



NATIONAL MARINE
SANCTUARIES™

CORDELL BANK

**SITE-SPECIFIC
ACTION PLANS
CBNMS FINAL MANAGEMENT PLAN**

- I. Structure of Action Plans**
- II. Education and Outreach**
- III. Ecosystem Protection**
- IV. Partnerships with Community Groups**
- V. Conservation Science**
- VI. Administration**

STRUCTURE OF ACTION PLANS

This Final Management Plan (FMP) is a set of functionally based action plans that outline how the sanctuary will be managed for the next five years. Each action plan outlines how different strategies will be conducted and presents the costs that might be incurred for each strategy; sets coordinated timelines for carrying out all strategies; and proposes performance indicators as a measure of management effectiveness.

DEVELOPMENT OF ACTION PLANS

Through the extensive community-based management plan review, resource management issues to be addressed in the management plan were identified. Working groups were formed to address each of these issues. Working groups consisted of sanctuary staff, members of the advisory council, experts, agency representatives and the public. These groups worked together to identify the priority issues the sanctuary faced and the outcomes that should be sought for each issue. The working groups developed the goals and objectives, strategies, and activities to achieve those outcomes. The following issues and program areas are addressed in this management plan:

- A. Education and Outreach
- B. Ecosystem Protection
- C. Partnerships with Community Groups
- D. Conservation Science
- E. Administration

OUTLINE OF ACTION PLANS

Each action plan is divided into eight sections, which are described in detail below.

Issue Statement/ Program Statement

The issue (or program) statement clearly and concisely provides an introduction about “why” this is a priority issue to be addressed by the sanctuary in the management plan. It may include a brief description of the current situation or problem, and specific areas, which need attention.

Issue Description/ Program Description

The issue (or program) description provides a general background on what the sanctuary currently knows or understands about an issue. Program descriptions explicitly describe the types of activities already undertaken by the sanctuary and the general direction it would like to move in the future. It includes the status of natural resources, related human-use activities occurring in the sanctuary, and jurisdictional authorities pertinent to the specific issue.

Goals

The goal states “what” is the desired future state of the Cordell Bank National Marine Sanctuary (CBNMS) ecosystem and management relevant to the specific resource management issue or program area. The goal is a broad statement about a long-term desired outcome that may or may not be completely obtainable.

Objectives

The objectives are measurable outcomes for evaluating progress and success in moving toward the future desired condition. It will be achieved in a specific time frame to help accomplish the desired goal.

Strategies

The strategies section is a description of how the objectives will be accomplished for the particular issue or program area. Each strategy addresses one or more objectives and is divided into specific activities for the sanctuary staff to carry out. Activities are developed and implemented to achieve the goals and objectives of the issue or program area.

Where applicable, the potential partners, products, and complementary strategies are listed. The potential partners are only those organizations that the sanctuary has contacted as possible partners on the particular activity, and have shown interest in contributing to the effort. This list does not limit the partners the sanctuary may work with, but merely serves as a guide when implementing the activity. The sanctuary may partner with other organizations as work on the particular activity progresses. Likewise, the products listed are projected, but additional or altered products may become more appropriate as the strategy is completed.

Many activities within this plan complement each other by providing the groundwork for other activities to take place or by being similar such that efficiencies can be achieved by working on them together. Where this is the case, the complementary strategies are listed beneath the activity.

Timeline

A general timeline is included for each action plan and presents the projected calendar for initiating and completing each strategy over the next five years. The timeline shows the planning, implementation, and where appropriate, the completion stage for each strategy. These timelines are based upon staff workload, coordination with related strategies, and the assumption that funds will be available.

Budget

The budget table for each action plan presents the estimated costs by year for conducting the activities and strategies contained in this plan, including estimated staff salaries. These budget numbers represent the sanctuary’s best estimate of what it will cost to conduct the programs and projects described over a five-year period. However, each year the sanctuary will prepare an annual operating plan that will determine that year’s priorities and costs in the context of not

only the overall revised management plan, but current problems facing the site and general national priorities as well. Therefore, costs as estimated in this management plan may be somewhat different than determined by the Annual Operating Plan (AOP) each year. These estimates are also subject to a number of other caveats:

- The sanctuary’s base budget is available each year from appropriated funds;
- There is both availability of and opportunity to receive additional funding from appropriated funds;
- The estimates do not take into account increasing personnel costs each year or inflation; and
- The estimates do not take into account unexpected events or emergencies or unforeseen projects.

Where appropriate, a PAC FUNDS entry indicates that strategy costs will be covered by a separate congressionally allocated fund for facilities and construction.

Performance Measures

Each action plan includes a chart presenting the outcomes expected and the performance indicators that will be used to measure progress toward the outcome. This effort is being undertaken to measure the sanctuary’s management effectiveness (i.e. the achievement of a planned effort or activity). The methodology to be used to assess the effectiveness of each strategy in achieving the desired goal is detailed in this chart. The definitions for the performance measure terminology follow.

| | |
|------------------------------------|---|
| <i>Strategy</i> | The management action taken by the sanctuary to address a particular issue. |
| <i>Performance Goal</i> | The overarching, very broad target for the action plan. The goal(s) under each issue area or program area action plan. |
| <i>Desired Outcome (Objective)</i> | The more specific outcomes we want to achieve with our activities within the scope of the performance goal. The objectives under each issue area or program area action plan. |
| <i>Outcome Measure</i> | A specific amount or degree of the indicator that shows progress towards the desired outcome. Could contain temporal (by year) and range targets (percent, fraction, etc.). |
| <i>How Measured</i> | Describes exactly how the outcome measure will be measured. |
| <i>Who Measures</i> | Who of the staff or outside partner will measure the outcome. |
| <i>Output Measure</i> | A specific product or tool that results from the activity. Its production demonstrates a completed objective. |

OVERVIEW MATRICES OF PROGRAM AREA STRATEGIES

From a manager’s perspective, every strategy in the management plan is a task for staff in one or more of the four program areas. The Program Area Overview Matrices (Appendix I) section organizes all strategies and activities into the four program areas: Administration, Education and

Outreach, Conservation Science, and Resource Protection. The overview matrices list the Strategies, Activities, Objectives, and Complementary Strategies under each program area.

IMPLEMENTATION OF THE MANAGEMENT PLAN

This plan is designed to guide management of the marine resources of CBNMS for the next five years. Implementation of this new management plan will require cooperation and coordination among many federal, state, and local government agencies, as well as private organizations and individuals. Information exchange, sharing facilities and staff, and the coordination of policies and procedures within an ecosystem context are features of this management plan and each of its program areas. As this plan is being implemented, CBNMS will work to facilitate all public and private uses of those resources that are compatible with the primary objective of resource protection.

Limitations

Although this five-year management plan for CBNMS details the action plans for the five program areas, how these strategies are implemented may be affected by multiple factors. These factors include: (1) funding that comes primarily from congressional appropriations that may fluctuate from year to year; (2) CBNMS' ability to forge new partnerships in which staff, facilities and financial resources may be shared; (3) CBNMS' need to be responsive to the ever changing impacts on the sanctuary's marine resources from both natural perturbations and human activities; (4) an increased understanding of the complexity of the ecosystem, habitats, and living marine resources; and (5) learning better ways to manage the resources through experience, experimentation, and the sharing of knowledge. Sanctuary staff, the sanctuary advisory council, the public, and CBNMS' partners will, as appropriate, provide oversight and guidance for redirecting any management plan strategies. A summary of the estimated cost for each action plan is included in Table 1.

Incremental Funding Scenarios

Table 2 provides an outline of how the various strategies in the management plan will be implemented. The implementation of the strategies depends on various factors including:

- Status of strategy implementation
- Priority of strategy implementation
- Coordination level necessary with partners for implementation, and
- Funding source for strategy implementation

The status of the strategy indicates the amount of work completed or the level of implementation of a strategy at the time of the management plan review. Certain strategies and activities have been partially or wholly implemented prior to or during the management plan review. Other strategies are new as part of the updated management plan or may not be initiated until the future.

The priority of a strategy or action plan is indicated by the level of implementation based upon the funding or resources available. As stated previously, full implementation of the management

plan exceeds the resources available to the CBNMS therefore requiring some prioritization of the action plan or strategies. As resources become available, a greater level of implementation is possible. Table 2 outlines how much implementation could occur with the existing amount of resources and how increases in resources would affect the amount of implementation possible for each strategy or action plan.

Implementation of most of the strategies in this management plan will require some input or coordination from partners, particularly other government agencies, research institutions and non-governmental organizations (NGOs). Table 2 outlines the level of involvement expected from partners to achieve full implementation of each strategy. Many action plans and strategies are completely dependent on involvement from other agencies or dependent on research conducted by a research institution.

Funding for implementation of many of the strategies will require a mix of internal National Marine Sanctuary Program (NMSPP) funds as well as funding from external sources such as grants or in-kind work from partner agencies. Table 2 highlights the probable source of funding, primarily internal or external or a mix of funding sources.

Table 1: Estimated Costs for Action Plans

| Action Plan | Estimated Annual Cost (1000's)* | | | | | Total Est. 5-Year Cost (1000's) |
|---|---------------------------------|--------|--------|--------|--------|---------------------------------|
| | YR 1 | YR 2 | YR 3 | YR 4 | YR 5 | |
| Site-Specific Action Plans | | | | | | |
| Education and Outreach | \$149 | \$171 | \$201 | \$264 | \$281 | \$1066 |
| Ecosystem Protection | \$103 | \$138 | \$274 | \$289 | \$279 | \$1083 |
| Partnerships with Community Groups | \$30 | \$50 | \$50 | \$52 | \$55 | \$237 |
| Conservation Science | \$175 | \$205 | \$327 | \$541 | \$326 | \$1574 |
| Administration | \$206 | \$221 | \$311 | \$416 | \$496 | \$1650 |
| Cross-Cutting Action Plans | | | | | | |
| Administration and Operations | \$288 | \$276 | \$264 | \$264 | \$264 | \$1356 |
| Community Outreach | \$144 | \$180 | \$180 | \$180 | \$216 | \$900 |
| Ecosystem Monitoring | \$381 | \$525 | \$567 | \$531 | \$471 | \$2475 |
| Maritime Heritage | \$237 | \$237 | \$246 | \$270 | \$270 | \$1260 |
| Total Estimated Annual Cost | \$1713 | \$2003 | \$2420 | \$2807 | \$2658 | \$11601 |

The sanctuary's base budget is available each year from appropriated funds.

There is both availability of and opportunity to receive additional funding from appropriated funds.

The estimates do not take into account increasing personnel costs each year or inflation.

The estimates do not take into account unexpected events or emergencies or unforeseen projects.

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Table 2: Incremental Funding Scenarios

| | | A | B | C | D | E | F |
|---|--|-------------------------|---|--|--|----------------------------------|---------------------------------|
| Funding Scenarios and Implementation of Action Plan Strategies | | Activity Status: | Implementation Level Funding: Scenario 1 | 10% per year Increase: Scenario 2 | 20% per year Increase: Scenario 3 | Partnership Coordination: | Primary Funding Sources: |
| Education and Outreach | | | | | | | |
| | ED-1: General Outreach | ● | H | H | H | ● | ● |
| | ED-2: Sanctuary Naturalist Program | ○ | M | H | H | ● | ● |
| | ED-3: Media and Communications | ● | M | M | H | ● | ● |
| | ED-4: Educational Tools to Promote Ocean Literacy | ● | M | H | H | ○ | ○ |
| | ED-5: Interpretive Signage | ○ | H | H | H | ● | ● |
| | ED-6: Integrate Conservation Science into Education | ● | H | H | H | ● | ○ |
| | ED-7: Adult Education | ● | M | H | H | ● | ● |
| | ED-8: Education Advisory Panel | ● | H | H | H | ● | ● |
| | ED-9: Multicultural Programming | ○ | M | M | M | ● | ○ |
| Ecosystem Protection | | | | | | | |
| | EP-1: Sanctuary Representation At Fisheries Forums | ○ | H | H | H | ● | ○ |
| | EP-2: Track Human Use Activities | ○ | M | H | H | ● | ○ |
| | EP-3: Evaluate Human Use Activities | ○ | M | H | H | ● | ○ |
| | EP-4: Address Impacts From Human Use Activities | ○ | M | H | H | ● | ○ |
| | EP-5: Support Krill Harvesting Ban | ○ | H | H | H | ● | ● |
| | EP-6: Profile Fishing Activities In Sanctuary | ○ | H | H | H | ● | ● |
| | EP-7: Assess Acoustic Impacts | | M | H | H | | |
| | EP-8: Assess and Remove Marine Debris | | H | H | H | | |
| Partnerships With Community Groups | | | | | | | |
| | PC-1: Research Community Partnerships | ● | H | H | H | ● | ● |
| | PC-2: Sanctuary Advisory Council | ● | H | H | H | ● | ○ |
| | PC-3: Media Partnerships | ● | H | H | H | ● | ● |
| | PC-4: Fiscal Partnerships | ● | H | H | H | ● | ● |
| Conservation Science | | | | | | | |
| | CS-1: Oceanographic Climatology Report | ○ | M | H | H | ● | ○ |
| | CS-2: Habitat Characterization | ● | M | H | H | ● | ● |
| | CS-3: Characterize Soft-Bottom Epifaunal Communities | ● | L | M | M | ● | ○ |
| | CS-4: Characterize Soft-Bottom Infaunal Communities | ● | M | H | H | ● | ○ |
| | CS-5: Voucher Specimen Collection | ○ | L | M | M | ● | ○ |
| | CS-6: Survey Museum Collections | ○ | L | M | M | ● | ● |
| | CS-7: Pelagic Monitoring | ● | H | H | H | ● | ○ |
| | CS-8: Fish and Invertebrate Monitoring | ● | H | H | H | ● | ○ |
| | CS-9: Data Management | ● | H | H | H | ● | ○ |
| | CS-10: Retention and Dispersal of Larval Fishes | ● | M | H | H | ○ | ○ |
| Administration | | | | | | | |
| | AD-1: Operations | ○ | M | M | H | ● | ○ |
| | AD-2: Staffing | ○ | M | H | H | ○ | ○ |
| | AD-3: Partnerships | ● | M | M | H | ● | ● |
| | AD-4: Sanctuary Advisory Council | ● | H | H | H | ● | ○ |

