity Tracking	To ensure information gained through research, education, salvage, and management activities conducted in the Sanctuary benefits CINMS programs and/or natural resources.	Net benefit to Sanctuary resources from permitted activities.	Ratio of resource benefit to resource damage resulting from permitted activities.
		Greater awareness of the nature, extent, and results of non-permitted research projects conducted in the Sanctuary.	Number of voluntary research project registrations
OP.3 Relationships With Other Authorities	To work in a coordinated, complimentary, and comprehensive manner with authorities with whom CINMS has similar or overlapping mandates, jurisdiction, objectives, and/or interests.	Stakeholder and agency awareness of Sanctuary regulations and policies.	Number of Sanctuary regulatory violations by other authorities, or permitted by other authorities.
		Minimized Sanctuary resource and public access impacts resulting from other authorities' decisions, plans, projects, proposals, and policies.	Extent of CINMS staff participation in other authorities' public hearings, workshops, and other consultations regarding activities that may impact the Sanctuary.
		Enhanced partnerships with CINP, and other authorities	Extent of collaboration, including use of tools such as MOUs, between CINMS staff and staff from other authorities.
OP.4 Vehicle, Boat, and Aircraft Operations	To operate sanctuary vehicles, vessels and aircraft in a safe and efficient manner.	Staff have access to fully functional vehicles, vessels, and aircraft as needed.	Amount of staff personal vehicle use and number of Sanctuary activities canceled due to unavailability of vehicles, vessels and aircraft.
		Safety equipment maintained on all vehicles, vessels, and aircraft.	Results of vessel safety inspections, and random checks of safety equipment in vehicles and aircraft.

Table 24: Performance Measures for the Operations Action Plan

Strategies	Objective	Performance Measures	Metrics
<p>OP.5 Administrative Initiatives</p>	<p>To administer the sanctuary in a safe, consistent, and effective manner, ensuring basic site needs are met.</p>	<p>Funding secured in Sanctuary budget for activities staff designate as high priority.</p>	<p>Percentage of funding necessary for full implementation of high priority activities realized</p>
		<p>Staff knowledgeable in vehicle, vessel, and aircraft safety procedures and equipment.</p>	<p>Regularity of and staff attendance at safety briefings and trainings.</p>
		<p>Reliable equipment and services.</p>	<p>Percentage of workdays essential equipment was non-functional.</p>
		<p>Enhanced partnership with Channel Islands Marine Sanctuary Foundation</p>	<p>Number of joint CIMSF - CINMS projects and transactions</p>
<p>OP.6 Human Resources</p>	<p>To ensure sufficient human resources for implementing existing and planned Sanctuary activities.</p>	<p>Maintain status-quo staffing needs.</p>	<p>Number and duration of staff vacancies and contract gaps.</p>
		<p>Ability to meet additional staffing needs.</p>	<p>Extent and diversity of non-GS human resources utilized by the Sanctuary.</p>
			<p>Number of Sanctuary activities not implemented, or partially implemented, due to staffing limitations.</p>
<p>OP.7 Office Space Expansion</p>	<p>To provide adequate office space facilities for Sanctuary operation.</p>	<p>Timely development of new office space.</p>	<p>Facilities move-in by 2009.</p>
		<p>Adequate Sanctuary facilities.</p>	<p>Per-person occupancy rate of at least 150 square feet per person in office facilities</p>
			<p>Availability of Sanctuary-dedicated space for: storage, library, conference, and laboratory facilities.</p>
<p>Improved public visibility of the Sanctuary.</p>	<p>Number and geographic range of additional Sanctuary signs and placards placed.</p>		

Table 25: Performance Measures for the Performance Evaluation Action Plan

Strategies	Objective	Performance Measures	Metrics
EV.1 Monitoring Site Performance Measures Over Time	To effectively and efficiently incorporate performance measurement into the regular cycle of Sanctuary management.	Performance measurement is fully integrated into site management.	Consistency of monitoring and reporting.
		Results are reported consistently and fairly.	Regularity of reporting; review of results by the SAC.
		Results directly impact management decision-making.	Regular evaluation of performance process utility; application of programmatic criteria to determine role of MP performance measures in decision making process.

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SECTION IV: APPENDICES

SECTION IV: APPENDICES



Figure 54: Diver mapping the shipwreck Cuba at San Miguel Island.
(Mark Norder)

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APPENDIX A: ACTION PLAN SUMMARY TABLES

APPENDIX A: ACTION PLAN SUMMARY TABLES

This draft management plan proposes a complex suite of strategies and activities contained within ten diverse action plans. Appendix A provides summary information about these action plans in two tables: Appendix A1 and Appendix A2. While the action plans are detailed through over 160 pages of text, Appendix A1 below provides a basic overview of each draft action plan by strategy and activity. Information about the status, funding source, and partnership coordination is provided for each activity. Because the availability of funds is contingent upon the Federal appropriations process, which varies from year to year, and because priorities also shift throughout time, the precise level of implementation for each activity is not predicted here. Appendix A2 on page 233 presents base budget (core operations and programmatic costs) and capital facility estimates for years one through five of this management plan.

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Appendix A1: Action Plan Summary Table

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					LEVEL FUNDING (= FY05 BUDGET)	10% ANNUAL FUNDING INCREASE	20% PER YEAR FUNDING INCREASE
Awareness and Understanding Action Plan							
Strategy AU.1 - Education Program Development							
(1) Develop teacher workshops	◇	□	◎	H	H	H	
(2) Continue to develop education programs on water quality	◆	■	●	M	M	H	
(3) Providing content for GIS “Mapping an Ocean Sanctuary” education materials	◇	□	○	M	M	M	
(4) Continue support of Oceans to Classrooms marine science series	◇	■	◎	H	H	H	
(5) Conduct student field monitoring	♦	■	◎	M	M	M	
(6) Partner with Waves on Wheels	◇	■	◎	L	L	L	
(7) Participate in NOAA/NMSP National Initiative strategies	♦	■	◎	M	M	H	
Strategy AU.2 - Community Involvement/Volunteer & Intern Program Development							
(1) Presenting at regional and national workshops and conferences	◇	□	◎	M	M	M	
(2) Continue Adult Education Program at SBCC & Ventura College Community Services	♦	□	◎	M	M	M	
(3) Develop Interagency Interpretive Program with CINP	◆	■	◎	H	H	H	
(4) Maintain the Great Annual Fish Count Program	◇	■	●	M	M	M	
(5) Maintain the CINMS Internship Program	◇	□	◎	H	H	H	
Strategy AU.3 - Team OCEAN							
(1) Maintain the Channel Islands Naturalist Corps	◆	■	◎	H	H	H	
(2) Develop Sanctuary Marine Watch Volunteer Program	♦	□	◎	L	M	M	

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					LEVEL FUNDING (= FY05 BUDGET)	10% ANNUAL FUNDING INCREASE	20% PER YEAR FUNDING INCREASE
(3) Integrate CINMS Volunteer Program Strategies into NMSP volunteer efforts							
		◆	□	◎	H	H	H
(4) Conduct Ocean Etiquette Outreach							
		◆	□	◎	M	M	H
Strategy AU.4 - Developing Outreach Technology							
(1) Expand Website Capabilities							
		◆	□	○	M	M	M
(2) Increase the Number of CINMS Weather Kiosks							
		◆	□	◎	M	H	H
(3) Participating in National Telepresence Initiative							
		◆	■	◎	M	M	H
(4) Interactive Marine Mammal Sightings Database							
		◆	□	◎	M	M	M
Strategy AU.5 - Greater Southern California Outreach							
(1) Place Channel Islands Harbor Boating Instruction & Safety Center exhibits, panels and literature							
		◆	□	◎	M	M	M
(2) Implement outreach plans and volunteer programs							
		◆	□	◎	H	H	H
(3) Implementing COSEE West Programs							
		◇	■	◎	M	M	M
Strategy AU.6 - Developing Education & Outreach Tools & Products							
(1) Maintain various print publications							
		◇	□	◎	M	M	M
(2) Support various other educational materials							
		◇	□	◎	M	M	M
(3) Support other outreach materials							
		◇	□	◎	M	M	M
(4) Sponsor sanctuary cruises							
		◇	□	◎	M	M	M
(5) Participate in outreach events							
		◇	□	◎	H	H	H

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Strategy AU.7 - Visitor Center Support & Development							
(1) Partner with the Outdoors Santa Barbara Visitor Center	◇	■	◎	M	M	M	
(2) Partner with the Sea Center	◆	■	◎	H	H	H	
(3) Maintain Exhibits for the Cabrillo High School Aquarium	◇	■	◎	M	M	M	
(4) Partner with the Channel Islands Harbor Boating Instruction and Safety Center	◆	■	◎	M	M	M	
(5) Provide Support for the Watershed Resource Center	◇	□	◎	L	L	M	
(6) Maintain/Improve CINMS presence at CINP Visitor Center	◆	□	●	H	H	H	
(7) Assist in Development of the Outreach Center for Teaching Ocean Sciences (OCTOS)	◆	■	●	H	H	H	
Strategy AU.8 - Marine Reserves Education							
(1) Implement SET Recommendations for Marine Reserves Education and Outreach Products and Services	◆	□	○	M	M	M	
(2) Develop Printed Educational Products	◆	■	◎	M	M	H	
(3) Develop Public Service Announcements	◆	□	○	M	M	M	
(4) Conduct Sanctuary Cruises	◆	□	○	M	M	M	
(5) Develop, Place, and Maintain Interpretive Signs and Kiosks	◆	□	◎	H	H	H	
(6) Maintain Marine Reserves Website	◆	□	○	H	H	H	
Strategy AU.9 - Multicultural Education							
(1) Evaluate Needs Assessment Survey Results	◆	□	○	H	H	H	

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(2) Retain Bilingual Community Liaison		◆	■	○	M	M	H
(3) Develop a Strategic Plan for Multicultural Education		◆	□	○	H	H	H
(4) Develop and Adapt Multicultural Elements		◆	□	○	H	H	H
(5) Implement the Multicultural Education Strategic Plan		◆	■	○	H	H	H
Conservation Science Action Plan							
<i>Strategy CS.1 - Sanctuary Aerial Monitoring and Spatial Analysis Program</i>							
(1) Continue SAMSAP data collection		◆	□	◎	H	H	H
(2) Produce data and trends encyclopedia		◆	□	○	M	M	M
<i>Strategy CS.2 - Comprehensive Data Management</i>							
(1) Contract a software expert		◆	□	○	M	M	M
(2) Process existing data		◆	□	○	M	M	M
(3) Upgrade the CINMS system for individual querying		◆	□	○	M	M	M
(4) Integrate remotely sensed data into GIS format		◆	□	○	H	H	H
<i>Strategy CS.3 - Supporting Existing Site Characterization & Monitoring Programs</i>							
(1) Continue the mapping the seafloor project		◇	■	◎	H	H	H
(2) Continue support for various seabird studies		◆	■	◎	M	M	H
(3) Continue support for the CINP's kelp forest monitoring		◆	■	◎	M	M	H
(4) Support other site characterization projects		◆	■	◎	M	M	M

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Strategy CS.4 - Collaborative Marine Research Project							
(1) Select and implement research projects		◆	□	◎	M	H	H
Strategy CS.5 - Research Interpretation							
(1) Interpret and disseminate sanctuary research findings		◆	□	◎	H	H	H
(2) Develop a research-focused website		◆	□	○	H	H	H
(3) Hold annual research meetings and bimonthly seminar series		♦	□	○	M	M	M
(4) Develop a voluntary research registry		♦	□	◎	M	M	M
Strategy CS.6 - Marine Reserves (MR) Monitoring							
(1) Implement MR biological monitoring program		♦	■	●	H	H	H
(2) Develop and implement MR socioeconomic monitoring		♦	■	●	H	H	H
(3) Utilize various existing CINMS research and monitoring program in support of MR		◆	□	●	H	H	H
Boundary Evaluation Action Plan							
Strategy BE.1 - Completing the NCCOS Biogeographic Study							
(1) Provide project support to NCCOS staff		♦	□	◎	H	H	H
(2) Refine preliminary study results		♦	□	◎	H	H	H
(3) Complete, distribute and apply findings		♦	□	○	H	H	H

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Strategy BE.2 - Final Determination on Boundary Issue							
(1) Prepare and release draft SEIS/SMP		◆	□	○	M	H	H
(2) Make final decision on boundaries; issue final SEIS/SMP and		◆	□	○	M	H	H
Marine Zoning Action Plan							
Strategy MZ.1 - General Marine Zoning							
(1) Analyze spatial data		◆	□	◎	H	H	H
(2) Evaluate utility of zoning strategies for the Sanctuary		◆	□	◎	H	H	H
Strategy MZ.2 - Consideration of Federal Marine Reserve and Conservation Areas							
(1) Prepare and release Draft Environmental Documents		◆	□	◎	H	H	H
(2) Issue Final Environmental Impact Statement and Final Rule		◆	□	○	H	H	H
Water Quality Action Plan							
Strategy WQ.1 - Offshore Water Quality Monitoring							
(1) Continue support for Plumes and Blooms		◇	■	●	M	M	M
(2) Continue support for Southern California Bight Regional Monitoring Surveys		◇	■	●	M	M	M