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| | | A | B | C | D | E | F |
|---|--------------------------------------|-------------------------|---|--|--|----------------------------------|---------------------------------|
| Funding Scenarios and Implementation of Action Plan Strategies | | Activity Status: | Implementation Level Funding: Scenario 1 | 10% per year Increase: Scenario 2 | 20% per year Increase: Scenario 3 | Partnership Coordination: | Primary Funding Sources: |
| | AD-5: Interagency Coordination | ● | M | H | H | ● | ● |
| | AD-6: Enforcement Plan | ● | M | M | H | ● | ● |
| | AD-7: Emergency Response | ● | H | H | H | ● | ● |
| | AD-8: Planning and Evaluation | ● | M | H | H | ○ | ○ |
| | AD-9: Regulations and Permitting | ● | H | H | H | ○ | ○ |
| | AD-10: New and Emerging Issues | ○ | M | M | M | ● | ○ |
| | Boundary Modifications | | | | | | |
| | B-1: Boundary Modification Framework | ○ | L | M | M | ● | ○ |

| Legend | | | |
|---|---|--|---|
| Column A | Column B, C, D | Column E | Column F |
| Strategy Status: ● – Existing w/o significant modification ● – Existing w/ significant modification ○ – New (since '05) or future (not yet implemented) | Implementation* (w/ NMSP Funding): H – High M – Medium L – Low * Implementation ranking considers the priority of each strategy as well as the percentage of activities that could be initiated, maintained, and/or completed under differing funding scenarios. | Necessary Partnership Coordination: ● – Not possible w/o partners ● – Significant reliance on partners ○ – Little reliance on partners | Primary Funding Sources (e.g., grants, Foundation): ● – External (e.g., grants) ● – Internal/ External ○ – Internal |
| | | | |



EDUCATION AND OUTREACH ACTION PLAN

PROGRAM STATEMENT

Cordell Bank National Marine Sanctuary (CBNMS) has developed a long-term education and outreach action plan that builds a greater understanding and seeks to emphasize the ocean's influence on people and peoples' influence on the ocean using Cordell Bank National Marine Sanctuary and the greater California Current ecosystem as a focus. CBNMS will work to increase ocean literacy and awareness of the National Marine Sanctuaries to encourage ocean stewardship.

PROGRAM DESCRIPTION

This action plan addresses the need to cultivate an informed, involved constituency who care about protecting, conserving, and restoring our precious ocean resources and national marine sanctuaries. In addition to NOAA, NOS, and the national marine sanctuary program identifying a need to build a more informed and involved ocean literate public, the U.S. Commission on Ocean Policy's Final Report-An Ocean Blueprint for the 21st Century, stresses the need to increase the nation's ocean awareness and to improve ocean related education efforts as *“critical to building an ocean stewardship ethic, strengthening the nation's science literacy, and creating a new generation of ocean leaders.”* The report concluded an interested, engaged public is an essential prerequisite *“to successfully address complex ocean and coastal-related issues, balance the use of conservation of marine resources, and realize future benefits from the ocean.”*

A national survey by the Ocean Project (1999) indicates the American public has a superficial awareness of the importance of the ocean to their daily lives, let alone its importance to all life on the planet. The *Ocean Blueprint* goes on to state, *“The ocean is a source of food and medicine, controls global climate, provides energy, supplies jobs, supports economies, and reveals information about the planet not gained from any other source. While most people do not recognize the number of benefits the ocean provides, or its potential for further discovery, many do feel a positive connection with it, sensing perhaps the vitality of the sea is directly related to human survival.”*

In an effort to increase awareness, the Office of National Marine Sanctuaries has partnered with the National Geographic Society, the Centers for Ocean Sciences Education Excellence (COSEE) and the College of Exploration to identify the critical elements of ocean literacy in the context of science. Ocean literacy is defined as “an understanding of the ocean's influence on you – and your influence on the ocean.” An ocean-literate person understands:

- *the essential principles and fundamental concepts of ocean science (listed below),*
- *can communicate about the oceans in a meaningful way,*
- *can make informed and responsible decisions regarding the oceans and its resources.*

Seven Essential Principles of Ocean Literacy:

1. The Earth has one big ocean with many features
2. The ocean and life in the ocean shape the features of the earth.
3. The ocean is a major influence on weather and climate.
4. The ocean makes the Earth habitable
5. The ocean supports a great diversity of life and ecosystems
6. The ocean and humans are inextricably linked.
7. The ocean is largely unexplored.

Education programs listed in this plan are designed to enhance public awareness and understanding of the sanctuary in the context of its larger ecosystem-the ocean, and how people are connected to it, and to build stewards to take on the responsibility of protecting it. The development of effective and coordinated education programs is a priority for all national marine sanctuaries.

CBNMS will use education and outreach as a resource management tool to address specific priority resource management issues that are identified in the management plan and will coordinate with other program areas such as conservation science to disseminate findings. Developing partnerships with other agencies, institutions, and organizations is the key to success in building effective, well-coordinated education strategies. CBNMS and Gulf of the Farallones National Marine Sanctuary (GFNMS) will collaborate to serve common audiences.

Awareness raising activities cut both ways in generating greater support for sanctuary protection, as well as greater demand to access it. The harsh conditions and remoteness of CBNMS has kept it from the public eye-“out of sight, out of mind” and barring historical fishing activities, it has been relatively untouched to date. But as more people learn about the beauty and awe of Cordell Bank, many will want to go there and experience it either through diving or surface wildlife viewing trips. The sanctuary must therefore consistently underscore the message that in order to preserve the fragile balance of this special place, people must love it respectfully. Education and outreach activities therefore will focus on “bringing the place to the people.”

EDUCATION AND OUTREACH GOALS

1. Use education as a management tool to protect the sanctuary’s resources.
2. Build an education program that complements and promotes other sanctuary programs such as conservation science and resource protection.
3. Create an ocean literate public that is informed and involved

EDUCATION AND OUTREACH OBJECTIVES

1. Take a hierarchical educational approach by developing awareness and building a knowledge base to change behavior and build stewardship.
2. Increase communication and coordination among sanctuary education and outreach programs and partners.
3. Develop programs to target students, teachers, content builders, user/impact groups, influencers, and decision makers, citizens in Sonoma, Marin, and Mendocino watersheds.
4. Develop programs that target diverse audiences including various multicultural, socioeconomic, age, and gender groups.

EDUCATION AND OUTREACH STRATEGIES

STRATEGY ED-1: *Develop community support and partnerships for ocean conservation through targeted outreach efforts.*

Activity 1.1 In coordination with GFNMS and Monterey Bay National Marine Sanctuary (MBNMS), build community partnerships by engaging and informing the public about the CBNMS, neighboring sanctuaries, and the greater California Current Ecosystem.

- A. Develop tailored outreach messages for specific users and audiences and implement in CBNMS communication plan
- B. Develop shared outreach materials, products, lectures, and programs based on established priorities that address ocean literacy, and inspire stewardship by supporting and acknowledging behaviors that protect ocean resources.
- C. Work with the sanctuary advisory council, West Coast region for National Marine Sanctuary Program (NMSP), scientists, NMSP, users, regulatory agencies on identifying appropriate messages for reaching out to constituents.
- D. Identify and target outreach/education strategies that are relevant to reach culturally diverse and underserved communities

Potential Partners: GFNMS, MBNMS, CBNMS Sanctuary Advisory Council (SAC)

Complementary Strategies: GFNMS Management Plan, Education and Outreach, STRATEGY ED-11 and STRATEGY ED-13; MBNMS FMP, Operations and Administration, STRATEGY OA-4; Marine Protected Areas, STRATEGY MPA-8; CBNMS Partnerships with Community Groups, STRATEGY PC-2; Education and Outreach, STRATEGY ED-2, STRATEGY ED-3

STRATEGY ED-2: *Utilize volunteers and interns to assist sanctuary staff in communicating sanctuary messages to a broader audience and carrying out program needs.*

Activity 2.1 Develop a broad-based umbrella program to train volunteers and interns to deliver outreach and education messages in a variety of settings and venues.

- A. Create a framework and plan for supporting or collaborating with a long term volunteer Sanctuary Naturalist Program that trains volunteers and interns to: deliver outreach and educational messages; and deliver interpretive programs to schools, community groups, and at public events.
- B. Explore potential partnership with GFNMS, Farallones Marine Sanctuary Association (FMSA) and Point Reyes National Seashore, Student Conservation Association (SCA), Environmental Forum of Marin, and others as appropriate to develop or collaborate with an existing volunteer program.
- C. Develop training program and materials for volunteers and interns and provide ongoing learning opportunities for volunteer and interns including opportunities at sea,
- D. Evaluate volunteer/intern satisfaction and effectiveness of outreach program and add new training and volunteering opportunities as appropriate.
- E. Explore long term education/outreach formal intern opportunities with NOAA Hollings Scholarship Program, Student Conservation Association (SCA), Sonoma State University, Dominican University, and other area schools.

Potential Partners: GFNMS, FMSA, Point Reyes National Seashore (PRNS), Audubon Canyon Ranch (ACR), Stewards of the Coast and Redwoods, Russian River Stewards, Student Conservation Association, Environmental Forum of Marin, local universities and colleges

Products: Training manual, advertising materials, outreach materials, intern training program

Complementary Strategies: GFNMS FMP, Education and Outreach, STRATEGY ED-7; MBNMS FMP, Operations and Administration, STRATEGY OA-2, STRATEGY OA-4; Beach Closures, STRATEGY BC-2

Activity 2.2 Train volunteers and employees of existing interpretative and volunteer organizations/agencies to deliver and incorporate CBNMS educational messages through their programs.

- A. Identify and survey potential organizations for needs and willingness to partner with CBNMS to distribute education and outreach messages.

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- B. Develop general training presentation on CBNMS to reach a variety of education and interpretation audiences and continually update with current issues, topics of interest, and more effective media such as videos, animations, evaluate effectiveness of delivered programs.
- C. Create and distribute outreach materials about CBNMS.
- D. Maintain regular communication with partners and provide updated presentations, videos, and handouts to staff and volunteers as needed.

Potential Partners: GFNMS, PRNS, Stewards of the Coast and Redwoods, The Marine Mammal Center (TMMC), FMSA, ACR, Bodega Marine Laboratory (BML), Sea Grant Extension, Watershed Councils, Russian River Cleanup Committee.

Products: Sanctuary handbook, presentations, handouts, videos, activity kits, outreach CD, and kits including hands-on activities and models of whales and seabirds

Complementary Strategies: CBNMS FMP, Education and Outreach, STRATEGY ED-1

STRATEGY ED-3: In coordination with GFNMS and MBNMS, leverage local, regional, and national media opportunities to increase California's Ocean Literacy and Ocean Stewardship

Activity 3.1 Communicate with the media. Components of the site's media plan will be developed in coordination and cooperation with GFNMS and MBNMS.

- A. Complete CBNMS media and communications plan and review site plan annually as needed. Incorporate National Marine Sanctuary Communication Playbook tools as appropriate.
- B. Define staff's roles and SAC's roles in working with the media and have all staff and SAC participate in media training.
- C. Develop an annual media plan for upcoming events, including identifying and creating media opportunities, roles, and timelines
- D. Develop a regular CBNMS spot on local radio station (KWMR). Model after "Star Date" and "Zoo Monday." Create podcast of show for Cordell website.
- E. Develop and maintain relationships with local media.
- F. Develop and distribute press kits at events as appropriate.
- G. Participate in NOAA's Ocean Communicators network (Thank you ocean campaign). Apply campaign tools to media work at the site

Potential Partners: National Marine Sanctuary Program (NMSP) Headquarters, PRNS, GFNMS, FMSA, MBNMS, CBNMS SAC

Products: Media/communications plan, media kits, sanctuary radio spot, press releases

Complementary Strategies: CBNMS FMP, Education and Outreach, STRATEGY ED-1; GFNMS FMP, Education and Outreach, STRATEGY ED-11; MBNMS FMP, Operations and Administration, STRATEGY OA-4

STRATEGY ED-4: *Promote ocean literacy and stewardship to far reaching audiences through the development of educational tools*

Activity 4.1 Develop portable products as outreach tools to educate a broader audience about the resources and activities of CBNMS and ocean conservation.

- A. Identify audience, purpose, need and justification to design portable products such as, but not limited to multimedia audio/visual products, internet based, hands on activities, teaching aids, exhibits, displays, photo database accessible to the public
- B. Identify audience, purpose, and need to plan and design printed materials such as posters, brochures, and one pagers. Evaluate those in existence and use results in future publications
- C. Consider cost/benefit of a printed newsletter about activities of CBNMS,
- D. Maintain an active, dynamic, and robust website that is continually reflecting changing programs and activities at Cordell Bank NMS and design standards

Potential Partners: NMSP, West Coast Region of the NMSP, NMSF, Point Reyes National Seashore Association, Point Reyes National Seashore

Products: Video, teaching aids, 3-D models, maps, exhibits, displays, public photo database, online podcasts, printed materials, website

Complementary Strategies: CBNMS FMP, Education and Outreach, STRATEGY ED-1, and STRATEGY ED-2

Activity 4.2 Expand CBNMS' reach into K-12 school audiences by creating standards-based curricular activity sets that complement existing curriculum and provide targeted professional development opportunities for teachers.

- A. Identify ocean themes relevant to people's everyday lives
- B. Identify Ocean Literacy themes, and how these topics apply to National/State based standards

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- C. Develop a finite number of standards-based activities in one or two different age groups (ie 4-6th, 7-8th, 9-12 grades)
- D. Engage partners and assemble an advisory group to review and provide feedback on activity sets.
- E. Present activities at science and environmental education related conferences to engage users
- F. Lead activities at partners' teacher trainings around northern CA.