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Strategy WQ.2 - Water Quality Protection Planning							
(1) Compile and synthesize information on jurisdictional water quality authorities and responsibilities	◆	□	◎	M	H	H	
(2) Review state and regional water quality management	◆	□	○	M	H	H	
(3) Develop and propose priority corrective actions for managing Sanctuary water quality impacts	◆	□	○	M	M	H	
Emergency Response and Enforcement Action Plan							
Strategy EE.1 - Improving Emergency Response Planning & Implementation							
(1) Identify specific emergency response duties for CINMS staff	◆	■	○	H	H	H	
(2) Implement SHIELDS and RUST	◆	□	◎	H	H	H	
(3) Train additional emergency response volunteers	◆	□	◎	M	M	M	
(4) Develop an emergency response manual	◆	□	◎	H	H	H	
(5) Develop modeling program as part of SAMSAP	◆	□	○	M	H	H	
Strategy EE.2 - Expanding Enforcement Efforts							
(1) Plan and implement interpretive enforcement via Sanctuary Marine Watch (Team	◆	□	◎	M	M	H	
(2) Maintain current Sanctuary vessel and aircraft surveillance operations	◆	■	◎	H	H	H	
(3) Cross-deputize other regional enforcement personnel	◆	■	●	H	H	H	

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Maritime Heritage Resources Action Plan							
<i>Strategy MHR.1 - The Shipwreck Reconnaissance Program</i>							
(1) Maintain the CINMS MHR inventory	◇	□	◎	H	H	H	
(2) Continue year-round monitoring of known sites	◆	■	◎	M	M	M	
(3) Produce various MHR-focused outreach materials	◆	□	○	M	H	H	
<i>Strategy MHR.2 - Maritime Heritage Resources Volunteer Program</i>							
(1) Work with volunteers in the production of shipwreck maps	◆	■	◎	L	L	L	
(2) Support volunteer photo and video documentation of sites	◆	□	◎	M	M	M	
(3) Support production of annual MHR Reconnaissance Reports	◇	■	◎	L	L	L	
<i>Strategy MHR.3 - Partnering With The Santa Barbara Maritime Museum</i>							
(1) Maintain the NOAA Exhibit	◇	□	◎	M	M	M	
(2) Maintain the Winfield Scott Exhibit	◇	□	◎	M	M	M	
(3) Maintain the Central CA and CI Shipwrecks Exhibits	◇	□	◎	M	M	M	
<i>Strategy MHR.4 - Implementing A Coordinated MHR Protection Outreach Effort</i>							
(1) Create and distribute shipwreck interpretive underwater slates	◆	□	○	M	M	M	
(2) Create and Distribute video of CINMS shipwrecks	◆	□	○	M	M	M	
(3) Establish a shipwreck trail guide and mooring system	◆	■	◎	M	M	M	

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Strategy MHR.5 - Upgrading The MHR Website							
(1) Incorporate SBMM Exhibits into the website		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	M	M	H
(2) Incorporate shipwreck profiles and site maps into the website		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	M	M	M
(3) Incorporate "Living Journals" into the website		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	H	H	H
Strategy MHR.6 - Promoting Public Education Of Chumash Native American History							
(1) Support various watercraft-paddling excursions		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	M	M	H
(2) Support Ocean Skills and Safety Program		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	M	M	M
(3) Develop outreach opportunities		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	H	H	H
Emerging Issues Action Plan							
Strategy EI.1 - Identifying & Assessing Emerging Issues							
(1) Develop comprehensive list of issues		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	H	H	H
(2) Periodically assess and prioritize emerging issues list		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	H	H	H
(3) Track emerging issues		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	H	H	H
Strategy EI.2 - Responding To Identified Issues							
(1) Consult with the Sanctuary Advisory Council		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	H	H	H
(2) Respond to issues		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	H	H	H

Appendix A1: Action Plan Summary Table

<p><u>STATUS</u></p> <p>◇ Existing w/ no significant modification</p> <p>◆ Existing w/ significant modification</p> <p>◆ New (since 2002) or future; not yet implemented</p> <p><u>FUNDING</u></p> <p>□ Funding is internal only (CINMS & NMSP)</p> <p>▣ Internal and external sources provide funding</p> <p>■ Major funding source is external</p>	<p><u>PARTNERSHIP COORDINATION</u></p> <p>○ None (may include SAC input)</p> <p>◉ Significant reliance on partners</p> <p>● Not possible w/o partners</p> <p><u>IMPLEMENTATION LEVEL (BASED ON FUNDING SCENARIO)</u></p> <p>H High level of implementation</p> <p>M Medium level of implementation</p> <p>L Low level of implementation</p>	STATUS	FUNDING	PARTNERSHIP COORDINATION	IMPLEMENTATION LEVEL		
					LEVEL FUNDING (= FY05 BUDGET)	10% ANNUAL FUNDING INCREASE	20% PER YEAR FUNDING INCREASE
Operations Action Plan							
<i>Strategy OP.1 - Sanctuary Advisory Council Operations</i>							
(1) Support the operation and administration of the Sanctuary Advisory Council	◆	□	○	H	H	H	
(2) Improve the effectiveness of the Advisory Council	◆	□	○	M	M	M	
(3) Sponsor Advisory Council-hosted issue forums	◆	□	◉	M	M	M	
<i>Strategy OP.2 - Permitting and Activity Tracking</i>							
(1) Continue careful oversight and issuance of permits	◆	□	○	M	M	M	
(2) Develop a voluntary research registry	◆	□	◉	M	M	M	
(3) Consider voluntary registries for other activities	◆	□	◉	L	L	M	
<i>Strategy OP.3 - Relationships With Other Authorities</i>							
(1) Conduct outreach to agencies and stakeholders	◆	□	○	H	H	H	
(2) Testify at public hearings on issues affecting the CINMS	◆	□	○	M	M	M	
(3) Review and comment on relevant plans and projects	◇	□	○	M	M	M	
(4) Enhance partnership with the Channel Islands National Park	◆	□	◉	H	H	H	
(5) Tools to formalize relationships with other authorities	◇	□	●	M	M	H	

Appendix A1: Action Plan Summary Table

<u>STATUS</u> ◇ Existing w/ no significant modification ◆ Existing w/ significant modification ♦ New (since 2002) or future; not yet implemented <u>FUNDING</u> □ Funding is internal only (CINMS & NMSP) ■ Internal and external sources provide funding ■ Major funding source is external	<u>PARTNERSHIP COORDINATION</u> ○ None (may include SAC input) ◎ Significant reliance on partners ● Not possible w/o partners <u>IMPLEMENTATION LEVEL (BASED ON FUNDING SCENARIO)</u> H High level of implementation M Medium level of implementation L Low level of implementation	STATUS	FUNDING	PARTNERSHIP COORDINATION	IMPLEMENTATION LEVEL		
					LEVEL FUNDING (= FY05 BUDGET)	10% ANNUAL FUNDING INCREASE	20% PER YEAR FUNDING INCREASE
Strategy OP.4 - Vehicle, Boat & Aircraft Operations							
(1) Acquire and maintain Sanctuary vehicles	◇	□	○	H	H	H	
(2) Maintain and renovate Sanctuary vessels	◆	□	○	H	H	H	
(3) Maintain Sanctuary aircraft	◇	■	◎	H	H	H	
Strategy OP.5 - Administrative Initiatives							
(1) Continue to manage sanctuary finances	◇	□	○	H	H	H	
(2) Ensure a safe and secure working environment	◇	□	○	H	H	H	
(3) Work with WASC	◇	□	◎	H	H	H	
(4) Identify, prioritize, and fill equipment and service needs	◇	□	○	H	H	H	
(5) Enhance partnership with the Channel Islands Marine Sanctuary Foundation	◆	□	●	M	M	M	
Strategy OP.6 - Human Resources							
(1) Provide human resources services for staff	◇	□	○	H	H	H	
(2) Maintain sanctuary contracts	◇	□	◎	H	H	H	
(3) Identify mechanisms to augment and stabilize paid human resources	◆	□	○	H	H	H	
(4) Continue partnership with the NOAA Corps	◇	■	●	H	H	H	
Strategy OP.7 - Office Space Expansion							
(1) Participate in Building Design	♦	■	◎	H	H	H	

Appendix A1: Action Plan Summary Table

<p><u>STATUS</u></p> <p>◇ Existing w/ no significant modification ◆ Existing w/ significant modification ♦ New (since 2002) or future; not yet implemented</p> <p><u>FUNDING</u></p> <p>□ Funding is internal only (CINMS & NMSP) ■ Internal and external sources provide funding ■ Major funding source is external</p>	<p><u>PARTNERSHIP COORDINATION</u></p> <p>○ None (may include SAC input) ◎ Significant reliance on partners ● Not possible w/o partners</p> <p><u>IMPLEMENTATION LEVEL (BASED ON FUNDING SCENARIO)</u></p> <p>H High level of implementation M Medium level of implementation L Low level of implementation</p>	STATUS	FUNDING	PARTNERSHIP COORDINATION	IMPLEMENTATION LEVEL		
					LEVEL FUNDING (= FY05 BUDGET)	10% ANNUAL FUNDING INCREASE	20% PER YEAR FUNDING INCREASE
(2) Assist UCSB with Project Management During Building Construction	◆	■	◎	H	H	H	
(3) Develop CINMS Moving Plan and Conduct Move	◆	■	◎	H	H	H	
Evaluation Action Plan							
<i>Strategy EV.1 - Measuring Sanctuary Performance Over Time</i>							
(1) Monitor existing performance measures consistently over time	◆	□	○	H	H	H	
(2) Report results	◆	□	○	H	H	H	

Appendix A2: Estimated Costs Per Action Plan

Appendix A2 presents base budget (core operations and programmatic costs) and capital facility estimates for years one through five of this management plan. These estimates help the NMSP allocate funds for CINMS. Due to possible changes in Federal funding levels certain Sanctuary programs may require modification or deferred implementation to reflect budgetary changes. “Core operations” costs include: staff and contract labor, training, transportation and travel, utilities, property rental, printing, supplies, equipment, vessels and vessel maintenance. “Programmatic costs” are the additional costs the Sanctuary incurs carrying out the strategies in the action plans.

Table 26: Summary of Estimated Five-Year Costs for Each Action Plan (in thousands)

Action Plan	Year 1	Year 2	Year 3	Year 4	Year 5	Estimated 5 Year Total
Public Awareness and Understanding	\$333.5	\$487	\$534.5	\$465.5	\$447	\$2267.5
Conservation Science	\$79.5	\$347.5	\$330	\$310	\$305	\$1372
Boundary Evaluation	\$75	\$125	\$125	-	-	\$325
Marine Zoning	\$50	\$30	\$10	\$10	\$0	100
Water Quality	\$35	\$63	\$63	\$63	\$63	\$287
Emergency Response & Enforcement	\$38	\$39.5	\$39.5	\$30.5	\$104	\$251.5
Maritime Heritage Resources	\$133.5	\$243	\$102.5	\$76.5	\$82	\$637.5
Emerging Issues	-	-	-	-	-	-
Operations	\$320.50	\$329.50	\$329.50	\$329.50	\$329.50	\$1,638.50
Evaluation	-	-	-	-	-	-
Estimated Total Per Year	\$1,065	\$1,664.50	\$1,534	\$1,285	\$1,330.50	\$6,879

This table assumes that all actions flagged for capital facilities funding require ALL funding from that source alone.