Potential Partners: NMSP, West Coast Region's Sanctuaries, PORE, BWET program, non-profits in Bay Area doing EE and science education.

Products: curricular activities, CB educ advisory group, videos, props to accompany activities, presentations at conferences and teacher trainings

Complementary Strategies: CBNMS FMP, Education and Outreach, STRATEGY ED-1, STRATEGY ED-2, and STRATEGY ED-3

STRATEGY ED-5: In coordination with West Coast Region, increase awareness of CBNMS through interpretive signage and exhibits throughout the region.

Activity 5.1 Install interpretive signage at key field locations and place exhibits in museums and visitor centers throughout Marin, Sonoma, and southern Mendocino counties. Coordinate and collaborate with West Coast Region on presentation and messaging.

- A. Choose sign/exhibit locations based on diversity of visitors, both geographically, culturally, and relevance to messages.
- B. Establish and coordinate partnerships with staff at key locations where signage and exhibits are identified for the sanctuary.
- C. Secure funding, and create culturally and geographically relevant messages, content and designs
- D. Construct and install signs and exhibits, beginning with highest priority locations.
- E. Continue installing additional exhibits and signage as funding becomes available.

Potential Partners: GFNMS, MBNMS, PRNS, BML, GFNMS, California Academy of Sciences (CAS), Oakland Museum, Port of Bodega, Spud Point Marina, California State Parks

Products: Exhibits, signs, training materials for docents and teachers

Complementary Strategies: CBNMS FMP, Education and Outreach, STRATEGY ED-1,; MBNMS FMP, Interpretive Facilities STRATEGY IF-2

STRATEGY ED-6: *Increase awareness and knowledge of CBNMS Conservation Science programs by creating opportunities, programs, and materials for teachers and students*

Activity 6.1 Link sanctuary research programs with teachers and students by exploring ways to integrate conservation science projects into the classroom.

- A. Collaborate with West Coast Region to establish an annual Teacher at Sea program, with use of west coast vessel's Fulmar and McArthur II. *Note: due to variability of weather and ship time, and projects, this program may vary from year to year.*
- B. Collaborate with scientists conducting research in the sanctuary to make processes, and findings available to broader audiences including classrooms and teachers: ex remote sensing data i.e: Cordell Bank Buoy, and tagging of animals
- C. Work with participants from teacher at sea programs to develop activities and curriculum associated field experiences in relationship to the ecosystems of the sanctuary.

Potential Partners: West Coast Region, local schools, NOAA, BWET Grant recipients.

Products: Curriculum, products for teacher (write up, curriculum, classroom kit), news articles (press coverage), presentations at conferences

Complementary Strategies: CBNMS FMP, Education and Outreach, STRATEGY ED-1; Partnerships with Community Groups, STRATEGY PC-3

Activity 6.2 Encourage marine technology skills and careers in education programming. One of NOAA's goals is to provide skills to the future workforce to become the next leaders in ocean exploration and protection. Several NMS's are working together to align the sanctuary education programming with the marine technology community. We will engage students and teachers in the understanding of marine technology, by creating programs that encourage development of marine engineering skills, remote sensing, GIS skills, monitoring skills, and others.

- A. Increase sanctuary awareness through partnerships with the Marine Advanced Technology Education Center (MATE), Center for Image Processing and Education (CIPE), and National Geographic
- B. Create materials that are relevant to California state standards for teachers that utilize marine technology skills and information.
- C. Explore use of GIS technology and sanctuary related data sets for curriculum
- D. Host, organize and implement marine technology workshops at sanctuary sites to integrate marine technology activities into high school and/or college curriculum.

Potential Partners NMS sites, West Coast Region, National Geographic, MATE, CIPE, local universities, and/or non -profits

Products: Curriculum, products for teachers

Complementary Strategies: CBNMS FMP, Education and Outreach, STRATEGY ED-1

STRATEGY ED-7: Increase awareness, knowledge, and appreciation of CBNMS through adult education programming

Offer in depth field opportunities on the natural history of CBNMS and the productive CA Current Ecosystem.

- A. Continue to sponsor field seminars with PRNSA on the natural history of CBNMS.
- B. Expand 2 day field seminar course into an adult education course through community education programs, or community colleges in Marin and Sonoma, and expand curriculum to include a broad overview of topics relating to the sanctuary and marine environment.

Potential Partners: PRNSA, Santa Rosa Community College, College of Marin, Tam Union HS District Adult and Community Education, Sonoma State University, Marine Mammal Center, Oikonos Ecosystem Knowledge, Bodega Marine Lab, various watershed councils, Environmental Forum of Marin

Products: Handouts, website, seabird/marine mammal checklist, presentations, syllabus, marine mammal/seabird guides, on the water and in classroom teaching tools

Complementary Strategies: CBNMS FMP, Education and Outreach, STRATEGY ED-1

STRATEGY ED-8: *Develop an Education Advisory Group to work with education staff and SAC for specific projects or issues only*

Activity 8.1 Create an advisory group of education experts from local schools, school districts, county offices of education, educational institutions, if appropriate users and other agencies that can advise the sanctuary on the development and implementation of specific education related projects or management issues.

- A. Provide advice and guidance on sanctuary outreach and education programs, and or issues where education can address a sanctuary management issue.
- B. Continuously develop new partnerships and innovative education programs and opportunities for collaboration and reduce potential duplication of efforts.

Potential Partners: Local schools, education institutions, agencies, CBNMS SAC, GFNMS, GFNMS SAC, FMSA

STRATEGY ED-9: Develop a multicultural education plan targeting changing demographics in the CBNMS region of northern California.

Activity 9.1 Identify communities and populations with growing non-english speaking populations. (*North of San Francisco, the Hispanic population is the dominant non-english speaking population.*)

- A. Assess demographic data from counties of Marin, and Sonoma counties
- B. Seek partnerships with other agencies, organizations looking to reach underserved audiences in environmental/ocean literacy related content
- C. Collaborate with West Coast Region sites implementing multi-cultural programming at their sites (ex. MERITO program at MBNMS, CINMS)
- D. Create plan for CBNMS to implement culturally relevant programming for non-english speaking populations, including secure funding scheme and partners roles.

Potential Partners: GFNMS, PRNS, Golden Gate National Recreation Area (GGNRA), FMSA, West Coast Region Sanctuaries, National Marine Fisheries Service (NMFS), NERRS, Romberg, Tiburon Center, MMC, school districts, Sonoma Water District, county and city agencies

Products: Implementation and evaluation plan for multicultural programming

CBNMS Education and Outreach

Timeline

| EDUCATION AND OUTREACH STRATEGY | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---------------|---------------|---------------|---------------|---------------|
| Strategy ED-1: Develop community support and partnerships for ocean conservation through targeted outreach efforts | —————▶ | | | | |
| Strategy ED-2: Utilize volunteers to assist sanctuary staff in communicating sanctuary messages |▶ | | —————▶ | | |
| Strategy ED-3: Leverage local, regional, and national media opportunities to increase California’s ocean literacy and stewardship | —————▶ | | | | |
| Strategy ED-4: Develop educational tools to promote ocean literacy and stewardship | | | | | |
| Action ED-4.1 Sanctuary video |▶ | | ◆ | | |
| Action ED-4.2 Interactive CD-ROM | | |▶ | | |
| Strategy ED-5: Increase awareness of CBNMS through interpretive signage and exhibits throughout the region | —————▶ | | | | |
| Strategy ED-6: Increase awareness and knowledge of CBNMS Conservation Science by creating opportunities, programs, and products for teachers and students |▶ | | | | |
| Strategy ED-7: Increase awareness, knowledge, and appreciation about CBNMS through adult education opportunities | —————▶ | | | | |
| Strategy ED-8: Develop an education advisory group to work with education staff and SAC for specific projects or issues. |▶ | | —————▶ | | |
| Strategy ED-9: Develop multicultural education plan to target changing demographics in the CBNMS region of northern CA. | | | |▶ | |

Legend:

- ▶ **Ongoing Activity**
-▶ **Planning Stage**
- ◆ **Completed Activity**

CBNMS Education and Outreach

Budget

| STRATEGY | Estimated Annual Cost (1000's)* | | | | | Total Est. 5-Year Cost (1000's) |
|---|---------------------------------|--------------|--------------|--------------|--------------|---------------------------------|
| | YR 1 | YR 2 | YR 3 | YR 4 | YR 5 | |
| Strategy ED-1: Develop community support and partnerships for ocean conservation through targeted outreach efforts | \$23 | \$23 | \$28 | \$30 | \$32 | \$136 |
| Strategy ED-2: Utilize volunteers to assist sanctuary staff in communicating sanctuary messages | \$0 | \$8 | \$23 | \$25 | \$28 | \$84 |
| Strategy ED-3: Leverage local and national media opportunities to increase awareness and knowledge of CBNMS resources and activities | \$10 | \$10 | \$10 | \$10 | \$10 | \$50 |
| Strategy ED-4: Promote lessons of ocean literacy and stewardship to far reaching audiences through the development of educational tools | \$40 | \$43 | \$48 | \$50 | \$54 | \$235 |
| Strategy ED-5: Increase awareness of CBNMS through interpretive signage and exhibits throughout the region | \$15 | \$17 | \$18 | \$24 | \$25 | \$99 |
| Strategy ED-6 Increase awareness and knowledge of CBNMS conservation science programs by engaging teachers and students | \$40 | \$42 | \$44 | \$46 | \$48 | \$220 |
| Strategy ED-7: Increase awareness and knowledge about CBNMS through adult education opportunities | \$11 | \$18 | \$18 | \$22 | \$24 | \$93 |
| Strategy ED-8: Develop an education advisory group to work with education staff and SAC for specific projects and issues | \$10 | \$10 | \$12 | \$12 | \$15 | \$59 |
| Strategy ED-9: Develop multicultural education plan targeted to the changing demographics in the CBNMS region of northern CA. | \$0 | \$0 | \$0 | \$45 | \$45 | \$90 |
| Total Estimated Annual Cost | \$149 | \$171 | \$201 | \$264 | \$281 | \$1066 |
| The sanctuary's base budget is available each year from appropriated funds. | | | | | | |
| There is both availability of and opportunity to receive additional funding from appropriated funds. | | | | | | |
| The estimates do not take into account increasing personnel costs each year or inflation. | | | | | | |
| The estimates do not take into account unexpected events or emergencies or unforeseen projects. | | | | | | |

CBNMS Education and Outreach

Performance Measures

| Strategy Title(s) | Performance Goal | Desired Outcome (Objective) | Outcome Measure | How Measured | Who Measures | Output Measure |
|--|--|---|--|--|---|---|
| Strategy ED-1: Develop community support and partnerships for ocean conservation through targeted outreach efforts. Strategy ED-2: Utilize volunteers and interns to assist sanctuary staff in communicating sanctuary messages to a broader audience and carrying out program Needs. | Continually reach broader audiences to create an informed and involved public. | Take a hierarchical educational approach by: developing awareness, building a knowledge base, changing behavior and building stewardship. | Increase in support from the community for sanctuary programs. | 1) Completion of the Sanctuary Naturalist Corps training program (short-term) 2) Increase in the number of outreach opportunities undertaken by the sanctuary as a direct result of a well established and coordinated volunteer program (long-term) 3) Increase in number of volunteers (long-term) 4) Increase in retention of volunteers (long-term) | Education Specialist, Volunteer Coordinator (GFNMS), and Sanctuary Superintendent | 1) Regularly scheduled volunteer training and follow-up/refreshers program 2) Sanctuary Naturalist training manual |
| Strategy ED-3: Leverage local and national media opportunities. Strategy ED-4: Develop educational tools to promote ocean literacy Strategy ED-5: Increase awareness through interpretive signage and exhibits. | Continually reach broader audiences to create an informed and involved public. | Develop programs to target content builders, user/impact groups, influencers, and decision makers. | 1) Expand messaging tools and venues to continually reach a broader audience 2) Increase attendance in sanctuary programs | 1) Track media coverage to determine increases in exposure 2) Track increase in sanctuary awareness at museums etc that have sanctuary exhibits | Education Specialist and Sanctuary Superintendent | 1) Increase in number of press releases and radio spots 2) Complete development of outreach tools 3) Complete design, fabrication and installation of signage and displays at new locations |

Education and Outreach Action Plan
CBNMS Final Management Plan

| Strategy Title(s) | Performance Goal | Desired Outcome (Objective) | Outcome Measure | How Measured | Who Measures | Output Measure |
|--|---|---|--|--|--|--|
| <p>Strategy 6: Increase awareness and knowledge of CBNMS conservation science programs by creating opportunities, programs, and materials for teachers and students.</p> <p>Strategy ED-7: Increase awareness and knowledge through adult education opportunities.</p> <p>Strategy ED 8: Develop and Education Advisory Group to work with education staff and SAC for specific projects or issues</p> | <p>1) Continually reach broader audiences to create an informed and involved public.</p> <p>2) Use education to complement and promote other sanctuary programs such as research, monitoring, and enforcement.</p> <p>3) incorporate users input into development of new programs and materials</p> | <p>Take a hierarchical educational approach by: developing awareness, building a knowledge base, changing behavior, and building stewardship.</p> | <p>1) Increase in awareness of CBNMS ecosystem and programs</p> <p>2) Increase involvement in education programs in the sanctuary by students and teachers, and adults</p> | <p>1) Track increase of teachers and students participating in sanctuary programs</p> <p>2) Track increase in use of CBNMS ecosystem topics integrated into school curricula</p> | <p>Education Specialist and Sanctuary Superintendent</p> | <p>1) Classroom curriculum</p> <p>2) Products for teachers</p> <p>3) Website content</p> |
| <p>Strategy ED 9: Develop multicultural plan that is targeted to the changing demographics in the CBNMS region of northern CA.</p> | <p>1) Continually reach broader audiences to create an informed and involved public</p> <p>2) Develop targeted strategies to reach diverse audiences</p> | <p>Take a hierarchical educational approach by: developing awareness, building a knowledge base, changing behavior, and building stewardship</p> | <p>1) increase in awareness of watershed and ocean environment</p> <p>2) increase in participation of sanctuary education programs by culturally diverse communities</p> | <p>1) create plan that involved regional partners to target culturally diverse communities</p> | <p>Education Specialist and Sanctuary Superintendent</p> | <p>1) Multicultural education plan created</p> <p>2) multicultural education working group assembled to advise on plan</p> |



ECOSYSTEM PROTECTION ACTION PLAN

ISSUE STATEMENT

Specific impacts from various activities on Cordell Bank National Marine Sanctuary's (CBNMS) natural resources are complex, and difficult to document and manage. Some of the issues related to activities include: (1) impacts on benthic habitats from fishing gear such as bottom trawls and long lines; (2) potential impacts to higher trophic levels from over-harvesting of forage/lower trophic level species such as krill; (3) the problems with bycatch; (4) potential impacts of acoustics on marine organisms; and (5) impacts from marine debris.