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APPENDIX B: LIST OF ACRONYMS

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ARB	Air Resources Board
ASA	Abandoned Shipwreck Act
ATBA	Areas To Be Avoided
CAP	Civil Aeronautical Patrol
CCC	California Coastal Commission
CDFG	California Department of Fish and Game
CEC	Community Environmental Council
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFGC	California Fish and Game Commission
CIH	Channel Islands Harbor
CIHBISC	Channel Islands Harbor Boating Instruction and Safety Center
CIMSF	Channel Islands Marine Sanctuary Foundation
CINC	Channel Islands Naturalist Corps
CINMS	Channel Islands National Marine Sanctuary
CINP	Channel Islands National Park
CIPE	Center for Image Processing in Education
CMA	Chumash Maritime Association
CMAR	Coastal Maritime Archaeology Resources
CODAR	Coastal Ocean Dynamics Applications Radar
COP	Coastal Ocean Program
COSEE	Centers for Ocean Science Education Excellence
CPFV	Commercial Passenger Fishing Vessel
CRC	Cascadia Research Collective
CREEC	California Regional Environmental Education Community
CSC	Coastal Services Center
CSLC	California State Lands Commission
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DAC	Damage Assessment Center
DBW	Department of Boating and Waterways
DEIS	Draft Environmental Impact Statement
DOI	Department of Interior
EEZ	Exclusive Economic Zone
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESRI	Environmental Systems Resource Institute
FACA	Federal Advisory Committee Act
FAP	Federal Archaeological Program
FEIS	Final Environmental Impact Statement
FMP	Fishery Management Plans
FTE	Full Time Equivalent
GAFC	Great Annual Fish Count
GIS	Geographic Information System
GPS	Global Positioning System
GSA	General Services Administration
HRC	(California) Historical Resources Commission

IMO	International Maritime Organization
LAUSD	Los Angeles Unified School District
LiMPETS	Long Term Monitoring Program and Experiential Training for Students
MBNMS	Monterey Bay National Marine Sanctuary
MHR	Maritime Heritage Resource
MMPA	Marine Mammal Protection Act
MMS	Minerals Management Service
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPWC	Motorized Personal Watercraft
MRWG	Marine Reserve Working Group
MSFCMA	Magnuson-Stevens Fisheries Conservation Management Act
NASA	National Aeronautic and Space Administration
NCCOS	National Centers for Coastal Ocean Science
NEPA	National Environmental Policy Act
NERRS	National Estuarine Research Reserve System
NESDIS	National Environmental Satellite and Data Information Service
NGO	Non-governmental organization
NGS	National Geographic Society
NHPA	National Historic Preservation Act
NM	Nautical mile
NMSA	National Marine Sanctuaries Act
NMSF	National Marine Sanctuary Foundation
NMSP	National Marine Sanctuary Program
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NSDI	National Spatial Data Infrastructure
NSF	National Science Foundation
NSP	Nonpoint Source Pollution
NWS	National Weather Service
OAR	(Office of) Oceanic and Atmospheric Research
OCNMS	Olympic Coast National Marine Sanctuary
OCRM	Office of Coastal Resource Management
OCS	Outer Continental Shelf
OLE	Office for Law Enforcement
ONR	Office of Naval Research
OR&R	Office of Response and Restoration
OSPR	(Office of) Oil Spill Prevention and Response
PFMC	Pacific Fishery Management Council
PISCO	Partnership for Interdisciplinary Study of Coastal Oceans
RAIN	Regional Alliance for Information Networking
REEF	Reef Environmental Education Foundation
ROV	Remotely Operated Vehicle
RWQCB	Regional Water Quality Control Board
SAC	Sanctuary Advisory Council
SAMSAP	Sanctuary Aerial Monitoring and Spatial Analysis Program
SBCC	Santa Barbara City College
SBCS	Santa Barbara County Schools

SBMM	Santa Barbara Maritime Museum
SBMMC	Santa Barbara Marine Mammal Center
SCB	Southern California Bight
SCCWRP	Southern California Coastal Water Research Project
SeaWiFS	Sea-Viewing Wide-Field-of-Vision Sensor
SEIS	Supplemental Environmental Impact Statement
SET	Sanctuary Education Team
SMP	Supplemental Management Plan
SPO	Special Projects Office
SWMEA	Southwestern Marine/Aquatic Educators Association
SWRCB	State Water Resource Control Board
TSS	Traffic Separation Scheme
UCSB	University of California at Santa Barbara
UCSB-MSI	University of California at Santa Barbara-Marine Science
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VAFB	Vandenberg Air Force Base
VTSS	Vessel Traffic Separation Scheme
WASC	Western Administrative Support Center
WOW	Waves on Wheels

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**APPENDIX C: EXISTING AND PROPOSED CINMS
REGULATIONS**

APPENDIX C: EXISTING AND PROPOSED CINMS REGULATIONS

Table 27: Existing CINMS Regulations and Regulatory Alternatives

No Action (Status Quo)	Proposed Action <u>Underlined</u> (new) and struck through (deleted) text show differences from No Action (Status Quo)	Alternative 1 (bold text is different from Proposed Action)
<p>Sanctuary Boundary (15 CFR 922.70).</p> <p>The Channel Islands National Marine Sanctuary (Sanctuary) consists of an area of the waters off the coast of California of approximately 1252.5 square nautical miles (NM) adjacent to the following islands and offshore rocks: San Miguel Island, Santa Cruz Island, Santa Rosa Island, Anacapa Island, Santa Barbara Island, Richardson Rock, and Castle Rock (collectively the Islands) extending seaward to a distance of six NM. The boundary coordinates are listed in appendix A to this subpart.</p>	<p>Sanctuary Boundary.</p> <p>The Channel Islands National Marine Sanctuary (Sanctuary) consists of an area of the waters off the coast of California of approximately 1252.5¹²⁴³ square nautical miles (NM) of coastal and ocean waters, and the submerged lands thereunder, off the southern coast of California. The Sanctuary boundary begins at the Mean High Water Line of and extends seaward to a distance of approximately six NM adjacent to from the following islands and offshore rocks: San Miguel Island, Santa Cruz Island, Santa Rosa Island, Anacapa Island, Santa Barbara Island, Richardson Rock, and Castle Rock (collectively the Islands) extending seaward to a distance of six NM. The <u>seaward</u> boundary coordinates are listed in <u>the Appendix A</u> to this subpart.</p>	<p>Sanctuary Boundary.</p> <p>Same as Proposed Action</p>
<p>1. Oil and Gas.</p> <p>Prohibited: Exploring for, developing, and producing hydrocarbons except pursuant to leases executed prior to March 30, 1981, and except the laying of pipeline, if the following oil spill contingency equipment is available at the site of such operations:</p> <p>(i) 1500 feet of open ocean containment boom and a boat capable of deploying the boom;</p> <p>(ii) One oil skimming device capable of open ocean use; and</p> <p>(iii) Fifteen bales of oil sorbent material, and subject to all prohibitions, restrictions and conditions imposed by applicable regulations, permits, licenses or other authorizations and consistency reviews including those issued by the Department of the Interior, the Coast Guard, the Corps of Engineers, the Environmental Protection Agency and under the California Coastal Management Program and its implementing regulations.</p> <p>Other Exceptions:</p> <ul style="list-style-type: none"> • Except as may be necessary for the national defense • Except as may be necessary to respond to an emergency threatening life, property, or the environment • Except as may be permitted by the Director in accordance with 15 CFR secs. 922.48 and 922.72 	<p>1. Oil and Gas.</p> <p>Prohibited: Exploring for, developing, and/or producing hydrocarbons <u>within the Sanctuary</u>, except pursuant to leases executed prior to March 30, 1981, and except the laying of pipeline <u>pursuant to exploring for, developing, or producing hydrocarbons</u>, if the following oil spill contingency equipment is available at the site of such operations:</p> <p>(i) 1500 feet of open ocean containment boom and a boat capable of deploying the boom;</p> <p>(ii) One oil skimming device capable of open ocean use; and</p> <p>(iii) Fifteen bales of oil sorbent material, and subject to all prohibitions, restrictions and conditions imposed by applicable regulations, permits, licenses or other authorizations and consistency reviews including those issued by the Department of the Interior, the Coast Guard, the Corps of Engineers, the Environmental Protection Agency and under the California Coastal Management Program and its implementing regulations.</p> <p>Other Exceptions:</p> <ul style="list-style-type: none"> • Except as may be necessary for the national defense • Except as may be necessary to respond to an emergency threatening life, property, or the environment; • Except as may be permitted by the Director in accordance with 15 CFR secs. 922.48 and 922.72 	<p>1. Oil and Gas.</p> <p>Same as Proposed Action</p>
<p>2. Mineral Activities.</p> <p>No existing regulation</p>	<p>2. Mineral Activities.</p> <p>Prohibited: <u>Exploring for, developing, or producing minerals within the Sanctuary, except producing by-products incidental to hydrocarbon production allowed by paragraph (a)(1) of this section</u> [see #1 above].</p>	<p>2. Mineral Activities.</p> <p>Same as Proposed Action</p>

Table 27, Page 1 of 9

Table 27: Existing CINMS Regulations and Regulatory Alternatives (continued)

No Action (Status Quo)	Proposed Action <u>Underlined</u> (new) and struck through (deleted) text show differences from No Action (Status Quo)	Alternative 1 (bold text is different from Proposed Action)
<p>3. Discharging or Depositing. Prohibited: Discharging or depositing any material or other matter except: (i) Fish or fish parts and chumming materials (bait); (ii) Water (including cooling water) and other biodegradable effluents incidental to vessel use of the Sanctuary generated by: (A) Marine sanitation devices; (B) Routine vessel maintenance, e.g., deck wash down; (C) Engine exhaust; or (D) Meals on board vessels; (iii) Effluents incidental to hydrocarbon exploration and exploitation activities allowed by paragraph (a)(1) of this section [see #1 above].</p> <p>Other Exceptions:</p> <ul style="list-style-type: none"> • Except as may be necessary for the national defense • Except as may be necessary to respond to an emergency threatening life, property, or the environment • Except as may be permitted by the Director in accordance with 15 CFR secs. 922.48 and 922.72 	<p>3. Discharging or Depositing. Prohibited: Discharging or depositing <u>from within or into the Sanctuary</u> any material or other matter except: <u>(A)(i) Fish, or fish parts, and or chumming materials (bait) used in or resulting from lawful fishing activity within the Sanctuary, provided that such discharge or deposit is during the conduct of lawful fishing activity within the Sanctuary;</u> <u>(B)(ii) Water (including cooling water) and other biodegradable effluents incidental to vessel use of the Sanctuary and generated by:</u> <u>(A) an operable Type I or II marine sanitation devices (U.S. Coast Guard classification) approved in accordance with section 312 of the Federal Water Pollution Control Act, as amended, (FWPCA), 33 U.S.C. 1321 et seq. Vessel operators must lock all marine sanitation devices in a manner that prevents discharge of untreated sewage;</u> <u>(B)(C) Routine vessel maintenance, e.g., Biodegradable matter from a vessel resulting from deck wash down, vessel engine cooling water, or graywater as defined by section 312 of the FWPCA;</u> <u>(C)(D) Vessel eEngine or generator exhaust; or</u> <u>(D) Meals on board vessels;</u> <u>(iii)(E) Effluents routinely and necessarily discharged or deposited incidental to hydrocarbon exploration, development, or production and exploitation activities allowed by paragraph (a)(1) of this section [see #1 above];</u> <u>(F) Discharges allowed under section 312(n) of the FWPCA; or</u> <u>(ii) Discharging or depositing from beyond the boundary of the Sanctuary any material or other matter that subsequently enters the Sanctuary and injures a Sanctuary resource or quality, except those listed in subparagraphs (a)(3)(i)(B) through (F) of this section and fish, fish parts, or chumming materials (bait) used in or resulting from lawful fishing activity beyond the boundary of the Sanctuary, provided that such discharge or deposit is during the conduct of lawful fishing activity there.</u></p> <p>Other Exceptions:</p> <ul style="list-style-type: none"> • Except as may be permitted by the Director in accordance with the <u>scope, purpose, terms, and conditions of a National Marine Sanctuary permit issued pursuant to 15 CFR secs. 922.48 and 922.723.</u> • Except as may be for an activity necessary to respond to an emergency threatening life, property, or the environment. • Except for an activity necessary for valid law enforcement purposes <u>in the Sanctuary.</u> • [See Department of Defense at the end of this table.] 	<p>3. Discharging or Depositing. Prohibited: Discharging or depositing <u>from within or into the Sanctuary</u> any material or other matter except: <u>(A)(i) Fish, or fish parts, and or chumming materials (bait) used in or resulting from lawful fishing activity within the Sanctuary, provided that such discharge or deposit is during the conduct of lawful fishing activity within the Sanctuary;</u> <u>(B)(ii) Water (including cooling water) and other biodegradable effluents incidental to vessel use of the Sanctuary and generated by: (A) an operable Type I or II marine sanitation devices (U.S. Coast Guard classification) approved in accordance with section 312 of the Federal Water Pollution Control Act, as amended, (FWPCA), 33 U.S.C. 1321 et seq. excluding any vessel of 300 gross registered tons or more. Vessel operators must lock all marine sanitation devices in a manner that prevents discharge of untreated sewage;</u> <u>(B)(C) Routine vessel maintenance, e.g., Biodegradable matter from a vessel resulting from deck wash down, vessel engine cooling water, or graywater as defined by section 312 of the FWPCA;</u> <u>(C)(D) Vessel eEngine or generator exhaust; or</u> <u>(D) Meals on board vessels;</u> <u>(iii)(E) Effluents routinely and necessarily discharged or deposited incidental to hydrocarbon exploration, development, or production and exploitation activities allowed by paragraph (a)(1) of this section [see #1 above];</u> <u>(F) Discharges allowed under section 312(n) of the FWPCA; or</u> <u>(ii) Discharging or depositing from beyond the boundary of the Sanctuary any material or other matter that subsequently enters the Sanctuary and injures a Sanctuary resource or quality, except those listed in subparagraphs (a)(3)(i)(B) through (F) of this section and fish, fish parts, or chumming materials (bait) used in or resulting from lawful fishing activity beyond the boundary of the Sanctuary, provided that such discharge or deposit is during the conduct of lawful fishing activity there.</u></p> <p>Other Exceptions:</p> <ul style="list-style-type: none"> • Except as may be permitted by the Director in accordance with the <u>scope, purpose, terms, and conditions of a National Marine Sanctuary permit issued pursuant to 15 CFR secs. 922.48 and 922.723.</u> • Except as may be for an activity necessary to respond to an emergency threatening life, property, or the environment. • Except for an activity necessary for valid law enforcement purposes <u>in the Sanctuary.</u> • [See Department of Defense at the end of this table.]

Table 27, Page 2 of 9

Table 27: Existing CINMS Regulations and Regulatory Alternatives (continued)

<p>No Action (Status Quo)</p>	<p>Proposed Action <u>Underlined</u> (new) and struckthrough (deleted) text show differences from No Action (Status Quo)</p>	<p>Alternative 1 (bold text is different from Proposed Action)</p>
<p>4. Altering the Seabed. Prohibited: Except in connection with the laying of any pipeline as allowed by paragraph (a)(1) of this section, within 2 NM of any Island: (i) Constructing any structure other than a navigation aid, (ii) Drilling through the seabed, or (iii) Dredging or otherwise altering the seabed in any way, other than (A) To anchor vessels, or (B) To bottom trawl from a commercial fishing vessel.</p> <p>Other Exceptions:</p> <ul style="list-style-type: none"> • Except as may be necessary for the national defense • Except as may be necessary to respond to an emergency threatening life, property, or the environment, • Except as may be permitted by the Director in accordance with 15 CFR secs. 922.48 and 922.72 	<p>4. Altering the Submerged Lands. Prohibited: Except in connection with the laying of any pipeline as allowed by paragraph (a)(1) of this section, within 2 NM of any Island: (ii) Drilling into through the seabed, (iii) Dredging, or otherwise altering the seabed <u>submerged lands of the Sanctuary in any way, other than: (i) or</u> Constructing or placing any structure other than a navigation aid, material, or other matter on or in the submerged lands of the Sanctuary, except as incidental to and necessary to: (A)(i) To anchor a vessels; (ii) <u>Install an authorized navigational aid;</u> (B) (iii) To bottom trawl from a commercial fishing vessel <u>Conduct lawful fishing activity;</u> (iv) <u>Lay pipeline pursuant to exploring for, developing, or producing hydrocarbons; or</u> (v) <u>Explore for, develop, or produce hydrocarbons as allowed by subparagraph (a)(1) of this section [see #1 above].</u></p> <p>Other Exceptions:</p> <ul style="list-style-type: none"> • Except as may be permitted by the Director in accordance with the scope, purpose, terms, and conditions of a National Marine Sanctuary permit issued pursuant to 15 CFR secs. 922.48 and 922.723. • Except as may be for an activity necessary to respond to an emergency threatening life, property, or the environment. • Except for an activity necessary for valid law enforcement purposes in the Sanctuary. • [See Department of Defense at the end of this table.] 	<p>4. Altering the Submerged Lands. Same as Proposed Action</p>
<p>5. Abandoning. No existing regulation</p>	<p>5. Abandoning. Prohibited: Abandoning any structure, material, or other matter on or in the submerged lands of the Sanctuary.</p> <p>Exceptions:</p> <ul style="list-style-type: none"> • Except in accordance with the scope, purpose, terms, and conditions of a National Marine Sanctuary permit issued pursuant to 15 CFR 922.48 and 922.73. • Except for an activity necessary to respond to an emergency threatening life, property, or the environment. • Except for an activity necessary for valid law enforcement purposes in the Sanctuary. • [See Department of Defense at the end of this table.] 	<p>5. Abandoning. Same as Proposed Action</p>

Table 27, Page 3 of 9

Table 27: Existing CINMS Regulations and Regulatory Alternatives (continued)

<p>No Action (Status Quo)</p>	<p>Proposed Action <u>Underlined</u> (new) and struckthrough (deleted) text show differences from No Action (Status Quo)</p>	<p>Alternative 1 (bold text is different from Proposed Action)</p>
<p>6. Nearshore Operation of Vessels.</p> <p>Prohibited: Except to transport persons or supplies to or from an Island, operating within one NM of an Island any vessel engaged in the trade of carrying cargo, including, but not limited to, tankers and other bulk carriers and barges, or any vessel engaged in the trade of servicing offshore installations. In no event shall this section be construed to limit access for fishing (including kelp harvesting), recreational, or research vessels.</p> <p>Other Exceptions:</p> <ul style="list-style-type: none"> • Except as may be necessary for the national defense • Except as may be necessary to respond to an emergency threatening life, property, or the environment, • Except as may be permitted by the Director in accordance with 15 CFR secs. 922.48 and 922.72 	<p>6. Nearshore Operation of Vessels.</p> <p>Prohibited: Except to transport persons or supplies to or from any Island, operating within one NM of any Island any vessel engaged in the trade of carrying cargo, including, but not limited to, tankers and other bulk carriers and barges, or any vessel engaged in the trade of servicing offshore installations, or any vessel of three hundred gross registered tons or more, except. In no event shall this section be construed to limit access for fishing (including or kelp harvesting), recreational, or research vessels.</p> <p>Other Exceptions:</p> <ul style="list-style-type: none"> • Except as may be permitted by the Director in accordance with <u>the scope, purpose, terms, and conditions of a National Marine Sanctuary permit issued pursuant to 15 CFR secs. 922.48 and 922.723.</u> • Except as may be for an activity necessary to respond to an emergency threatening life, property, or the environment. • <u>Except for an activity necessary for valid law enforcement purposes in the Sanctuary.</u> • [See Department of Defense at the end of this table.] 	<p>6. Nearshore Operation of Vessels.</p> <p>Prohibited: Except to transport persons or supplies to or from any Island, operating within one NM of any Island any vessel engaged in the trade of carrying cargo, including, but not limited to, tankers and other bulk carriers and barges, or any vessel engaged in the trade of servicing offshore installations, or any vessel of three hundred gross registered tons or more, except. In no event shall this section be construed to limit access for fishing (including or kelp harvesting), recreational, or research vessels.</p> <p>Other Exceptions:</p> <ul style="list-style-type: none"> • Except as may be permitted by the Director in accordance with <u>the scope, purpose, terms, and conditions of a National Marine Sanctuary permit issued pursuant to 15 CFR secs. 922.48 and 922.723.</u> • Except as may be for an activity necessary to respond to an emergency threatening life, property, or the environment. • <u>Except for an activity necessary for valid law enforcement purposes in the Sanctuary.</u> • [See Department of Defense at the end of this table.]
<p>7. Disturbing a Seabird or Marine Mammal by Aircraft.</p> <p>Prohibited: Disturbing seabirds or marine mammals by flying motorized aircraft at less than 1000 feet over the waters within one NM of any Island except:</p> <p>(i) For enforcement purposes;</p> <p>(ii) To engage in kelp bed surveys; or</p> <p>(iii) To transport persons or supplies to or from an Island.</p> <p>Other Exceptions:</p> <ul style="list-style-type: none"> • Except as may be necessary for the national defense • Except as may be necessary to respond to an emergency threatening life, property, or the environment • Except as may be permitted by the Director in accordance with 15 CFR secs. 922.48 and 922.72 	<p>7. Disturbing a Seabird or Marine Mammal by Aircraft.</p> <p>Prohibited: Disturbing a seabirds or marine mammals by flying a motorized aircraft at less than 1000 feet over the waters within one NM of any Island, <u>except, if allowed under subparagraph (a)(9) of this section [see #9 below]:</u></p> <p>(i) For enforcement purposes;</p> <p>(ii) to engage in kelp bed surveys; or</p> <p>(iii) to transport persons or supplies to or from an Island.</p> <p>Other Exceptions:</p> <ul style="list-style-type: none"> • Except as may be permitted by the Director in accordance with <u>the scope, purpose, terms, and conditions of a National Marine Sanctuary permit issued pursuant to 15 CFR secs. 922.48 and 922.723.</u> • Except as may be for an activity necessary to respond to an emergency threatening life, property, or the environment. • <u>Except for an activity necessary for valid law enforcement purposes in the Sanctuary.</u> • [See Department of Defense at the end of this table.] 	<p>7. Disturbing a Seabird or Marine Mammal by Aircraft.</p> <p>Same as Proposed Action</p>

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Table 27: Existing CINMS Regulations and Regulatory Alternatives (continued)

<p>No Action (Status Quo)</p>	<p>Proposed Action <u>Underlined</u> (new) and struck through (deleted) text show differences from No Action (Status Quo)</p>	<p>Alternative 1 (bold text is different from Proposed Action)</p>
<p>8. Moving, Removing, or Injuring a Sanctuary Historical Resource.</p> <p>Prohibited: Removing or damaging any historical or cultural resource.</p> <p>Other Exceptions:</p> <ul style="list-style-type: none"> • Except as may be necessary for the national defense • Except as may be necessary to respond to an emergency threatening life, property, or the environment, • Except as may be permitted by the Director in accordance with 15 CFR secs. 922.48 and 922.72 	<p>8. Moving, Removing, or Injuring a Sanctuary Historical Resource.</p> <p>Prohibited: <u>Moving, Removing, injuring, or possessing, or attempting to move, remove, injure, or possess or damaging any a Sanctuary</u> historical or cultural resource.</p> <p>Exceptions:</p> <ul style="list-style-type: none"> • <u>Except as may be permitted by the Director in accordance with the scope, purpose, terms, and conditions of a National Marine Sanctuary permit issued pursuant to 15 CFR secs. 922.48 and 922.723.</u> • <u>Except as may be for an activity necessary to respond to an emergency threatening life, property, or the environment.</u> • <u>Except for an activity necessary for valid law enforcement purposes in the Sanctuary.</u> • [See Department of Defense at the end of this table.] 	<p>8. Moving, Removing, or Injuring a Sanctuary Historical Resource.</p> <p>Same as Proposed Action</p>
<p>9. Taking a Marine Mammal, Sea Turtle, or Seabird.</p> <p>No existing regulation</p>	<p>9. Taking a Marine Mammal, Sea Turtle, or Seabird.</p> <p>Prohibited: <u>Taking any marine mammal, sea turtle, or seabird within or above the Sanctuary, except as expressly authorized by the Marine Mammal Protection Act, as amended, (MMPA), 16 U.S.C. 1361 et seq., Endangered Species Act, as amended, (ESA), 16 U.S.C. 1531 et seq., Migratory Bird Treaty Act, as amended, (MBTA), 16 U.S.C. 703 et seq., or any regulation, as amended, promulgated under the MMPA, ESA, or MBTA.</u></p> <p>Other Exceptions:</p> <ul style="list-style-type: none"> • <u>Except in accordance with the scope, purpose, terms, and conditions of a National Marine Sanctuary permit issued pursuant to 15 CFR 922.48 and 922.73.</u> • <u>Except for an activity necessary to respond to an emergency threatening life, property, or the environment.</u> • <u>Except for an activity necessary for valid law enforcement purposes in the Sanctuary.</u> • [See Department of Defense at the end of this table.] 	<p>9. Taking a Marine Mammal, Sea Turtle, or Seabird.</p> <p>Same as Proposed Action</p>
<p>10. Possessing a Marine Mammal, Sea Turtle, or Seabird.</p> <p>No existing regulation</p>	<p>10. Possessing a Marine Mammal, Sea Turtle, or Seabird.</p> <p>Prohibited: <u>Possessing within the Sanctuary (regardless of where taken from, moved, or removed from) any marine mammal, sea turtle, or seabird, except as expressly authorized by the MMPA, ESA, MBTA, or any regulation, as amended, promulgated under the MMPA, ESA, or MBTA.</u></p> <p>Other Exceptions:</p> <ul style="list-style-type: none"> • <u>Except in accordance with the scope, purpose, terms, and conditions of a National Marine Sanctuary permit issued pursuant to 15 CFR 922.48 and 922.73.</u> • <u>Except for an activity necessary to respond to an emergency threatening life, property, or the environment.</u> • <u>Except for an activity necessary for valid law enforcement purposes in the Sanctuary.</u> • [See Department of Defense at the end of this table.] 	<p>10. Possessing a Marine Mammal, Sea Turtle, or Seabird</p> <p>Same as Proposed Action</p>

Table 27, Page 5 of 9

Table 27: Existing CINMS Regulations and Regulatory Alternatives (continued)