ISSUE DESCRIPTION

CBNMS is located in one of the world's four major upwelling systems. The upwelling of nutrient-rich, deep ocean water provides a food-rich environment and promotes the growth of organisms at all levels of the marine food web. The vertical relief and hard substrate of Cordell Bank provides habitat with nearshore characteristics in an open ocean environment 20 nautical miles from shore. The tremendous biodiversity found in the vicinity of Cordell Bank includes fish, marine mammals, seabirds, sea turtles, algae, and benthic and pelagic invertebrates.

Commercial and sport fisheries in CBNMS have generally targeted rockfish, lingcod, flatfish, salmon, albacore tuna, and crab. Most of the private boats and charter vessels that fish CBNMS are from Bodega Bay, although rough ocean conditions often prevent smaller recreational boats from accessing Cordell Bank. Gear types used in CBNMS have included bottom trawl, mid-water trawl, hook and line, gill nets, crab traps, and long lines (including troll long line, vertical long line, and fixed gear long line). Management of commercial and recreational fisheries in California is the responsibility of the California Department of Fish and Game (CDFG), National Marine Fisheries Service (NMFS) and the Pacific Fishery Management Council (PFMC) (CBNMS is entirely in federal waters). The National Marine Sanctuary Program (NMSP) may regulate fishing activities as necessary to protect the resources and qualities for which a sanctuary is designated.

Noise levels in the marine environment have been increasing from increased shipping traffic, sonar technologies, and research projects. The effects of noise on marine mammals, seabirds, fishes, and turtles is not entirely known, though active sonar has been conclusively linked to the deaths of whales in other areas. Issues of concern include the effects of acoustics on marine mammals by ships, the military, research, or other influences. NOAA has conducted and continues to conduct research regarding the effects of sound disturbance on marine mammals, however additional CBNMS-specific research and monitoring may be necessary.

Levels of debris in both the ocean and at the land-sea interface are of growing concern. Various types of debris are known to have adverse effects on marine species. Plastics in the marine environment never fully degrade and recent studies show plastic is consumed by organisms at all levels of the marine food web. Dichlorodiphenyltrichloroethane (DDT) and other hydrophobic compounds are known to adhere to plastics. Ingestion and entanglement are some of the many problems associated with marine debris, which may eventually lead to death for many organisms. Priority types of marine debris include balloons, abandoned/discarded fishing gear, plastics and styrofoam, and consumer goods including 6-pack rings and plastic shopping bags.

Significant amounts of derelict fishing gear have been documented in Cordell Bank National Marine Sanctuary. This includes long lines, gill nets, crab gear, and trawl warps entangled on and around the Bank. CBNMS research has demonstrated that the Bank's physical structure and benthic invertebrate community provides critical habitat for recovering stocks of west coast rockfish (*Sebastes* spp.). The Pacific Fisheries Management Council recently identified Cordell Bank as a Habitat Area of Particular Concern under their Essential Fish Habitat designation. One concern is that the abandoned fishing gear on Cordell Bank may be negatively impacting sanctuary resources, creating artificial habitat for marine life, and potentially impacting the physical structure of the Bank. This derelict gear also poses a danger to personnel and equipment involved in Sanctuary research and monitoring activities.

JURISDICTIONAL SETTING

Restricted Access Fisheries

Restricted access programs in fisheries limit the quantity of persons, vessels, or fishing gear that may be engaged in the take of a given species of fish or shellfish. Restricted access may also limit the catch allocated to each fishery participant through harvest rights such as individual or community quotas. A primary purpose of restricted access programs is to balance the level of effort in a fishery with the health of the fishery resources. In most situations, except harvest rights, this involves setting an appropriate fishery capacity goal.¹

California's Restricted Access Program

In 1977, California focused its first limited access program on the abalone fishery, followed in 1979 with legislation requiring salmon limited entry permits. In the 1990s, industry began to demand more restricted access programs, so the CDFG decided the time had come to address restricted access in a comprehensive manner. In 1996, a limited entry review committee was formed to develop a standard restricted access policy for the Fish and Game Commission (FGC). The commission approved the restricted access policy in June 1999.¹

Since the passage of the Marine Life Protection Act of 1998 and the FGC's adoption of the restricted access policy in 1999, more restricted access program responsibility has shifted from the legislature to the commission and department. The department works closely with constituent advisory committees and task forces to carefully design and evaluate restricted access

¹ California Department of Fish and Game. December 2001, *California's Living Marine Resources: A Status Report*, Sacramento, California.

plans for submission to the commission. The commission then conducts hearings for further public input. The plan is then returned to CDFG and advisory groups for any necessary revisions before going to the commission for a final decision. The legislature is involved and informed with fisheries that require legislation to implement restricted areas.¹

Federal Restricted Access Program

The Magnuson-Stevens Fishery Conservation and Management Act of 1976 (Magnuson-Stevens Act) was enacted to begin phasing out foreign fishing and encouraged “Americanization” of fisheries, primarily for groundfish, within the 200 mile exclusive economic zone.

The PFMC is one of eight regional councils established by Congress, and manages the fisheries in federal waters off California, Oregon, and Washington. The Pacific Council manages four major west coast fisheries: (1) coastal pelagic species fishery (e.g., sardines); (2) marine salmon fishery; (3) Pacific coast groundfish fishery (including more than 80 species); and (4) west coast highly migratory species fishery (e.g., tunas and sharks).

Marine Life Management Act

The Marine Life Management Act (MLMA) requires CDFG and the FGC to evaluate existing restricted access programs every five years. These evaluations and increase in restricted access programs will require CDFG to expand capabilities to collect and analyze economic and social data related to fisheries. Socioeconomic data and biological data about fisheries’ resources are key components in developing and evaluating restricted access policy alternatives.

Marine Life Protection Act (MLPA)

State legislation requires that CDFG develop a plan for establishing networks of marine protected areas in California waters to protect habitats and preserve ecosystem integrity. The master plan requires that recommendations be made for a preferred alternative network of marine protected areas (MPAs) with “an improved marine life reserve component.” The MLPA further states that “it is necessary to modify the existing collection of MPAs to ensure that they are designed and managed according to clear, conservation-based guidelines that take full advantage of the multiple benefits that can be derived from the establishment of marine life reserves.”

Magnuson-Stevens Fishery Conservation and Management Act

The implementation of the Magnuson-Stevens Fishery Conservation and Management Act virtually eliminated all foreign fishing vessels by extending the United States jurisdiction and control over all marine fisheries resources within 200 miles of the U.S. coast. The act required the establishment of eight regional fishery management councils composed of federal and state fishery management officials and industry representatives. The councils have oversight on developing, monitoring, and revising fishery management plans for each fishery within the U. S. Exclusive Economic Zone (EEZ) that requires management. Every fishery management plan must be approved by the Secretary of Commerce by way of the National Marine Fisheries Service (NMFS).

Marine Mammal Protection Act and Endangered Species Act

National Marine Fisheries Service (NMFS) shares responsibility with the Fish and Wildlife Service for the implementation of the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA) to protect of any endangered, threatened or otherwise depleted species.

ECOSYSTEM PROTECTION GOAL

1. Improved understanding of human use impacts, and allow for activities that are compatible with sanctuary goals and ecosystem health.

ECOSYSTEM PROTECTION OBJECTIVES

1. Establish a working relationship with state and federal fisheries management agencies.
2. Track, evaluate, and address, as appropriate, existing, new, and emerging issues for their potential impacts on sanctuary resources.
3. Support adaptive management plans that promote ecosystem health.
4. Develop a definition of “compatible use” for activities that complement the sanctuary’s primary objective of resource protection.
5. Broaden and formalize partnerships between the sanctuary, fishing community, and non-governmental organizations (NGOs).
6. Increase awareness of acoustic impacts on marine organisms and pursue partnering opportunities to monitor ocean sound in CBNMS.
7. Continue to document the extent of marine debris in CBNMS and initiate debris removal and habitat restoration activities.

ECOSYSTEM PROTECTION STRATEGIES

STRATEGY EP-1: *Establish consistent and coordinated region-wide sanctuary representation at the PFMC and FGC meetings.*

Activity 1.1 Select a regional west coast sanctuaries representative to attend PFMC and FGC meetings, and participate as appropriate.

- A. The west coast sanctuaries (Olympic Coast, Cordell Bank, Gulf of the Farallones, Monterey Bay, and Channel Islands) need a single point of contact that will consistently represent all five sanctuaries to inform and update the council and

commission on current activities and emerging fishing issues. The sanctuaries also need to track, and as appropriate, be responsive to issues PFMC and FGC are addressing.

- B. Communicate with the council and commission on a regular basis to keep them informed and updated on sanctuary activities.

Potential Partners: NMSP, Olympic Coast National Marine Sanctuary (OCNMS), Gulf of the Farallones National Marine Sanctuary (GFNMS), Monterey Bay National Marine Sanctuary (MBNMS), Channel Islands National Marine Sanctuary (CINMS)

Complementary Strategies: GFNMS Management Plan (FMP), Fishing Activities, STRATEGY FA-6; MBNMS FMP, Fishing Related Education and Research, STRATEGY FER-1

STRATEGY EP-2: *Establish ongoing process to track human-use activities and their impacts in and around sanctuary waters.*

Activity 2.1 Establish a standing ecosystem protection working group of the sanctuary advisory council.

- A. Work with the sanctuary advisory council to establish appropriate representation from the fishing community, other stakeholders, interest groups, NGOs and agencies to sit on the ecosystem protection working group and advise the sanctuary advisory council on how to address specific types of activities that may not be compatible with the sanctuary's primary purpose of resource protection.

Potential Partners: Sanctuary advisory council, stakeholders, NGOs, and state and federal agencies

Activity 2.2 Develop a tracking process to continually identify trends in current, new, and emerging activities.

- A. Work with the sanctuary advisory council and the ecosystem protection working group to identify current, new, and emerging activities taking place in and around sanctuary waters.
- B. Work with the fishing community, mariners, the research community, and other resource management agencies to identify current, new, and emerging activities taking place in and around sanctuary waters.

Potential Partners: GFNMS, OCNMS, MBNMS, CINMS, CBNMS Sanctuary Advisory Council and the broader community

Complementary Strategies: CBNMS FMP, New and Emerging Issues, Administration, STRATEGY AD-10; GFNMS FMP, Fishing Activities, STRATEGY FA- 3; MBNMS FMP, Benthic Habitats, STRATEGY BH-1,

STRATEGY BH-2; Fishing Related Education and Research, STRATEGY FRER-3

STRATEGY EP-3: *Establish a process to evaluate impacts of human-use activities on sanctuary resources.*

Activity 3.1 Work with the standing ecosystem protection working group of the sanctuary advisory council to develop a definition for “compatible use.” The “compatible use” definition will establish a threshold for maximum allowable impacts on sanctuary resources from activities. The “compatible use” definition will set a standard for the “compatibility index” (see Activity 3.2 below).

Potential Partners: NMSP, MBNMS, GFNMS, CBNMS Sanctuary Advisory Council, NMFS, CDF&G

Complementary Strategies: CBNMS FMP, Regulations and Permitting, Administration, STRATEGY AD-9; GFNMS FMP, Ecosystem Protection, STRATEGY EP-3; MBNMS FMP, Benthic Habitats, STRATEGY BH-2, Fishing Related Education and Research, STRATEGY FER-3

Activity 3.2 Develop a “compatibility index” to rank and evaluate types and levels of impacts from human-use activities. The compatibility index will be based on a model similar to the Severity Ranking of Collateral Impacts model for fishing gear types and will include consideration and rankings for different types and levels of impacts such as:

1. Habitat impacts (physical)
2. Habitat impacts (biological)
3. Levels of by-catch (sea turtles, shellfish and crabs, finfish, sharks, marine mammals and seabirds, juvenile life stages)
4. Impacts associated with species life history (such as aggregated behavior during spawning)

Potential Partners: Sanctuary advisory council, NMFS, NMSP, GFNMS, MBNMS

Complementary Strategies: CBNMS FMP, Administration, STRATEGY AD-9, and STRATEGY AD-10; GFNMS FMP, Ecosystem Protection, STRATEGY EP-3

STRATEGY EP-4: *Develop policy recommendations or management action(s) to address impacts from human-use activities on sanctuary resources.*

Activity 4.1 If the compatibility index indicates significant negative impacts on sanctuary resources from human-use activities, a stakeholder-based, issue-specific working group of the

sanctuary advisory council will be developed to evaluate and make recommendations on actions the sanctuary should take to address impacts from specific activities.

- A. A stake-holder based working group (issue-specific) may include: resource management agencies, interest groups, user groups, fishers representing different gear types, and the scientific community.
- B. The working group will make recommendations based on best available scientific and socioeconomic data.