<p>No Action (Status Quo)</p>	<p>Proposed Action <u>Underlined</u> (new) and struckthrough (deleted) text show differences from No Action (Status Quo)</p>	<p>Alternative 1 (bold text is different from Proposed Action)</p>
<p>11. Tampering with Signs No existing regulation</p>	<p>11. Tampering with Signs Prohibited: <u>Marking, defacing, damaging, moving, removing, or tampering with any sign, notice, or placard, whether temporary or permanent, or any monument, stake, post, or other boundary marker related to the Sanctuary.</u> Exceptions: <ul style="list-style-type: none"> • <u>Except for an activity necessary to respond to an emergency threatening life, property, or the environment.</u> • <u>Except for an activity necessary for valid law enforcement purposes in the Sanctuary.</u> • [See Department of Defense at the end of this table.] </p>	<p>11. Tampering with Signs Same as Proposed Action</p>
<p>12. Releasing an Introduced Species No existing regulation</p>	<p>12. Releasing an Introduced Species Prohibited: <u>Introducing or otherwise releasing from within or into the Sanctuary an introduced species, except striped bass (<i>Roccus saxatilis</i>) released during catch and release fishing activity.</u> Exceptions: <ul style="list-style-type: none"> • <u>Except in accordance with the scope, purpose, terms, and conditions of a National Marine Sanctuary permit issued pursuant to 15 CFR 922.48 and 922.73.</u> • [See Department of Defense at the end of this table.] Proposed definition (at Sec. 922.71): <u>Introduced species means (1) a species (including but not limited to any of its biological matter capable of propagation) that is non-native to the ecosystems protected by the Sanctuary; or (2) any organism into which genetic matter from another species has been transferred in order that the host organism acquires the genetic traits of the transferred genes.</u> </p>	<p>12. Releasing an Introduced Species Same as Proposed Action</p>
<p>13. Operation of Motorized Personal Watercraft No existing regulation</p>	<p>13. Operation of Motorized Personal Watercraft Prohibited: <u>Operating a motorized personal watercraft within waters of the Channel Islands National Park, established by 16 U.S.C. 410(ff).</u> Proposed definition (at Sec. 922.71): <u>Motorized personal watercraft means a vessel, usually less than 16 feet in length, which uses an inboard, internal combustion engine powering a water jet pump as its primary source of propulsion. The vessel is intended to be operated by a person or persons sitting, standing or kneeling on the vessel, rather than within the confines of the hull. The length is measured from end to end over the deck excluding sheer, meaning a straight line measurement of the overall length from the foremost part of the vessel to the aftermost part of the vessel, measured parallel to the centerline. Bow sprits, bumpkins, rudders, outboard motor brackets, and similar fittings or attachments, are not included in the measurement. Length is stated in feet and inches.</u> Exceptions: <ul style="list-style-type: none"> • <u>Except in accordance with the scope, purpose, terms, and conditions of a National Marine Sanctuary permit issued pursuant to 15 CFR 922.48 and 922.73.</u> • <u>Except for an activity necessary to respond to an emergency threatening life, property, or the environment.</u> • <u>Except for an activity necessary for valid law enforcement purposes in the Sanctuary.</u> • [See Department of Defense at the end of this table.] </p>	<p>13. Operation of Motorized Personal Watercraft Same as Proposed Action</p>

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Table 27: Existing CINMS Regulations and Regulatory Alternatives (continued)

No Action (Status Quo)	<p style="text-align: center;">Proposed Action</p> <p style="text-align: center;"><u>Underlined</u> (new) and struckthrough (deleted) text show differences from No Action (Status Quo)</p>	<p style="text-align: center;">Alternative 1</p> <p style="text-align: center;">(bold text is different from Proposed Action)</p>
<p>14. Lightering</p> <p>No existing regulation</p>	<p>14. Lightering</p> <p>No regulation proposed</p>	<p>14. Lightering</p> <p>Prohibited: Lightering in the Sanctuary.</p> <p>Note: Sanctuary regulations define lightering as at-sea transfer of petroleum-based products, materials, or other matter from vessel to vessel (15 CFR 922.3).</p> <p>Exceptions:</p> <ul style="list-style-type: none"> • Except for an activity necessary to respond to an emergency threatening life, property, or the environment. • Except for an activity necessary for valid law enforcement purposes in the Sanctuary. • [See Department of Defense at the end of this table.]
<p>Department of Defense Activities.</p> <p>All activities currently carried out by the Department of Defense within the Sanctuary are essential for the national defense and, therefore, not subject to the prohibitions in this section. The exemption of additional activities having significant impact shall be determined in consultation between the Director and the Department of Defense.</p>	<p>Department of Defense Activities.</p> <p>(b) All activities currently carried out by the Department of Defense within the Sanctuary are essential for the national defense and, therefore, not subject to the prohibitions in this section. The exemption of additional activities having significant impact shall be determined in consultation between the Director and the Department of Defense.</p> <p><u>(b)(1) The prohibitions in paragraphs (a)(3) through (13) do not apply to military activities carried out by DOD as of the effective date of these regulations and specifically identified in section 3.5.9 (Department of Defense Activities) of the Final Channel Islands National Marine Sanctuary Management Plan/Environmental Impact Statement (FMP/FEIS), Volume II: Environmental Impact Statement, 200 [year of completion of the FMP/FEIS will be entered here], authored and published by NOAA ("pre-existing activities"). Copies of the document are available from the Channel Islands National Marine Sanctuary, 113 Harbor Way, Santa Barbara, CA 93109. Other military activities carried out by DOD may be exempted by the Director after consultation between the Director and DOD.</u></p> <p><u>(2) A military activity carried out by DOD as of the effective date of these regulations and specifically identified in the section entitled "Department of Defense Activity" of the FMP/FEIS is not considered a pre-existing activity if:</u></p> <p><u>(A) it is modified in such a way that requires the preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act, 42 U.S.C. 4321 et seq., relevant to a Sanctuary resource or quality;</u></p> <p><u>(B) it is modified, including but not limited to changes in location or frequency, in such a way that its possible adverse effects on Sanctuary resources or qualities are significantly greater than previously considered for the unmodified activity;</u></p> <p><u>(C) it is modified, including but not limited to changes in location or frequency, in such a way that its possible adverse effects on Sanctuary resources or qualities are significantly different in manner than previously considered for the unmodified activity; or</u></p> <p><u>(D) there are new circumstances or information relevant to a Sanctuary resource or quality that were not addressed in the FMP/FEIS.</u></p> <p><u>(3) In the event of destruction of, loss of, or injury to a Sanctuary resource or quality resulting from an incident, including, but not limited to, discharges, deposits, and groundings, caused by a DOD activity, DOD, in coordination with the Director, must promptly prevent and mitigate further damage and must restore or replace the Sanctuary resource or quality in a manner approved by the Director.</u></p> <p><u>(4) All DOD activities must be carried out in a manner that avoids to the maximum extent practicable any adverse impacts on Sanctuary resources and qualities.</u></p>	<p>Department of Defense Activities.</p> <p>Same as Proposed Action.</p>

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Table 27: Existing CINMS Regulations and Regulatory Alternatives (continued)

<p>No Action (Status Quo)</p>	<p>Proposed Action Underlined (new) and struckthrough (deleted) text show differences from No Action (Status Quo)</p>	<p>Alternative 1 (bold text is different from Proposed Action)</p>
<p>Permit Procedures and Issuance Criteria.</p> <p>(a) Any person in possession of a valid permit issued by the Director in accordance with this section and Sec.922.48 may conduct any activity in the Sanctuary prohibited under Sec. 922.71 [see above] if such activity is either:</p> <p>(1) Research related to the resources of the Sanctuary,</p> <p>(2) To further the educational value of the Sanctuary; or</p> <p>(3) For salvage or recovery operations.</p> <p>(b) Permit applications shall be addressed to: Director, Office of Ocean and Coastal Resource Management, ATTN: Manager, Channel Islands National Marine Sanctuary, 113 Harbor Way, Santa Barbara, CA 93109.</p> <p>(c) In considering whether to grant a permit the Director shall evaluate such matters as:</p> <p>(1) The general professional, and financial responsibility of the applicant;</p> <p>(2) The appropriateness of the methods envisioned to the purpose(s) of the activity;</p> <p>(3) The extent to which the conduct of any permitted activity may diminish or enhance the value of the Sanctuary as a source of recreation, or as a source of educational or scientific information;</p> <p>(4) The end value of the activity and</p> <p>(5) Such other matters as may be deemed appropriate.</p> <p>The Director may observe any permitted activity and/or require the submission of one or more reports of the status or progress of such activity. Any information obtained shall be available to the public.</p>	<p>Permit Procedures and Issuance Criteria.</p> <p>(a) Any person in possession of a valid permit issued by the Director in accordance with this section and Sec.922.48 may conduct any activity in the Sanctuary prohibited under by <u>922.71(a)(3) through (10), (a)(12), and (a)(13)</u> if such activity is either:</p> <p><u>(1) Research related to the resources of the Sanctuary;</u></p> <p><u>(2) To further the educational value of the Sanctuary; or</u></p> <p><u>(3) For salvage or recovery operations specifically authorized by, and conducted in accordance with the scope, purpose, terms, and conditions of, a permit issued under 922.48 and this section.</u></p> <p>(b) <u>The Director, at his or her sole discretion, may issue a permit, subject to terms and conditions as he or she deems appropriate, to conduct an activity prohibited by 922.72(a)(3) through (10), (a)(12), and (a)(13) if the Director finds that the activity:</u></p> <p><u>(1) Is appropriate research designed to further understanding of Sanctuary resources and qualities;</u></p> <p><u>(2) Will further the educational value of the Sanctuary;</u></p> <p><u>(3) Will further salvage or recovery operations in or near the Sanctuary in connection with a recent air or marine casualty;</u></p> <p><u>(4) Will assist in managing the Sanctuary; or</u></p> <p><u>(5) Will further salvage or recovery operations in connection with an abandoned shipwreck in the Sanctuary title to which is held by the State of California.</u></p> <p>(c) In considering whether to grant a permit the Director shall evaluate such matters as: The Director may not issue a permit under 922.48 and this section unless the Director also finds that:</p> <p><u>(1) The general professional, and financial responsibility of the applicant;</u></p> <p><u>(2) The appropriateness of the methods envisioned to the purpose(s) of the activity;</u></p> <p><u>(3) The extent to which the conduct of any permitted activity may diminish or enhance the value of the Sanctuary as a source of recreation, or as a source of educational or scientific information;</u></p> <p><u>(4) The end value of the activity and</u></p> <p><u>(5) Such other matters as may be deemed appropriate.</u></p> <p><u>(1) The proposed activity will have at most short-term and negligible adverse effects on Sanctuary resources and qualities;</u></p> <p><u>(2) The applicant is professionally qualified to conduct and complete the proposed activity;</u></p> <p><u>(3) The applicant has adequate financial resources available to conduct and complete the proposed activity;</u></p> <p><u>(4) The duration of the proposed activity is no longer than necessary to achieve its stated purpose;</u></p> <p><u>(5) The methods and procedures proposed by the applicant are appropriate to achieve the goals of the proposed activity, especially in relation to the potential effects of the proposed activity on Sanctuary resources and qualities;</u></p> <p><u>(6) The proposed activity will be conducted in a manner compatible with the primary objective of protection of Sanctuary resources and qualities, considering the extent to which the conduct of the activity may diminish or enhance Sanctuary resources and qualities, any potential indirect, secondary, or cumulative effects of the activity, and the duration of such effects;</u></p> <p><u>(7) The proposed activity will be conducted in a manner compatible with the value of the Sanctuary as a source of recreation and as a source of educational and scientific information, considering the extent to which the conduct of the activity may result in conflicts between different users of the Sanctuary and the duration of such effects;</u></p> <p><u>(8) It is necessary to conduct the proposed activity within the Sanctuary;</u></p>	<p>Permit Procedures and Issuance Criteria.</p> <p>Same as Proposed Action</p>

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Table 27: Existing CINMS Regulations and Regulatory Alternatives (continued)

No Action (Status Quo)	<p align="center">Proposed Action</p> <p><u>Underlined</u> (new) and strikethrough (deleted) text show differences from No Action (Status Quo)</p>	<p align="center">Alternative 1</p> <p align="center">(bold text is different from Proposed Action)</p>
	<p><u>(9) The reasonably expected end value of the proposed activity furthers Sanctuary goals and purposes and outweighs any potential adverse effects on Sanctuary resources and qualities from the conduct of the activity; and</u></p> <p><u>(10) Any other matters the Director deems appropriate do not make the issuance of a permit for the proposed activity inappropriate.</u></p> <p><u>(d) Applications.</u></p> <p>(b)(1) Permit a <u>Applications for permits shall should be addressed to: the Director, Office of Ocean and Coastal Resource Management National Marine Sanctuaries; ATTN: Manager, Channel Islands National Marine Sanctuary, 113 Harbor Way, Santa Barbara, CA 93109.</u></p> <p><u>(2) In addition to the information listed in 922.48(b), all applications must include information the Director needs to make the findings in paragraphs (b) and (c) of this section.</u></p> <p><u>(e) In addition to any other terms and conditions that the Director deems appropriate, a permit issued pursuant to this section must require that the permittee agrees to hold the United States harmless against any claims arising out of the conduct of the permitted activities.</u></p>	

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**APPENDIX D: SUPPORTING INFORMATION ON BOUNDARY
EVALUATION**

APPENDIX D: SUPPORTING INFORMATION ON BOUNDARY EVALUATION

This appendix provides supporting information for the Boundary Evaluation Action Plan (Section III). The sanctuary boundary concepts described below were developed in 2000 and 2001 as preliminary working draft options. They were designed to represent a range of potential modifications to the existing Sanctuary boundary.

The boundary concept maps were developed by CINMS staff working in close public consultation with the Sanctuary Advisory Council. These maps depict working versions, not final versions, of possible boundary alternatives. These concepts will be analyzed in a future supplemental environmental impact statement (SEIS), which will include information from a biogeographic study being conducted by NOAA's National Centers for Coastal and Ocean Science. Summary information about the biogeographic study is also presented in this Appendix. The forthcoming SEIS will present an analysis of boundary alternatives to the public. Public comments will be solicited and responded to before a decision on boundary change, if any, is made by NOAA in the future.