Potential Partners: Sanctuary advisory council, stakeholder representatives, agency representatives, interest groups, experts and user groups

Complementary Strategies: CBNMS FMP, Administration, STRATEGY AD-9, and STRATEGY AD-10; GFNMS FMP, Ecosystem Protection, STRATEGY EP-4; MBNMS FMP, Benthic Habitats, STRATEGY BH-2

Activity 4.2 Develop a series of management categories (policy responses) based on relative level of impact from an activity, as determined by the compatibility index.

- A. Management responses or recommendations to other appropriate management agencies may include a range of recommendations such as:
 - 1. Using less ecologically damaging methods
 - 2. Changing practices using appropriate incentives
 - 3. Promoting innovations in fishing gear and technology
 - 4. Establishing area-based restrictions
 - 5. Supporting future studies, including assessment of social and economic effects of policy actions on activities
 - 6. Using tools such as adaptive management to reintroduce closed fisheries.
- B. Develop a timeline and mechanism(s) for implementation of recommendations, establishing protocols and procedures for working with other agencies when appropriate.

Potential Partners: Sanctuary advisory council, topical experts, stakeholders, interest groups, fishing community, PFMC, CDFG, NMSP, GFNMS, MBNMS, CINMS and OCNMS

Products: Compatibility Index

STRATEGY EP-5: *Work with Gulf of the Farallones and Monterey Bay National Marine Sanctuaries and the Pacific Fisheries Management Council to support actions prohibiting the commercial harvest of krill.*

Activity 5.1 Krill are currently not harvested within the sanctuary, however, the potential exists for this fishery to develop in the future due to an increasing need for aquaculture feed. A krill fishery could severely impact the integrity of the marine ecosystem, and could adversely affect commercial and recreational fisheries of all kinds as most targeted species are directly or indirectly dependent on this resource. The PFMC is currently engaged in rule making to prohibit the commercial harvest of krill. The Sanctuary will continue to support the PFMC process as the council moves toward a permanent ban on the commercial harvest of krill.

- A. CBNMS will work with GFNMS, MBNMS, and the PFMC to support activities that result in a permanent ban on krill harvesting.

Potential Partners: GFNMS, MBNMS, PFMC, NMFS, CDFG, FGC

STRATEGY EP-6: *Profile fishing activities and communities in and around the sanctuary to better understand levels of impacts specific to CBNMS.*

Activity 6.1 Work with the NMFS on increasing the number of observers on fishing vessels in CBNMS. Observers will collect data on catch and by-catch levels and also evaluate experimental gear types.

Potential Partners: Fishing community, NMFS

Activity 6.2 Hire a contractor to profile the history and evolution of fishing activities occurring in and adjacent to the sanctuary. Profile should include information on actual numbers of boats actively engaged in each fishery; areas where the fishery is taking place; gear types; catch levels; a socioeconomic profile of the harbors and marinas accessing the sanctuary; and an understanding of markets, changing gear types, and changing fisheries management regulations that influence this profile. Information exchange with mariners will provide important input to the profile, and provide support for continual update of the database.

Potential Partners: Fishing community, NMFS, NOAA, The National Centers for Coastal Ocean Science (NCCOS), Coastal Services Center (CSC)

Products: Publication

STRATEGY EP-7: *Assess impacts from acoustics on sanctuary resources.*

Activity 7.1: Expand research and monitoring of acoustics in CBNMS.

- A. Gather more information and data on the effects of sound in the marine environment.
- B. Work with partners to conduct passive acoustic monitoring to identify and quantify sources of anthropogenic noise underwater and continue to be apprised of survey and monitoring activities that are evaluating the effects of sound.

Potential Partners: GFNMS, MBNMS, NMFS, Scripps Institution of Oceanography

Activity 7.2: Continue evaluation of individual projects with potential acoustic disturbance.

- A. CBNMS will continue evaluating individual proposals on a case-by-case basis to determine impacts of proposed projects, and make management recommendations.
- B. The CBNMS should work with NOAA Fisheries and other partners to determine acceptable sound levels in the different frequency ranges affecting wildlife.

Potential Partners: GFNMS, MBNMS, NMFS, Scripps Institution of Oceanography

STRATEGY EP-8: *Assess impacts from marine debris on sanctuary resources and conduct mitigation activities.*

Activity 8.1: Expand GIS database to characterize benthic marine debris in CBNMS

- A. CBNMS will work with partners to expand databases to track and characterize the type, location and amounts of marine debris observed during benthic monitoring and habitat mapping and characterization research activities within CBNMS.

Potential Partners: GFNMS, MBNMS, University of California-Davis Wildlife Health Center, State Coastal Conservancy, National Fish and Wildlife Foundation

Activity 8.2: Develop protocols to monitor pelagic marine debris and incorporate into monthly monitoring activities

Activity 8.3: Work with partners in removing derelict fishing gear from CBNMS

- A. CBNMS will work with partners to assess the feasibility and test methods of removing derelict fishing gear from deep water environments, like Cordell Bank.

- B. CBNMS will work with partners in the removal of derelict fishing gear from deep water benthic habitats.

Potential Partners: GFNMS, MBNMS, University of California-Davis Wildlife Health Center, State Coastal Conservancy

Ecosystem Protection

Timeline

| ECOSYSTEM PROTECTION STRATEGY | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|--------|--------|--------|--------|--------|
| Strategy EP-1: Establish region-wide sanctuary representation at PFMC and FGC meetings | —————▶ | | | | |
| Strategy EP-2: Establish process to track activities in the sanctuary |▶ | | | | |
| Strategy EP-3: Establish process to evaluate activities in the sanctuary | —————▶ | | | | |
| Strategy EP-4: If significant negative impacts detected, develop policy recommendations or management actions to address impacts from activities on sanctuary resources | —————▶ | | | | |
| Strategy EP-5: Work regionally to support recommendations prohibiting krill harvesting | —————◆ | | | | |
| Strategy EP-6: Profile historic and evolution of fishing activities occurring in the sanctuary | —————▶ | | | | |
| Strategy EP-7: Assess impacts from acoustics on sanctuary resources |▶ | | | | |
| Strategy EP-8: Assess impacts from marine debris on sanctuary resources and conduct mitigation activities | —————▶ | | | | |

Legend:

- ▶ **Ongoing Activity**
-▶ **Planning Stage**
- ◆ **Completed Activity**

*Ecosystem Protection Action Plan
CBNMS Final Management Plan*

Ecosystem Protection

Budget

| ECOSYSTEM PROTECTION STRATEGY | Estimated Annual Cost (1000's)* | | | | | Total Est. 5-Year Cost (1000's) |
|--|---------------------------------|--------------|--------------|--------------|--------------|---------------------------------|
| | YR 1 | YR 2 | YR 3 | YR 4 | YR 5 | |
| Strategy EP-1: Establish region-wide sanctuary representation at PFMC and FGC meetings | \$0 | \$1 | \$1 | \$1 | \$1 | \$4 |
| Strategy EP-2: Establish process to track activities in the sanctuary | \$0 | \$16 | \$21 | \$16 | \$16 | \$69 |
| Strategy EP-3: Establish process to evaluate activities in the sanctuary | \$0 | \$18 | \$15 | \$5 | \$5 | \$43 |
| Strategy EP-4: If significant negative impacts detected, develop policy recommendations or management actions to address impacts from on sanctuary resources | \$0 | \$0 | \$0 | \$15 | \$5 | \$20 |
| Strategy EP-5: Work regionally to support recommendations prohibiting krill harvesting | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Strategy EP-6: Profile historic and evolution of fishing activities occurring in the sanctuary | \$33 | \$33 | \$2 | \$2 | \$2 | \$72 |
| Strategy EP-7: Assess impacts from acoustics on sanctuary resources | 0 | 0 | \$165 | \$130 | \$130 | \$425 |
| Strategy EP-8: Assess impacts from marine debris on sanctuary resources and conduct mitigation activities | \$70 | \$70 | \$70 | \$120 | \$120 | \$450 |
| Total Estimated Annual Cost | \$103 | \$138 | \$274 | \$289 | \$279 | \$1083 |

The sanctuary's base budget is available each year from appropriated funds.

There is both availability of and opportunity to receive additional funding from appropriated funds.

The estimates do not take into account increasing personnel costs each year or inflation.

The estimates do not take into account unexpected events or emergencies or unforeseen projects.

Ecosystem Protection

Performance Measures

| Strategy Title(s) | Performance Goal | Desired Outcome (Objective) | Outcome Measure | How Measured | Who Measures | Output Measure |
|---|--|--|--|---|---|--|
| <p>Strategy EP-2: Track activities and their impacts on sanctuary resources.</p> <p>Strategy EP-3: Evaluate activities and their impacts on sanctuary resources.</p> <p>Strategy EP-4: Address impacts from activities.</p> | <p>Better understand and allow for activities that are compatible with sanctuary goals and ecosystem health.</p> | <p>1) Track, evaluate, and address, new and emerging issues for their potential impacts on sanctuary resources.</p> <p>2) Support adaptive management plans that promote ecosystem health.</p> <p>3) Develop "compatible use" standards for activities that complement the sanctuary's primary objective of resource protection.</p> | <p>Improved ability to carry out a consistent and systematic evaluation of impacts from activities occurring in the sanctuary.</p> | <p>1) Complete "compatible use" definition or threshold</p> <p>2) Complete "compatibility index" framework</p> <p>3) Develop series of management or policy response categories</p> | <p>Sanctuary Superintendent, Ecosystem Protection Working Group, Sanctuary Advisory Council</p> | <p>1) Process for tracking existing, new, and emerging issues</p> <p>2) Compatibility index matrix</p> |



PARTNERSHIPS WITH COMMUNITY GROUPS ACTION PLAN

ISSUE STATEMENT

In order to fully carry out its mission, Cordell Bank National Marine Sanctuary (CBNMS) needs to develop community partnerships to maximize its limited resources and minimize the risk of working in isolation and missing partnership opportunities. Through community partnerships, opportunities will be leveraged to develop public awareness, education, and stewardship; obtain volunteer, financial, and in-kind support; and increase research opportunities.

ISSUE DESCRIPTION

CBNMS is a small offshore sanctuary that does not have the necessary resources to complete key research or education projects, or establish the same unique identity and level of interest and support enjoyed by other established near-shore sanctuaries. The sanctuary's primary program focus is on conducting research, developing associated education programs, and identifying and protecting the sanctuary's natural resources and habitats. CBNMS faces a significant challenge in effectively building community identity, interest, and support.

One major way to achieve the sanctuary's goals is through community partnerships. Sanctuaries function more effectively with community support. All sanctuaries work with sanctuary advisory councils, community groups, and agencies to provide support in reaching out to the community and building stewardship. Community partnerships will allow CBNMS to:

- Work in concert with other agencies, institutions and organizations;
- Not duplicate efforts of other agencies and community groups; and
- Have opportunities to leverage research partnerships and expertise, develop public awareness and education, build public support, and leverage and build financial and in-kind support.

A model used by the neighboring Gulf of the Farallones National Marine Sanctuary (GFNMS) is a friends group called the Farallones Marine Sanctuary Association (FMSA). The FMSA works in coordination with the GFNMS to: enlist volunteers to monitor and protect fragile marine habitats; develop educational programs; offer sanctuary field adventures and tours; publish newsletters; and create visitor centers, educational materials, and exhibits to enhance the public's appreciation and enjoyment of the sanctuary. Since the needs and characteristics of the CBNMS differ from those of other sanctuaries like GFNMS, moving forward with partnership opportunities will require analysis of how the partnership could effectively provide support to CBNMS.

PARTNERSHIPS WITH COMMUNITY GROUPS GOALS

1. Maximize partnerships to facilitate the sanctuary's ability to identify, understand, and protect sanctuary resources.
2. Instill within the community a sense of value and stewardship of the sanctuary.

PARTNERSHIPS WITH COMMUNITY GROUPS OBJECTIVES

Create partnerships to:

1. Further research and monitoring that assists in answering resource management questions.
2. Establish a strong identity for the sanctuary within various interest groups in the community.
3. Identify and cultivate potential sources of revenue and in-kind support.
4. Build education programs that build stewardship to support and advocate for the needs of the sanctuary.

PARTNERSHIPS WITH COMMUNITY GROUPS STRATEGIES

STRATEGY PC-1: *Develop partnerships with the research and education community to leverage opportunities and expertise to fulfill the sanctuary's research and education goals.*

Activity 1.1 Collaborate with other research entities including agencies and institutions to share in-kind resources and services.

- A. Identify potential research and education partners, including other resource management agencies, marine research institutions, and individual researchers.
- B. Identify ways to collaborate with potential partners. The sanctuary should determine what it could offer to the partnership, including but not limited to providing ship time, housing, and/or outreach opportunities. For example, collaborations might include partnering on grants, internship programs, and symposiums.
- C. Identify and secure outside funding to support field researchers and an internship program.
- D. Partner on outreach components of research/monitoring programs (may also satisfy grant requirements).

Potential Partners: Point Reyes National Seashore (PRNS), Bodega Marine Laboratory (BML), Point Reyes Bird Observatory (PRBO), San Francisco State

University (SFSU) Romberg-Tiburon, National Marine Fisheries Service (NMFS), National Fish Wildlife Federation, California Department of Fish and Game (CDFG), United States Coast Guard (USCG), other research organizations

Products: Reports, papers, symposiums

Complementary Strategies: CBNMS Final Management Plan (FMP), Education, STRATEGY ED-7, and STRATEGY ED-8; Administration, STRATEGY AD-3

Activity 1.2 Collaborate with other education and outreach partners such as agencies, non-profits, museums, and others to share projects, in kind resources, collaborate on shared audiences and education goals.