Boundary Concepts

Boundary Concept 1

Boundary Concept 1 includes the entire management plan study area, plus an additional portion over the Santa Lucia bank. At 6,707 square nm, it covers the largest area of all boundary concepts. It encompasses the widest range and variety of habitats. Boundary Concept 1 also encompasses the greatest variety of uses and is adjacent to 150 miles of mainland coastline. Human uses encompassed include oil and gas exploration and development, commercial and recreational fishing, other types of recreation, harbors, watersheds, and military use. There are 39 developed oil and gas leases included within Boundary Concept 1. This is the only boundary concept including coastal areas adjacent to harbors.

Boundary Concept 1A

Boundary Concept 1A encompasses 6,038 nm (squared). Like Concept 1, it includes examples of the features making this area a unique environment: the conjunction of two biogeographic provinces as well as the transition area between the two. It also encompasses a range of human activities as varied as Concept 1, except for the exclusion of offshore oil and gas leases and coastal ports and harbors. As is also the case for Concept 1, the Concept 1A area is noted for encompassing a transition zone between two distinct biogeographical coastal provinces, where the cold temperate waters of the California Current flowing from the north meet the warm temperate waters of the of the California Countercurrent. Concept 1A also includes mainland coastal area of approximately 150 miles.

The outer boundary of Concept 1A extends slightly north of Point Sal on the north, extends to include a section west of the coast approximately 80 nm east to west and 50 nm from north to south. South of this westernmost section, Boundary Concept 1A encompasses the Santa Barbara Channel and areas from approximately 10 to 20 nm south of the existing Sanctuary boundary. Moving east south of the existing Sanctuary,

Boundary Concept 1A then drops south to include the existing Sanctuary around Santa Barbara Island. The boundary then heads north, ending at Point Mugu. The boundaries of Concept 1A were also discreetly drawn around state and federal outer continental shelf (OCS) oil and gas leases. In addition, the boundary as it pertains to ports and harbors uses as a baseline the Colreg Line as currently depicted on nautical charts, with adjustments for harbor construction occurring since the line was drawn.

Boundary Concept 2

Boundary Concept 2 encompasses 4,127 square nm, or 62 percent of Boundary Concept 1. Unlike Concepts 1 and 1A, the mainland coastal component of Concept 2 is begins at Gaviota and extends north Point Sal. Thus, Concept 2 is not adjacent to more urbanized areas of the mainland coast. As with Concept 1 and 1A, Boundary Concept 2 also includes a wide diversity of marine habitats and species, and examples of the features making this area a unique environment: the conjunction of two biogeographic provinces as well as the transition area between the two.

Boundary Concept 3

Boundary Concept 3 encompasses 2,862 square nm. Concept 3 includes a limited connection to a section of rural mainland coast extending from the southern boundary of Vandenberg Air Force Base south past Point Conception and east past Cojo Anchorage. A distinguishing feature of Concept 3 is the mainland coastal component extends to the coast without overlapping state or federal oil and gas leases, and without adjoining any urban coastal areas.

Boundary Concept 4

Boundary Concept 4 includes only offshore areas, and does not contact the coast. This concept encompasses 2,385 square nm, which is 36 percent of Boundary Concept 1. This concept is only slightly larger than then existing Sanctuary, and features a contiguous connection to Santa Barbara Island.

Concept 4 encompasses a larger area than the existing Sanctuary, providing a contiguous connection between the northern Channel Islands and Santa Barbara Island. As with Concepts 1, 1A, and 2, Boundary Concept 4 includes important offshore physical features, including portions of the Santa Barbara Basin. Concept 4 does not include habitats associated with the mainland coast, such as mainland kelp beds, wetlands, and linkages to coastal watersheds. It includes portions of the gray whale migration route, seabird foraging areas, and other important biological features.

Boundary Concept 5

Boundary Concept 5 encompasses 1,411 square nm and is closest among the concepts to the existing Sanctuary boundary. Concept 5 essentially squares off the existing curved Sanctuary boundary. Like Concept 4, Concept 5 does not include areas of the mainland coast and its associated coastal features and habitats. Concept 5 includes all the unique island habitats but without the connection to Santa Barbara Island.

Boundary Concept Maps and Data Attribute Tables

Figures 60-61 show the boundaries of boundary concept. Tables 29 and 30 compare various human use activities and environmental features occurring within each of the boundary concepts.