- A. Identify potential education partners that share same goals of the national marine sanctuary program for education.
- B. Identify Sanctuary education/outreach programs that could be accomplished through collaborations: criteria to include facilities, staff resources, related education goals and shared audiences
- C. Identify and secure outside funding to support education/outreach interns to help with site projects

Potential Partners: Point Reyes National Seashore (PRNS), Sonoma State University (SSU), marine related or environmental education related non-profits in Bay Area, College of Marin, Santa Rosa Junior College, US Satellite Group, Gulf of the Farallones NMS

Products: Outreach lectures, curriculum, workshops, exhibits, shared internships

Complementary Strategies: CBNMS Management Plan-ED 1, ED2, ED3, ED4, ED5, ED 6, ED 7, ED 8, ED9 and Administration Strategy AD-3

STRATEGY PC-2: *Culture the sanctuary advisory council as a link to the community.*

Activity 2.1 Raise the profile of CBNMS by identifying the role of sanctuary advisory council members in increasing awareness of the sanctuary and encouraging them to reach out to their constituencies and the community-at-large.

- A. Review “lessons learned” from other sanctuary advisory councils and coordinators in the National Marine Sanctuary Program (NMSP) to learn from successes and failures in reaching out to their community and constituencies.
- B. Provide media training to council members. Develop support materials such as PowerPoint or slide presentations for council members to use.
- C. Work with advisory council members on ways to engage constituents.

- D. Clarify and evaluate the council chairperson's roles, responsibilities, and expectations for representing the advisory council.

Potential Partners: CBNMS Sanctuary Advisory Council, other NMSP advisory councils and coordinators, NMSP staff

Products: Outreach materials for council members, annual report

Complementary Strategies: CBNMS FMP, Administration, STRATEGY AD-4

STRATEGY PC-3: *Use media opportunities to promote the sanctuary's programs and raise the identity of the sanctuary in Marin, Sonoma, and southern Mendocino counties.*

Activity 3.1 Use media opportunities to raise the identity of the sanctuary within the surrounding coastal and greater communities.

- A. Identify and implement effective use of media tools to reach broad audiences (through newspaper, TV, radio). Incorporate key research findings into outreach messages.
- B. Keep the media informed about the current activities in the sanctuary.
- C. Nurture relationships with key media individuals and organizations. Work with regular columnists to create marine-focused columns and features in the local papers. Work with local radio stations to incorporate feature stories about the sanctuary into their programming.

Potential Partners: Local newspapers and writers, local radio stations, national media groups

Products: Periodical articles in newspapers, weekly/monthly radio show, videos

Complementary Strategies: CBNMS FMP, Education, STRATEGY ED-3, ED-4

STRATEGY PC-4: *Identify mechanisms to raise and manage additional sources of revenue and in-kind services.*

Activity 4.1 CBNMS does not expect to have the financial resources to fully implement this management plan. Developing partnerships will allow the sanctuary to leverage additional financial and in-kind support. As the need arises, CBNMS will develop partnerships to manage and generate additional sources of revenue.

- A. Establish fiscal agent relationship with existing non-profits to manage grants and donations.
- B. Explore mechanisms such as individual donations, grants, and events to generate additional sources of revenue.

- C. Build community capacity and interest to help generate donations.
- D. Support community effort to create non-profit organization focus on CBNMS if appropriate.

Potential Partners: Farallones Marine Sanctuary Association (FMSA), Point Reyes National Seashore Association (PRNSA), National Marine Sanctuaries Foundation (NMSF), sanctuary advisory council

Products: Fiscal agent, merchandise sales, membership, field seminars, grants, and fundraising events

CBNMS Partnerships with Community Groups

Timeline

| PARTNERSHIPS WITH COMMUNITY GROUPS STRATEGY | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--|---------------|---------------|---------------|---------------|---------------|
| Strategy PC-1: Develop and maintain partnerships with research and education community | | | | | → |
| Strategy PC-2: Culture the advisory council as a link to the community | | | | | → |
| Strategy PC-3: Use media opportunities to raise identity of sanctuary | | | | | → |
| Strategy PC-4: Identify mechanisms to raise and manage additional sources of revenue | | | | | → |

Legend:

-  **Ongoing Activity**
-  **Planning Stage**
-  **Completed Activity**

CBNMS Partnerships with Community Groups

Budget

| PARTNERSHIPS WITH COMMUNITY GROUPS STRATEGY | Estimated Annual Cost (1000's)* | | | | | Total Est. 5-Year Cost (1000's) |
|--|---------------------------------|------|------|------|------|---------------------------------------|
| | YR 1 | YR 2 | YR 3 | YR 4 | YR 5 | |
| Strategy PC-1: Develop and maintain partnerships with research and education community | \$20 | \$15 | \$15 | \$17 | \$20 | \$87 |
| Strategy PC-2: Culture the advisory council as a link to the community | \$10 | \$10 | \$10 | \$10 | \$10 | \$50 |
| Strategy PC-3: Use media opportunities to raise identity of sanctuary | \$0 | \$15 | \$15 | \$15 | \$15 | \$60 |
| Strategy PC-4: Identify mechanisms to raise and manage additional sources of revenue | \$0 | \$10 | \$10 | \$10 | \$10 | \$40 |
| Total Estimated Annual Cost | \$30 | \$50 | \$50 | \$52 | \$55 | \$237 |

The sanctuary's base budget is available each year from appropriated funds.

There is both availability of and opportunity to receive additional funding from appropriated funds.

The estimates do not take into account increasing personnel costs each year or inflation.

The estimates do not take into account unexpected events or emergencies or unforeseen projects.

CBNMS Partnerships with Community Groups

Performance Measures

| Strategy Title(s) | Performance Goal | Desired Outcome (Objective) | Outcome Measure | How Measured | Who Measures | Output Measure |
|--|---|--|---|---|--|---|
| Strategy PC-1: Develop partnerships with the research community to leverage opportunities and expertise, and fulfill the sanctuary's research goals. | Maximize partnerships to facilitate the sanctuary's ability to identify, understand, and protect sanctuary resources. | Create partnerships to further research and monitoring and to assist in answering resource management questions. | Increase in number of collaborative research projects within the sanctuary. | Identify and secure outside funding for research projects including in-kind services and support. | Sanctuary Superintendent, Research Coordinator | |
| Strategy PC-3: Use media opportunities to promote the sanctuary's research programs and raise the identity of CBNMS in Marin, Sonoma, and southern Mendocino counties. | Instill within the community a sense of value and stewardship of the sanctuary. | Create partnerships to establish a strong identity for the sanctuary within various interests of the community. | Increase in support from the community for sanctuary programs. | Track media coverage to determine increases in exposure. | Education Coordinator | Articles in newspapers and other media coverage |



CONSERVATION SCIENCE ACTION PLAN

PROGRAM STATEMENT

Although characterization, monitoring, and research have been the cornerstone of Cordell Bank National Marine Sanctuary (CBNMS) activities, a formalized long-term plan is still being developed to coordinate these efforts. All three activities will continue to be a high priority, and CBNMS staff will integrate the findings of these projects into education and outreach programs. Two specific areas the sanctuary will focus on are: (1) development of a coordinated and integrated characterization and research program for CBNMS; and (2) development and implementation of a long-term monitoring plan.

PROGRAM DESCRIPTION

Cordell Bank is an intriguing site due to its high biological diversity and its remote location. The sanctuary is important to researchers, and investigation has been taking place ever since its discovery. The Bank is a difficult place to study on a regular basis in large part because of unpredictable and harsh offshore oceanic conditions. The first extensive study of Cordell Bank was conducted from 1977 to 1987 by Cordell Expeditions. The researchers documented life on the Bank in over 3000 photographs, considerable film and video footage, and a large collection of biological specimens.

Since 1997, CBNMS and Gulf of the Farallones National Marine Sanctuary (GFNMS) have been involved in exploration and investigation of the marine life and habitat of the site through an Ecosystem Dynamics Study. This long-term study focuses on the distribution and relative abundance of krill, an important building block in the food chain for this area. Through the use of acoustics and net sampling, krill are located and identified. The physical parameters influencing their distribution are investigated. These data are analyzed along with seabird and marine mammal sightings to better understand why marine life concentrates in particular areas of the sanctuary.

Remotely operated vehicles (ROV) and the Delta submersible are used to characterize the benthic biota and habitats in CBNMS. In September 2001, sanctuary biologists and partners conducted initial surveys of the Bank, characterizing habitats and documenting species distribution and abundance. The sanctuary conducted these studies between 2001 and 2005 to increase the understanding of this unique environment and to better manage the sanctuary's resources.

CONSERVATION SCIENCE GOALS

1. Increase our knowledge and understanding of the Cordell Bank ecosystem.
2. Develop research programs to identify and address specific resource management issues.
3. Develop monitoring programs to understand long-term status and trends to guide management.

CONSERVATION SCIENCE OBJECTIVES

1. Characterize the habitats and communities of CBNMS; evaluate and synthesize characterization data and information.
2. Develop a monitoring plan, identify indicators, and conduct a targeted monitoring program in order to identify and understand natural variation and impacts from human activities on the marine ecosystem.
3. Recommend research and monitoring results for inclusion in CBNMS' outreach and education programs.
4. Develop new and enhance existing partnerships with other agencies and institutions.

CONSERVATION SCIENCE STRATEGIES

STRATEGY CS-1: *Prepare an oceanographic climatology report. The physical oceanography of CBNMS is integral to Cordell Bank's ecosystem and is not well understood. To fully characterize the sanctuary, a complete and detailed understanding of the oceanographic and atmospheric conditions in and around the sanctuary is needed.*

Activity 1.1 Prepare an oceanographic climatology report summarizing existing knowledge about the physical oceanography and meteorology of this region. This information will expose voids and shortcomings in the existing data, and serve as a guide for designing future programs.

- A. Conduct short-term data analyses from compiled data.
- B. Using existing data, construct a climatology of the oceanographic and meteorological conditions in and around the CBNMS and GFNMS. This document will contain figures, diagrams, satellite images, and tables that illustrate the prevailing environmental conditions, together with text that interprets, synthesizes, and summarizes this information. The report will deliver recommendations to the sanctuary for future studies that are needed to characterize the physical environment in and around the sanctuary.

Potential Partners: GFNMS, Moss Landing Marine Laboratories (MLML), National Weather Service (NWS), contractor

Products: Climatology report including graphical and tabular summaries

STRATEGY CS-2: *Map and characterize CBNMS' habitats. A habitat map will provide important baseline information for management including: relative proportions of sanctuary habitats; the current state of sanctuary resources as a basis against which to measure future change; unique habitats; unique potential habitat for species of concern including essential fish habitat; and extent of habitat damage from human disturbance.*

Activity 2.1 Conduct sonar surveys to determine habitat types and their spatial extent, specifically delineate: (1) rocky regions and outcrops within low relief soft bottom areas of sanctuary; (2) soft and mixed sediments within the Bank region; (3) trawl disturbance in soft sediments; and (4) marine debris and submerged cultural resources.

- A. Survey entire extent of sanctuary using sonar technology. Analyze information to develop fine-scale bathymetry maps, habitat maps, maps of marine debris and submerged cultural resources. This information can be used in conjunction with biological surveys to produce habitat suitability models for selected species.
- B. Habitat maps created using sonar systems will be ground truthed using data collected by manned submersible and ROV surveys over high relief rocky regions of the sanctuary and towed camera systems and grabs over low relief unconsolidated substrates.
- C. Incorporate research findings into CBNMS education/outreach and management programs and messages.

Potential Partners: United States Geological Survey (USGS) Coastal and Marine Geology Program

Products: Cruise report, technical data summaries, peer-reviewed article(s), geographic information systems (GIS) coverages, habitat maps

Complementary Strategies: CBNMS Management Plan (FMP), Research, STRATEGY CS-1 and STRATEGY CS-3

STRATEGY CS-3: *Characterize the soft-bottom epifaunal* communities of CBNMS.*

**Epifauna are animals that live in contact with the sea bottom, either moving freely over the substrate or attached to it.*

Activity 3.1 Survey the surface biota and sediment characteristics of the soft-sediment portion of the shelf area of CBNMS.

- A. Conduct survey of soft-bottom habitats of CBNMS. Survey will provide habitat assessment, estimates of distribution and abundance of epifauna, assessment of

disturbance effects and marine debris, species list of invertebrates, and description of any submerged cultural resources.

- B. Results from this survey will be used to refine the habitat map.
- C. Create partnerships to continue monitoring epifaunal communities over time.

Potential Partners: National Marine Fisheries Service (NMFS), USGS/US Seabed

Products: Publications and reports (cruise report, technical data summary, peer-reviewed article(s)), photographs (still and video), habitat map, map of submerged cultural resources

Complementary Strategies: CBNMS FMP, Research, STRATEGY CS-1, STRATEGY CS-2, STRATEGY CS-4

STRATEGY CS-4: *Characterize soft-bottom infaunal* communities of CBNMS.*

****Infauna are animals that live within or burrow through substrate.***

Activity 4.1 Characterize the infaunal biota of the soft sediment portion of the shelf and slope of CBNMS.

- A. Conduct literature review to obtain current knowledge about infaunal communities. Relevant sources may be the United States Environmental Protection Agency (EPA) status and trends information; Minerals Management Service (MMS) reports; invertebrate collections made by NMFS /North West Fisheries Science Center (NWFSC) slope and shelf trawl surveys; and regional universities and research institutions.
- B. Conduct baseline survey of infaunal communities of CBNMS using bottom grabs. Survey should determine species diversity, distribution, and abundance, as well as describe characteristics of the sediment. Design sampling so that temporal variability of infaunal community can be assessed and correlated to changing oceanographic conditions.
- C. Utilize partnerships to continue monitoring infaunal communities over time.
- D. Use results to ground truth habitat map.

Potential Partners: NMFS (trawl survey data), National Ocean Service/The National Centers for Coastal Ocean Science (NOS/NCCOS) (analysis), California Academy of Sciences (CAS), Bodega Marine Lab (BML), San Francisco State University (SFSU) Romberg – Tiburon Lab (analysis)

Products: Publications and reports (cruise report, technical data summary, peer-reviewed article(s)), photographs, additions to species list, GIS-based summary report

Complementary Strategies: CBNMS FMP, Research, STRATEGY CS-2 and STRATEGY CS-3

STRATEGY CS-5: *Collect, inventory, and catalog new and previously unsorted Cordell Bank benthic invertebrate specimens.*

Activity 5.1 Generate a voucher specimen database of the benthic invertebrates of Cordell Bank.