Figure 55: Map Of Boundary Concept 1

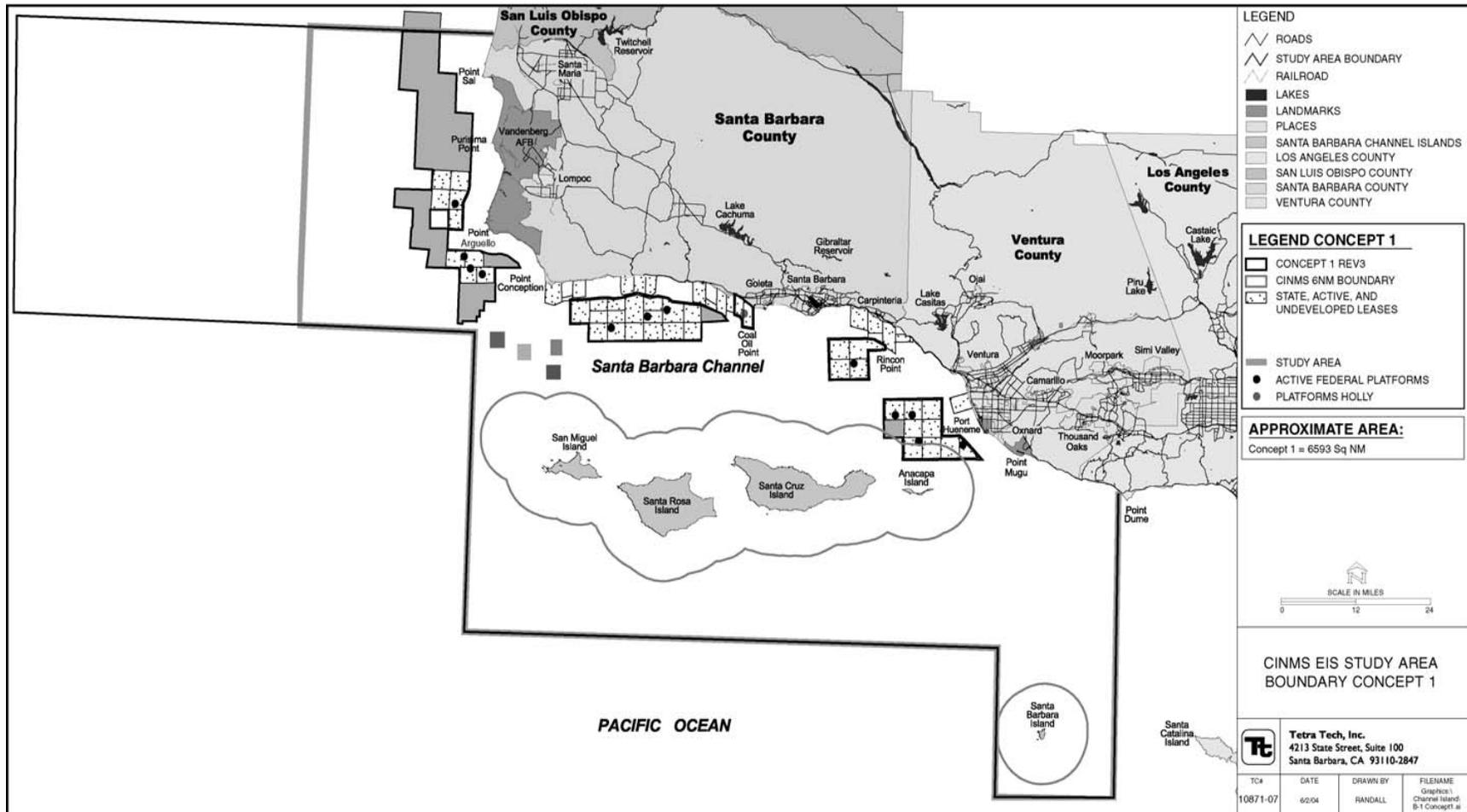


Figure 56: Map Of Boundary Concept 1A

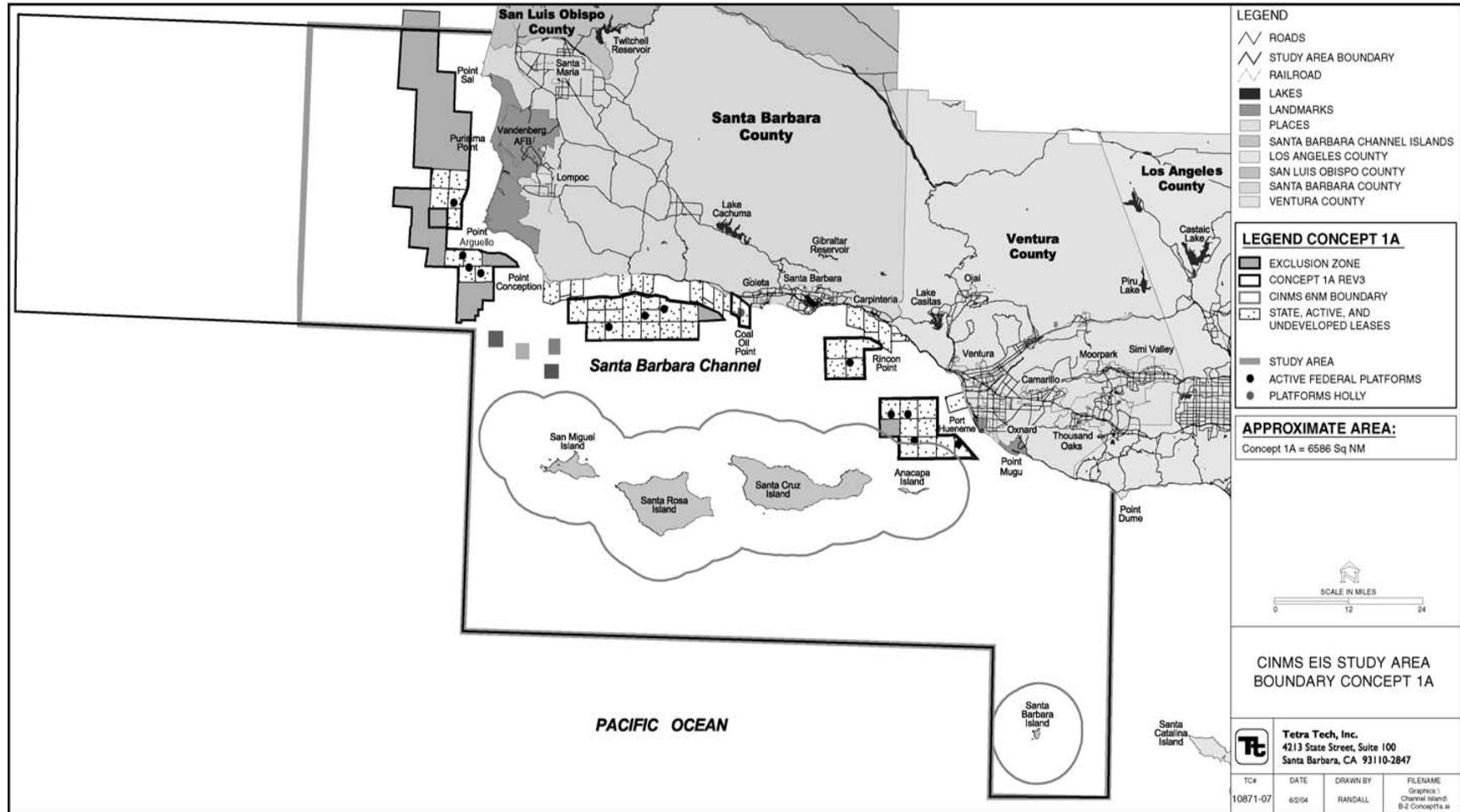


Figure 57: Map Of Boundary Concept 2

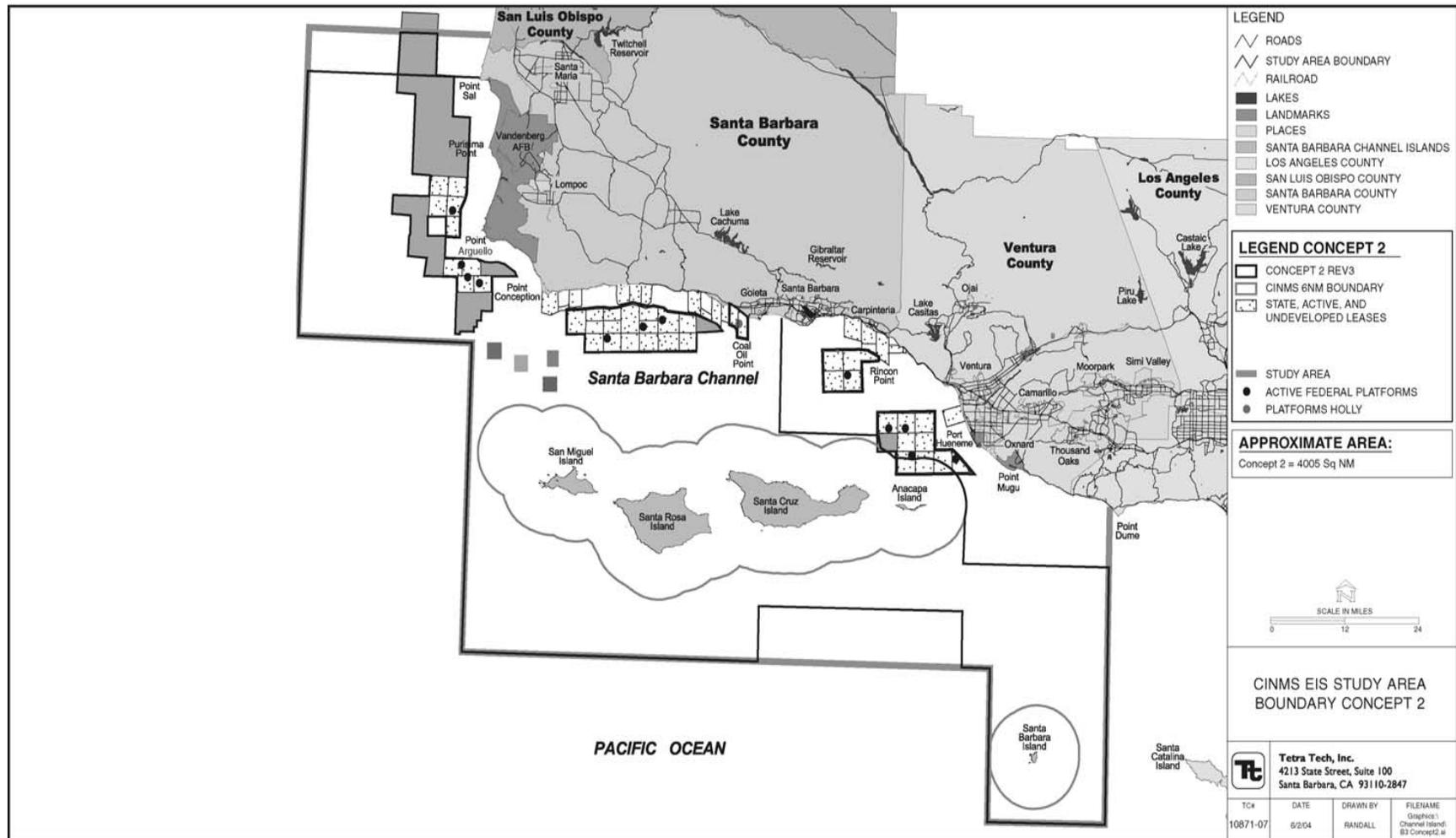


Figure 58: Map of Boundary Concept 3

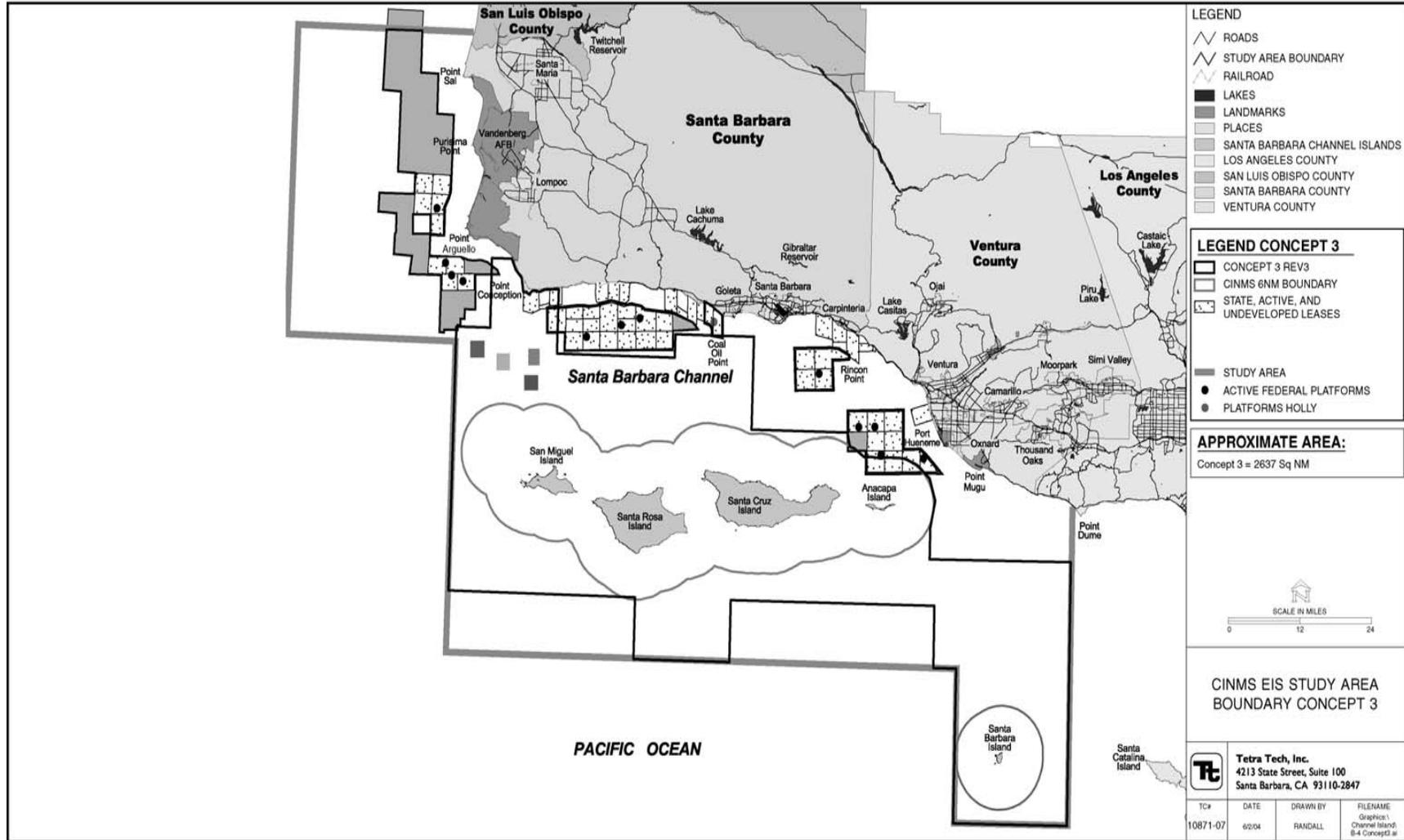


Figure 59: Map Of Boundary Concept 4

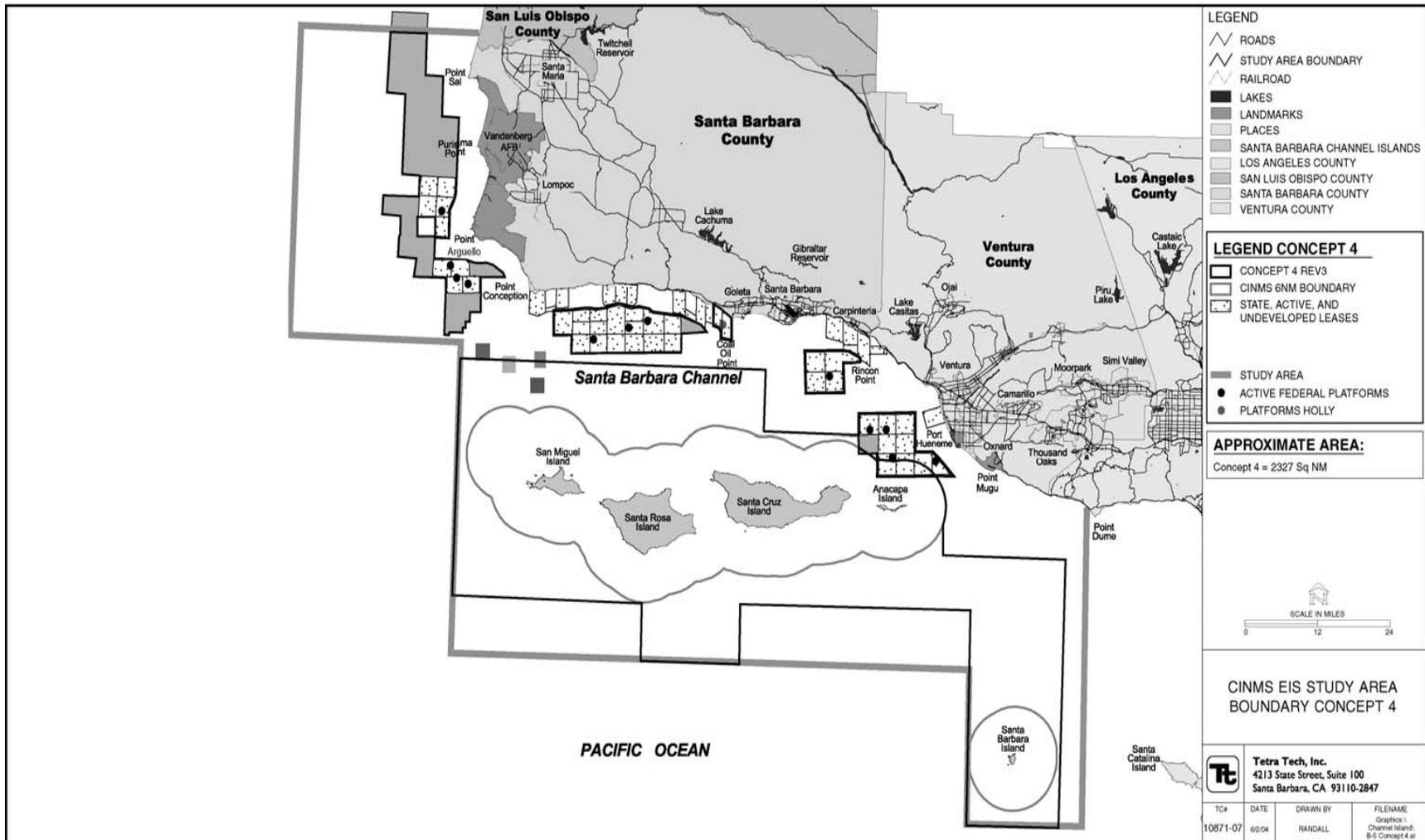


Figure 60: Map Of Boundary Concept 5

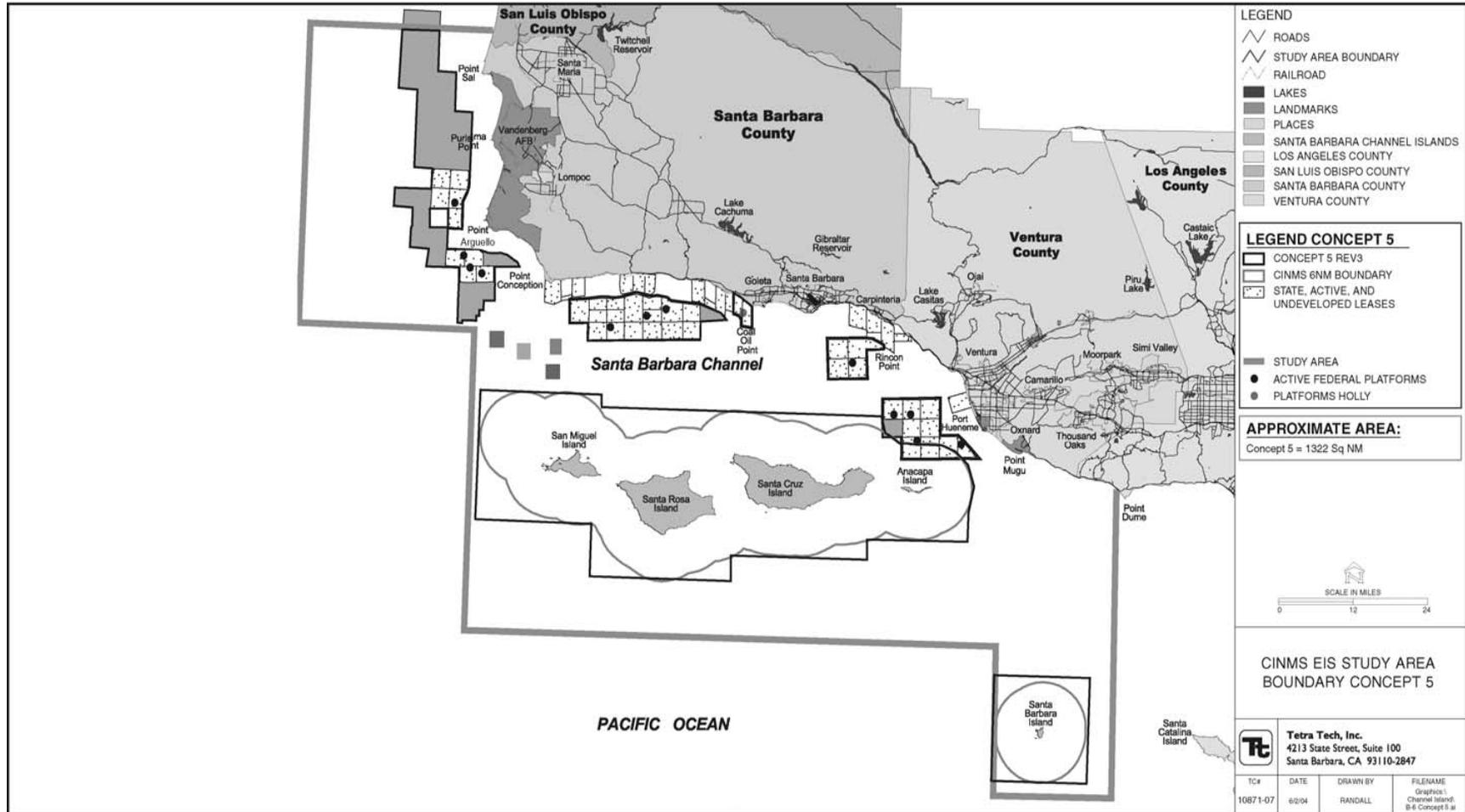


Table 28: Comparison of Human Use Attributes for Boundary Concepts

USES	Significance of Use	Study Area	Status Quo	Preliminary Boundary Concept					
				1	1A	2	3	4	5
Number of harbors	<ul style="list-style-type: none"> Focus of commercial and recreational activities. Source of pollutants from vessel-related activity and maintenance. Source of pollutants from dredging, and from construction and maintenance of piers. 	4	0	4	0	0	0	0	0
Number of commercial fish blocks	<ul style="list-style-type: none"> Impact of concentrated human activity on ecological balance. Impacts from various gear types. 	89	27	89	54	58	43	40	27
Number of military installations	<ul style="list-style-type: none"> Concentration of human activity. Support military activities impacting Sanctuary. 	4	0	4	1	1	1	0	0
Miles of Vandenberg AFB coastline	<ul style="list-style-type: none"> Source of launch, helicopter, and flight test noise impacts. Source of debris disposal into Sanctuary waters. 	35	0	35	35	35	3	0	0
Percentage of concept included in Sea Range	<ul style="list-style-type: none"> Source of noise and explosion impacts. Source of debris disposal. 	70%	95%	80%	55%	75%	70%	90%	95%
Number of producing state oil and gas leases	<ul style="list-style-type: none"> Potential source of environmental pollution. Visual impacts of platforms and facilities. Impacts from decommissioning. 	2	0	2	0	0	0	0	0
Number of producing federal oil and gas leases	<ul style="list-style-type: none"> Potential source of environmental pollution. Visual impacts of platforms and facilities. Impacts from decommissioning. 	19	0	19	0	7	0	0	0
Number of potentially developed federal oil and gas leases	<ul style="list-style-type: none"> Impacts from seismic studies. Impacts from disturbance of the seabed. Impacts from discharge. 	75	0	75	0	62	0	0	0
Percentage of area encompassed by producing or potentially producing oil and gas leases	<ul style="list-style-type: none"> Source of ocean disposal (muds and cuttings). Focus of human activity. Impacts from seismic studies. Impacts from disturbance of the seabed. Impacts from discharge. Potential source of environmental pollution. Visual impacts of platforms and facilities. Impacts from decommissioning. 	9%	0%	9%	0%	11%	0%	0%	0%
Number of active oil and gas support facilities (piers, etc.)	<ul style="list-style-type: none"> Support activities impacting offshore areas. Potential source of environmental pollution. Visual impacts of facilities. 	37	0	37	0	16	0	0	0
Number of aquaculture facilities	<ul style="list-style-type: none"> Potential for introduction of exotic species. Potential impacts on water quality and benthic habitats. 	10	0	10	2	2	0	0	0

Table 28: Comparison of Human Use Attributes for Boundary Concepts

USES	Significance of Use	Study Area	Status Quo	Preliminary Boundary Concept					
				1	1A	2	3	4	5
Number of desalination plants	<ul style="list-style-type: none"> Discharge plume supports only species with broad salinity tolerances Potentially toxic trace elements concentrate in surface layer above discharge plume. Impacts from species entrainment in intakes. 	2	0	2	1	1	0	0	0
Number of Outfalls	<ul style="list-style-type: none"> Source of marine pollution. Sources of pollution to breeding and juvenile development areas for coastal and offshore species. 	10	0	10	4	4	3	0	0
Percent of VTSS within Concept	<ul style="list-style-type: none"> Ships are a source of exotic species. Source of marine pollution. Source of air pollution and noise. Safety issues. 	100%	25%	100%	75%	75%	60%	50%	30%
Percent of area used for recreation (visual estimate)	<ul style="list-style-type: none"> Source of noise disturbance. Source of debris disposal. 	50%	50%	50%	35%	35%	30%	40%	50%

Table 29: Comparison of Environmental Attributes for Boundary Concepts

ATTRIBUTES	Significance of Attribute	Study Area	Status Quo	Preliminary Boundary Concept					
				1	1A	2	3	4	5
Total square miles	<ul style="list-style-type: none"> Indicator of ecosystem representation. 	8,882	1,658	8,882	7,996	5,009	3,790	3,159	1,869
Percentage of total ecosystem represented	<ul style="list-style-type: none"> Extent a complete system is represented. 	100%	19%	100%	62%	57%	43%	36%	21%
Number of plateaus, gyres, banks, & subsea canyons	<ul style="list-style-type: none"> Area's uniqueness connected to geomorphology. Habitat and species diversity. 	7	1	7	5	5	4	3	2
Percentage of continental slope	<ul style="list-style-type: none"> Links to oceanic systems. Promotes upwelling. 	100%	0%	100%	100%	50%	50%	50%	0%
Diversity of bathymetry	<ul style="list-style-type: none"> Benthic habitat and species diversity. 	9	1	9	9	6	5	4	2
Percentage of submerged rocky reef	<ul style="list-style-type: none"> Attachment site for kelp and numerous invertebrates. Food source and habitat protection for fish. 	100%	60%	100%	90%	90%	75%	70%	60%
Percentage of undeveloped mainland coastline	<ul style="list-style-type: none"> Mainland representative of unaltered habitats. Source for comparison studies with islands. 	100%	0%	100%	100%	100%	18%	0%	0%
Number of wetlands	<ul style="list-style-type: none"> Breeding and feeding ground for birds. Support fish and invertebrate larval and juvenile stages. 	4	0	4	4	1	0	0	0
Number of major natural hydrocarbon seeps	<ul style="list-style-type: none"> Unique ecosystem feature and benthic community. 	1,200	0	1,200	900	900	300	0	0
number of areas of significant upwelling	<ul style="list-style-type: none"> Nutrient supply feeds primary productivity. 	5	2	5	5	5	3	2	2
Number of anoxic basins	<ul style="list-style-type: none"> Unique species assemblage. Nutrient sink. Oil and gas reservoir. 	2	0	2	2	2	2	1	0
Percentage of cetacean migration and feeding corridors (north and south)	<ul style="list-style-type: none"> Vital part of life cycle for a special-status species. 	100%	20%	100%	100%	60%	40%	25%	20%
Percentage of seabird foraging sites	<ul style="list-style-type: none"> Support species diversity and abundance. 	100%	67%	100%	84%	84%	84%	67%	67%
Number of known fish larval sources	<ul style="list-style-type: none"> Important part of life history supporting the diversity of commercial and non-commercial fish species. 	2	0	2	2	2	2	2	0

Table 29: Comparison of Environmental Attributes for Boundary Concepts

ATTRIBUTES	Significance of Attribute	Study Area	Status Quo	Preliminary Boundary Concept					
				1	1A	2	3	4	5
Number of known submerged American Indian sites	<ul style="list-style-type: none"> Record of past uses. Less subject to human intrusion than terrestrial sites. 	53	18	53	49	49	23	18	18