- A. Existing collections of Cordell Bank specimens at CA) will be taxonomically upgraded, computer catalogued, and maintained by CAS as research specimens.
- B. CAS will develop computerized species list for Cordell Bank and provide the data to the sanctuary for future investigations.
- C. Specimens of interest will be targeted for subsequent identification, description, and future publication.
- D. CAS will identify and describe sponge species collected from Cordell Bank, including not-yet-described species.

Potential Partners: CAS, Cordell Expeditions

Products: Computerized voucher specimen database, voucher specimen collection. CAS will publish descriptions of all new sponge species and a review of the sponge fauna of Cordell Bank as peer reviewed papers.

Activity 5.2 Continue to collaborate with CAS on collection and identification of other Cordell Bank benthic invertebrates.

- A. Partner with CAS on future taxonomic identification, database maintenance, and expansion of specimen collection.

Potential Partners: CAS, Cordell Expeditions

Products: Updated computerized voucher specimen database, updated voucher specimen collection

STRATEGY CS-6: *Survey available museum collections, data archives, and literature indexing services for Cordell Bank specimens, data, and publications.*

Activity 6.1 Conduct a literature, specimen, and data search to compile existing knowledge about Cordell Bank, and generate a verified species list. Methods should include:

- A. Search natural history museums and other collections for specimens collected from Cordell Bank.
- B. Search standard literature indexes for references to Cordell Bank. Secure regular access to Lexus-Nexus and/or other literature indexes for CBNMS.

- C. Search agency and academic electronic databases (i.e. metadata clearing houses) for data from Cordell Bank.
- D. Construct a verified species list and store in an easily accessible data repository (such as National Data Center or Sanctuary Integrated Monitoring Network (SIMoN)).

Potential Partners: CAS, Cordell Expeditions, Census of Marine Life

Products: Confirmed species list, list of references, reprint library, inventory of location of voucher specimens

STRATEGY CS-7: *Understand the function and variability of pelagic ecosystems.*

Activity 7.1 Quantitatively assess the distribution and abundance of marine birds, mammals, and sea turtles relative to ocean conditions, seasons, and biological productivity. This study will initially provide baseline data on production, populations, and trophic structure, and it will be continued as long-term monitoring.

- A. Physical oceanography will be described with data collected in the field and from remotely sensed data. Data will be collected on salinity and temperature at sea surface and at depth. Remote data will include upwelling indices, satellite images, and current information.
- B. Systematically survey along transect lines and record the presence of marine birds, mammals and sea turtles within CBNMS.
- C. Assess biological productivity by sampling zooplankton and phytoplankton using hydro-acoustics and net sampling.
- D. Use an echosounder to map the distribution of zooplankton and fish.
- E. Observe and document human activities at CBNMS.

Potential Partners: GFNMS, Monterey Bay National Marine Sanctuary (MBNMS), Point Reyes Bird Observatory (PRBO), BML

Products: Cruise reports, technical data summaries, peer-reviewed articles, fine-scale seasonal distribution maps

STRATEGY CS-8: *Continue monitoring fish and invertebrate assemblages in relation to the fine-scale habitat on and adjacent to the Bank portion of CBNMS. Identify locations and quantity of anthropogenic impacts, including derelict gear and other marine debris.*

Activity 8.1 Perform submersible field surveys (one- to three- year intervals) to monitor the distribution and abundance of fishes and invertebrates on and adjacent to the Bank. This project will include the following components:

- A. Assess and monitor distribution, abundance, and life history (size and maturity) of Bank fishes.
- B. Assess and monitor percent cover of invertebrates and distribution and abundance of specific macroinvertebrate species.
- C. Create an inventory of derelict fishing gear and marine debris using submersible transects and video footage.
- D. Use video transects and rock grab samples to further characterize habitats identified by the sonar survey.
- E. Compare the biota of Cordell Bank with other deep reefs along the west coast (eg., Bowie Seamount in British Columbia, Point Sur Bank in California, and Heceta Bank in Oregon).
- F. Determine the fish assemblages associated with different habitat types.

Potential Partners: National Oceanic and Atmospheric Administration (NOAA) Fisheries, California Department of Fish and Game (CDFG), USGS, BML, SFSU, Moss Landing Marine Laboratories (MLML)

Products: Cruise report, technical data summary, peer-reviewed article(s), habitat map, photographs (still and video)

Complementary Strategies: CBNMS FMP, Conservation Science, STRATEGY CS-1, STRATEGY CS-2, STRATEGY CS-3, STRATEGY CS-4, STRATEGY CS-5, and STRATEGY CS-6

STRATEGY CS-9: *Manage and store data in easily accessible and secure formats and locations. Data collected by the sanctuary should be accessible to interested public and should be securely stored to prevent loss.*

Activity 9.1 Paper data sheets from research cruises will be photocopied. One set will be kept in the sanctuary office and the second set kept offsite. Paper data sheets provide general information (e.g., location, time) describing the sampling environment.

Activity 9.2 Electronic media collected on research cruises (files and tapes) will be copied and stored in the sanctuary office. Electronic media (files and video tapes) provide the detailed information (e.g., water temperature profiles, number of organisms observed).

Activity 9.3 Data obtained from laboratory analyses of video transects or plankton collections will be stored in a relational database, modeled after the National Park Service's Natural Resources Database Template. All electronic data are available to sanctuary staff through the CBNMS local area network. Since the relational databases comprise the core of the sanctuary research program, copies of the databases are housed on an off-site computer to guard against catastrophic loss.

Activity 9.4 Ensure data are compliant with federal standards for accessibility and quality, and formatted to be compatible with Federal Geospatial Data Center (FGDC) and other relevant agency initiatives (e.g., the Integrated Ocean Observing System).

STRATEGY CS-10: Assess the role of Cordell Bank in the supply and receipt of fish larvae within the regional marine ecosystem by linking population genetics and oceanography.

Activity 10.1 Determine the genetic make-up of adult, juvenile and larval populations of fish with pelagic larval stages within the Cordell Bank region relative to regional populations to understand levels of mixing and retention of early life history stages.

- A. Collect adult, juvenile, and larval stages of several common species with pelagic larvae from Cordell Bank as well as at multiple locations north and south of the Bank within the California Current System. Conduct genetic analyses on collected individuals to determine likely birthplaces of individuals.

Potential Partners: Bodega Marine Lab (BML), San Francisco State University (SFSU) Romberg-Tiburon Lab, Moss Landing Marine Lab (MLML), Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO), National Marine Fisheries Service Santa Cruz Laboratory

Products: Publications and reports (cruise report, technical data summary, peer-reviewed articles(s))

Activity 10.2 Examine larval dispersal through simulations of coupled bio-physical models.

- A. Develop or modify an existing 3-D bio-physical simulation model to determine: 1) the geographic fate of larvae released from Cordell Bank; 2) the geographic origin of larvae that are likely to settle on Cordell Bank. Examine predicted dispersal patterns for larvae with different behavioral characteristics as well as larval periods. Examine predicted dispersal patterns given various oceanographic conditions.

Potential Partners: Bodega Marine Lab (BML), San Francisco State University (SFSU) Romberg-Tiburon Lab, Moss Landing Marine Lab (MLML), Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO)

Products: Publications and reports (technical data summary, peer-reviewed articles(s))

CBNMS Conservation Science

Timeline

| CONSERVATION SCIENCE STRATEGY | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|--------|--------|--------|--------|--------|
| Strategy CS-1: Prepare an oceanographic climatology | | | —◆ | | |
| Strategy CS-2: Map and characterize CBNMS habitats | —————▶ | | | | |
| Strategy CS-3: Characterize soft-bottom epifaunal communities | —◆ | | | | |
| Strategy CS-4: Characterize soft-bottom infaunal communities | | | —◆ | | |
| Strategy CS-5: Collect, inventory, and catalog new and previously unsorted Cordell Bank benthic invertebrate specimens | | —◆ | | | |
| Activity CS-5.1 Generate voucher specimen database of CBNMS benthic invertebrates (work with CAS) | | | —◆ | | |
| Activity CS-5.2 Continue collaborative studies of CBNMS invertebrates with CAS, ongoing as needed | | | —▶ | | |
| Strategy CS-6: Survey museum collections and literature for information about CBNMS and generate a verified species list | | —◆ | | | |
| Strategy CS-7: Understand the function and variability of pelagic ecosystems |▶ | | | | |
| Strategy CS-8: Continue monitoring of fish and invertebrate assemblages in relation to the fine-scale habitat on and adjacent to the Bank portion of CBNMS | —————▶ | | | | |
| Strategy CS-9: Manage and store data in easily accessible and secure formats and locations | —————▶ | | | | |
| Strategy CE-10: Assess the role of Cordell Bank in the supply and receipt of fish larvae within the regional marine ecosystem by linking population genetics and oceanography. | | | | —◆ | |
| | | | —◆ | | |

Legend:

- ▶ **Ongoing Activity**
-▶ **Planning Stage**
- ◆ **Completed Activity**

*Conservation Science Action Plan
CBNMS Final Management Plan*

CBNMS Conservation Science

Budget

| CONSERVATION SCIENCE STRATEGY | Estimated Annual Cost (1000's)* | | | | | Total Est. 5-Year Cost (1000's) |
|--|---------------------------------|-------|-------|-------|-------|---------------------------------|
| | YR 1 | YR 2 | YR 3 | YR 4 | YR 5 | |
| Strategy CS-1: Prepare an oceanographic climatology | \$0 | \$0 | \$35 | \$35 | \$0 | \$70 |
| Strategy CS-2: Map and characterize CBNMS habitats | \$20 | \$50 | \$50 | \$150 | \$60 | \$330 |
| Strategy CS-3: Characterize soft-bottom epifaunal communities of CBNMS | \$23 | \$0 | \$0 | \$0 | \$0 | \$23 |
| Strategy CS-4: Characterize soft bottom infaunal communities of CBNMS | \$0 | \$0 | \$0 | \$35 | \$20 | \$55 |
| Strategy CS-5: Collect, inventory, and catalog new and previously unsorted Cordell Bank benthic invertebrate specimens | \$0 | \$0 | \$18 | \$0 | \$0 | \$18 |
| Action CS-5.1 Generate voucher specimen database of CBNMS benthic invertebrates with CAS | \$0 | \$0 | \$0 | \$19 | \$0 | \$19 |
| Action CS-5.2 Collaborate with CAS on collection and identification of Cordell Bank benthic invertebrates | \$0 | \$0 | \$9 | \$9 | \$9 | \$27 |
| Strategy CS-6: Survey museum collections and literature for information about CBNMS and generate a verified species list | \$0 | \$15 | \$0 | \$0 | \$0 | \$15 |
| Strategy CS-7: Understand the function and variability of the pelagic ecosystem | \$37 | \$40 | \$42 | \$44 | \$52 | \$215 |
| Strategy CS-8: Continue monitoring of fish and invertebrate assemblages | \$85 | \$88 | \$91 | \$94 | \$100 | \$458 |
| Strategy CS-9: Manage and store data in easily accessible and secure formats and locations | \$10 | \$12 | \$12 | \$15 | \$15 | \$64 |
| Activity 10.1 Determine the genetic make-up of adult, juvenile and larval fish populations | 0 | 0 | 0 | 70 | 70 | 140 |
| Activity 10.2 Examine larval dispersal through simulations of coupled bio-physical models | 0 | 0 | 70 | 70 | 0 | 140 |
| Total Estimated Annual Cost | \$175 | \$205 | \$327 | \$541 | \$326 | \$1574 |

The sanctuary's base budget is available each year from appropriated funds.

There is both availability of and opportunity to receive additional funding from appropriated funds.

The estimates do not take into account increasing personnel costs each year or inflation.

The estimates do not take into account unexpected events or emergencies or unforeseen projects.

CBNMS Conservation Science

Performance Measures

| Strategy Title(s) | Performance Goal | Desired Outcome (Objective) | Outcome Measure | How Measured | Who Measures | Output Measure |
|--|--|--|---|--|--|---|
| Strategy CS-1: Prepare oceanographic climatology report. Strategy CS-2: Map and characterize habitats. Strategy CS-3: Characterize epifaunal communities. Strategy CS-4: Characterize infaunal communities. | Increase our knowledge and understanding of the Cordell Bank ecosystem. | Characterize the habitats and communities of CBNMS. | Increased understanding of: oceanographic and atmospheric conditions; relative abundance and distribution of habitats; epifaunal and infaunal benthic communities. | Complete site characterization including: detailed oceanographic climatology; clear delineation of habitat types; use surface biota and soft bottom characteristics to ground truth habitat types; cross reference infaunal with habitat mapping to cross-reference results. | Sanctuary Superintendent, Research Coordinator, research partners | 1) Oceanographic climatology report with effective maps and graphics 2) Fine scale bathymetric and habitat maps 3) Technical data summary on infaunal and epifaunal communities |
| Strategy CS-5: Collect, inventory and catalog benthic invertebrate specimens. Strategy CS-6: Survey museum collections, data archives, and literature indexing for specimens. | Increase our knowledge and understanding of the Cordell Bank ecosystem. | Characterize the habitats and communities of CBNMS. | Increase understanding of species diversity. | 1) Complete verified species inventory. 2) Taxonomically upgrade, catalog, and maintain specimen collection. | Sanctuary Superintendent, Research Coordinator, research partners | 1) Computerized voucher specimen database 2) House invertebrate voucher specimens 3) Confirmed species list |
| Strategy CS-7: Characterize pelagic ecosystems. | Develop research programs to identify and address specific resource management issues. | Determine monitoring objectives and indicators and conduct a comprehensive monitoring program. | Increase understanding of oceanographic habitats and communities (short-term); and detect and evaluate impacts from anthropogenic or natural perturbations (long-term). | 1) Quantitatively assess the distribution and abundance of marine mammals and seabirds. 2) Assess biological productivity (food) and assess human activity and oceanographic conditions. Cross-reference for correlation. | Sanctuary Superintendent, Research Coordinator, advisory council research panel, research partners | 1) Technical data summaries 2) Fine-scaled seasonal/annual distribution maps |

Conservation Science Action Plan
CBNMS Final Management Plan

| Strategy Title(s) | Performance Goal | Desired Outcome (Objective) | Outcome Measure | How Measured | Who Measures | Output Measure |
|---|---|---|--|--|---|---|
| Strategy CS-8: Maintain fish and invertebrate monitoring. | Maintain monitoring programs to understand long-term status and trends to guide management. | Characterize the habitats and communities of CBNMS. | Track changes to ecosystem over time and correlate to environmental conditions and to human use. | Characterize the Bank habitats and characterize and monitor faunal communities, while identifying locations and quantities of anthropogenic impacts. | Sanctuary Superintendent, Research Coordinator, research partners | 1) Technical data summary 2) Peer reviewed articles 3) Workshop presentations |

The following proposed studies represent important research activities that have not been fully developed as strategies within the Conservation Science Action Plan. Nevertheless, they are important topics that deserve attention when time and resources allow, and serve as an addendum to the main strategies that have been identified in this action plan. These proposed research activities originated from various sources including: 1) discussions of the Conservation Science working group that was assembled during the management plan review process; 2) comments received during the management plan review process; 3) assessment report of the condition of Cordell Bank National Marine Sanctuary resources.