Number of known submerged historic shipwrecks & aircraft sites	<ul style="list-style-type: none"> Recreational interest. Historic significance and information sources. 	169	154	169	169	169	156	154	154
Number of known submerged historic mainland use sites	<ul style="list-style-type: none"> Historic significance and information sources. 	26	0	26	26	20	6	0	0
Percentage of kelp forests represented	<ul style="list-style-type: none"> Keystone species. Provides food, attachment sites, and shelter for invertebrates and fish. Supports juvenile fish. 	100%	55%	100%	100%	70%	60%	55%	55%
Miles of rocky beach represented	<ul style="list-style-type: none"> Transition from onshore to offshore habitats. Rich assortment of species compared to sandy beach. Seabird foraging. Pinniped haulout. 	159	129	159	159	148	132	129	129
Miles of sandy beach represented	<ul style="list-style-type: none"> Transition from onshore to offshore habitats. Shorebird foraging. Pinniped haulout. High recreational interest in accessible mainland areas. 	168	44	168	168	105	53	44	44
Number of seabird colonies	<ul style="list-style-type: none"> Support species diversity and abundance. Representative mainland and island colonies. 	89	37	89	89	83	37	37	37
Number of pinniped haul out areas	<ul style="list-style-type: none"> Supports most diverse pinniped haulout and rookery areas in the world. 	18	13	18	18	16	13	13	13
Number of mainland watersheds	<ul style="list-style-type: none"> Estuaries support juveniles of offshore species. Link to onshore processes. 	5	0	5	5	3	0	0	0
Total mainland watershed area (square miles)	<ul style="list-style-type: none"> Indicator of pollutant, sediment, and nutrient input into Sanctuary waters. 	4,890	0	4,890	4,890	1,299	0	0	0
Percentage of area linked to rural coastal watersheds	<ul style="list-style-type: none"> Basis for evaluation of mainland human impacts by comparison with pristine island watersheds. 	100%	0%	100%	100%	100%	12%	0%	0%

Biogeographic Study

Project Summary of the Biogeographic Assessment of the Channel Islands National Marine Sanctuary and Surrounding Areas

The study of biogeography focuses on examining spatial patterns in the distribution of habitats, species, or assemblages throughout the landscape and understanding their significance. Typically this information is collected over large-scales rather than examining local occurrences of animals. This information then provides managers with a basis for determining components of the biota typical of an area and therefore appropriate for management.

Understanding the biogeography of the region within and adjacent to Channel Islands National Marine Sanctuary (CINMS) has been an integral component of the evaluation of the various boundary concepts from the beginning. One of the three principle drivers behind the evaluation of the differing boundary concepts was the emerging knowledge of how connected the resources within current sanctuary boundaries are with those around it. In 2003, NCCOS was asked by the NMSP to evaluate the strength of those connections within the six boundary concepts developed by the sanctuary staff and the Advisory Council by conducting a biogeographic assessment. When completed, this biogeographic assessment will be used in conjunction with a suite of other boundary analysis criteria under consideration by NMSP management (e.g., socioeconomics, management feasibility, etc.) to help inform any future decision-making on sanctuary boundary change.

The initial step in the biogeographic assessment process was the identification of key species to be analyzed. Emphasis was given to threatened species as well as those of particular ecological or commercial significance. The collection of relevant physical and biological data sets in the region of interest composed the second step in the process. Over 50 researchers along the west coast from federal and state agencies, NGO's and academia were contacted in an effort to assemble all existing distributional data pertinent to the species selected as well as their associated habitats. Data was collected and analyzed which describe the physical setting in terms of bathymetry, substrate, ocean color, and surface currents. Biological data was then collected on invertebrate, fish, marine mammal, and bird communities. Additional data was gathered to provide species specific information on those taxa as well as kelp and seagrasses.

The analysis step began with an examination of broad-scale biogeographic patterns over the entire range for which data was available in the given data set. Where data was sufficient, an analysis of community structure as well as the individual species identified by the sanctuary as being of high importance was presented. Next, the six boundary concepts were evaluated with respect to both the community and species level information. Three different metrics were utilized in this process: an absolute metric (count), a relative metric (density or mean), and the Optimal Area Index (OAI) for each boundary alternative. This third metric, the OAI, represents the relative increase in a measure of ecological value (e.g. number of animals), divided by the relative increase in area of a given boundary concept compared to the current boundary. Finally, the analyses conclude with a section summarizing all the results and integrating them to evaluate the patterns apparent within the different boundary concepts. Data collection and synthesis has been completed at this stage and the integration phase is slated for completion September 2005.

Throughout the assessment project, each component of the report was reviewed. All data providers, together with others familiar with the data sets, and selected members of the Sanctuary Advisory Council were consulted to obtain consensus on the analytical methodology utilized and to ensure accurate interpretation of the resulting patterns. This assessment builds upon and complements a similar effort recently completed by NCCOS for the three sanctuaries in northern and central California (Cordell Bank, Gulf of the Farallones, and Monterey Bay national marine sanctuaries; NCCOS, 2003) and a comprehensive west coast assessment completed by NOS in the late 1980s resulting in the “West Coast of North America, Coastal and Ocean Zones, Strategic Assessment: Data Atlas.” By drawing on data and analyses already conducted by NCCOS and the local research community, this assessment represents one of the most robust efforts of its kind. While the immediate focus of this assessment is to evaluate a series of boundary expansion concepts for the sanctuary, this biogeographic study should help to inform managers faced with other spatially explicit management decisions in this region. In addition, this assessment represents a summary of existing comprehensive, large-scale data sets. Taxa missing or areas not covered highlight the need for future research to fill these gaps. Additional information on this assessment is on the project website at http://biogeo.nos.noaa.gov/projects/assess/ca_nms/cinms/.

APPENDIX E: SOURCES CONSULTED

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