- 1) **Quantify Temporal Patterns of Gelatinous Zooplankton.** Use of Tucker trawl or vertical haul sampling and acoustics to assess seasonal and interannual patterns of abundance and community composition of gelatinous zooplankton as part of the Cordell Bank pelagic monitoring program.
- 2) **Assess Primary Productivity within the Cordell Bank Ecosystem.** Examine spatial and temporal variability in primary productivity and phytoplankton standing stock using simulated *in-situ* and photosynthesis-irradiance incubations coupled with satellite remote sensing data of ocean color.
- 3) **Directed Oceanographic Field Studies.** Use of current meter arrays and acoustic Doppler current profiler to measure currents at different levels in the water column around Cordell Bank, drifters to track motion at and near the surface, and remotely-sensed observations from satellites to provide information on both local and regional conditions.
- 4) **Marine Mammal Observations Using Ships of Opportunity.** Use of volunteer observers riding on ships of opportunity (e.g., wildlife viewing trips) to survey the distribution and abundance of marine mammals.
- 5) **Understanding the Emerging Role of Humboldt Squid in the Cordell Bank Ecosystem.** Use of submersible to conduct surveys on the Bank and off the slope to acquire basic information on squid abundance and distribution. Use of hook and line sampling to assess squid foraging habits and diet.
- 6) **Geomorphology of Cordell Bank and Nearby Shelf and Slope Subsurface Geology.** Collect sub-bottom profile data and synthesize with rock samples from Cordell Bank to summarize the subsurface geology and surficial geomorphology of the region.
- 7) **Water quality assessment.** Assess potential environmental degradation of Sanctuary waters arising from certain changing physical processes and anthropogenic inputs by reviewing and summarizing existing data sets to better understand the potential water quality threats to the Sanctuary waters.
- 8) **Benthic contaminant assessment.** Assess potential environmental degradation of benthic habitats and bottom dwelling species (as well as transfer further along the food chain) arising from concentrations of contaminants such as pesticides, hydrocarbons, and heavy metals by collecting and analyzing benthic samples.



ADMINISTRATION ACTION PLAN

PROGRAM STATEMENT

In order for Cordell Bank National Marine Sanctuary (CBNMS) to build a management plan that is effective in addressing the priority site-specific and cross-cutting resource management issues, as identified through the management plan review process, CBNMS will need to strengthen its infrastructure by adding staff and financial resources to its base budget. In addition to basic infrastructure needs, some administrative areas that will be addressed include: building partnerships; improving interagency coordination; and addressing regulatory and enforcement issues.

PROGRAM DESCRIPTION

Since its designation in 1989, the sanctuary has grown from having no staff or budget to a dedicated staff of six and a budget of \$627,000. The first full-time staff member was hired in 1995, but was funded by Gulf of the Farallones National Marine Sanctuary (GFNMS). In 1998, a separate \$129,000 budget was allocated; in 2000, two additional staff were hired; and in 2003, a manager was hired.

Administrative roles for managing the sanctuary are shared between the CBNMS manager and the National Marine Sanctuary Program (NMSP). The NMSP provides oversight and coordination among the thirteen national marine sanctuaries by developing a framework for resource management, and directing program and policy development. The sanctuary manager oversees site-specific management functions including implementation of the management plan. The management plan makes use of two complementary and strategic tools for ecosystem management: (1) programs, or action plans, carried out through research, education, and marine resource protection programs, and (2) regulations for controlling or restricting human behavior that is not compatible with resource protection. The sanctuary manager establishes who is responsible for implementing specific programs, provides an administrative framework to ensure that all resource management activities are coordinated, and provides and manages an appropriate infrastructure to meet the goals and objectives of the management plan. The sanctuary manager reports directly to the NMSP. In this capacity, the sanctuary manager represents the NMSP and is the primary spokesperson for CBNMS.

The NMSP and CBNMS are committed to coordinating with other federal, state, and local agencies in a continuous ecosystem management process. This process is designed to ensure the long-term protection of the unique resources of this region, while considering the demands of multi-use interests. Because of the complexity of managing the activities and resources in the sanctuary, cooperative efforts are necessary to effectively meet sanctuary goals. Overlapping

jurisdictions, different agency mandates, and limited resources necessitate the development of a management plan that brings together multiple institutions for the common purpose of ecosystem management. Achieving the long- and short-term goals for this region requires the development of close and continuing partnerships.

ADMINISTRATIVE STRUCTURE

All thirteen national marine sanctuaries are managed by the NMSP. The NMSP takes responsibility for ensuring that the management plan prepared for each sanctuary is coordinated and consistent with the National Marine Sanctuaries Act (NMSA). On an annual basis, the NMSP reviews and adjusts funding priorities and requirements to reflect resource management needs at each of the thirteen national marine sanctuaries. The NMSP also establishes policy and priorities in response to specific needs and issues at each site. The NMSP and the site manager monitor the effectiveness of the management plan, both regulations and programs, and may promulgate changes when necessary. The NMSP and the site manager coordinate efforts to protect and manage sanctuary resources with other federal, state, regional, and local agencies.

SANCTUARY SUPERINTENDENT

The CBNMS superintendent recommends to the NMSP priorities for annual allocation of funds for site-specific resource protection needs. The superintendent reports to the NMSP on enforcement activities, violations, and emergencies. The superintendent coordinates with the NMSP on evaluating, processing, and issuing permits; monitors and evaluates research, education, and marine resource management programs; oversees staffing needs and requirements; coordinates on-site efforts of all parties involved in sanctuary activities including state, federal, regional, and local agencies. Finally, the superintendent evaluates overall progress toward the resource protection objectives of the NMSP and prepares regular reports highlighting progress made in realizing these goals.

SANCTUARY STAFF

Under the direction of the sanctuary manager, the sanctuary staff is directly responsible for implementation of the management plan. Although each staff member is assigned to one of the program areas, collectively the staff is responsible for coordinating their efforts in addressing all the priority resource management issues.

SANCTUARY ADVISORY COUNCIL

The sanctuary advisory council has been structured in accordance with the NMSA and national guidelines developed by the NMSP. The advisory council, with its expertise and broad based representation, offers advice to the sanctuary manager on resource management issues and decisions. CBNMS Sanctuary Advisory Council representation includes six agency and stakeholder representatives and five alternates. The advisory council is representative of a broad based constituency to ensure that the manager has a broad information base upon which to make management decisions.

IMPLEMENTATION OF THE MANAGEMENT PLAN

Each of CBNMS' program areas—Education and Outreach; Conservation Science; and Marine Resource Protection—have outlined action plans for implementing the management plan. These action plans are designed to directly address resource management issues and guide management of CBNMS over the next five years.

Action plans are purposely designed with only preliminary implementation guidelines because their parameters may change in the future. The action plans presented in the management plan address current resource management issues identified as priorities by the sanctuary during the management plan review process. The implementation of these action plans is highly dependent on available staffing and financial resource allocation.

Implementation of the new management plan will require: coordination within and between action plans; sharing of staff and financial resources between program areas; and cooperation and coordination among many federal, state, and local government agencies, as well as private organizations, institutions, and individuals.

CBNMS administration provides an organized structure and support system for implementing management strategies while providing the flexibility and guidance necessary to address changing, new, and emerging resource management issues.

IMPLEMENTATION COSTS

Operating funds for sanctuary management come from federal appropriations to the NMSP. These funds cover expenses such as personnel salaries, vessel maintenance, property rental, equipment, and supplies.

In addition to calculating operating costs, CBNMS will perform an estimated cost analysis for carrying out each of the program areas. This analysis is necessary in order to secure appropriate and adequate funding for implementation of the management plan over the next five years.

Unpredictable and variable funding for staff and program development over the next five years may affect specific aspects of the sanctuary management plan. The scale and scope of certain programs may be modified due to any unforeseeable changes in the level of funding, however the goals and objectives of the plan will remain unchanged.

OTHER MANAGEMENT TOOLS

With limited staff and financial resources, partnerships are an integral part of successful ecosystem management of CBNMS. The sanctuary manager may draw from a selection of standard management tools to formalize relationships with other federal, state and local agencies or the private sector. Examples of these agreements are:

MEMORANDUM of UNDERSTANDING (MOU) / MEMORANDUM of AGREEMENT (MOA) establishes a formal relationship between two or more entities for general purposes, or for a specific purpose or project, that is expected to continue for an extended period of time.

This mechanism cannot be used to transfer funds, but generally addresses commitment of resources.

LETTER of AGREEMENT / LETTER of UNDERSTANDING is an informal mechanism used to establish a relationship between two or more entities, for a specific project or purpose, for a short period of time. This mechanism cannot be used to transfer funds.

INTERAGENCY AGREEMENT is used when one agency has expertise, equipment, and/or personnel to perform work more efficiently than another, and it is in the government's interest to do so. Generally, funds are transferred to the agency carrying out the work.

COOPERATIVE AGREEMENT provides funding to a non-federal entity for a project/product that benefits the public. Cooperative agreements are the primary mechanism used for financial assistance. The National Oceanic and Atmospheric Administration (NOAA) must serve as the program officer on the cooperative agreement with financial oversight maintained by the Grants Management Division.

GRANTS provide funding to a non-federal entity for a project/product that benefits the public and in which NOAA does not need/want to have substantial involvement. A grant is considered one of the major kinds of financial assistance and must be awarded competitively or include a sole source justification. NOAA must serve as the program officer with financial oversight maintained by the Grants Management Division.

CONTRACT is a mechanism used by the federal government to procure goods and services. A contract must be awarded competitively or include a sole source justification. The program office has administrative oversight. During the term of the contract, financial oversight is maintained by the Finance Services Division.

JURISDICTIONAL SETTING

Although the sanctuary does coordinate with state agencies such as California Department of Fish and Game (CDFG) and the California Coastal Commission, CBNMS lies entirely in federal waters. Federal jurisdictional partners include:

UNITED STATES COAST GUARD (USCG) holds broad responsibility for enforcing all federal laws throughout the sanctuary and assists NOAA in the enforcement of sanctuary regulations. 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 that threatens sanctuary resource.

NATIONAL MARINE FISHERIES SERVICE (NMFS) has responsibility along with the CDFG, under the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), for approving, implementing and enforcing Fishery Management Plans (FMPs) prepared by regional fishery management councils to ensure sustainability *of fishery resources. NMFS also shares responsibility with the Fish and Wildlife Service for the implementation of the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA) to prevent takings of any species protected under these laws.

ENVIRONMENTAL PROTECTION AGENCY (EPA) has regulatory responsibilities with regard to sewage outfalls (under the Clean Water Act) via National Pollutant Discharge Elimination System (NPDES) Permits, and ocean dumping (under Title I of the Marine Protection, Research, and Sanctuaries Act) to protect water quality.

UNITED STATES FISH AND WILDLIFE SERVICE (USFWS) is responsible for protecting all marine mammal species other than whales, porpoises, and pinnipeds under the Marine Mammal Protection Act (MMPA) and for protecting endangered or threatened bird and other species under the ESA.

ADMINISTRATION GOAL

1. Build a strong foundation which supports the development of: effective program areas; a strong regulatory framework; and an array of partnerships. This foundation will allow for growth and flexibility in addressing the priority issues and recommendations laid out in the management plan.

ADMINISTRATION OBJECTIVES

1. Develop a structured administrative framework to continuously evaluate, maintain, and expand as necessary, administrative operations.
2. Identify appropriate staffing, budget levels, and facility needs to support implementation of the management plan.
3. Continue to build on partnerships, collaborative efforts, and coordination with other agencies, institutions, and organizations.

ADMINISTRATION STRATEGIES

Operations

STRATEGY AD-1: *CBNMS will expand its facilities to include satellite offices, visitor centers, signage, and vessels located throughout the region as necessary to support implementation of the management plan.*

Additional sanctuary facilities may be developed through various partnerships with both the public and private sector. Currently, CBNMS' main office is located in Bear Valley on the grounds of Point Reyes National Seashore (PRNS) near Olema, California.

Activity 1.1 Expand the current main office space and increase storage capacity at Bear Valley (Red Barn) facility to accommodate additional staffing needs and allow for future growth.

Activity 1.2 Increase presence in Bodega Bay, the nearest access point to CBNMS, by opening a satellite office and visitor center that would serve both research and outreach needs and assist in the further development of partnerships.

Activity 1.3 Work with the PRNS to identify intern/researcher housing options on park lands. These facilities may also include wet labs for researchers' use. Several possible sites (existing buildings) have been identified and preliminary investigations into potential partnerships are taking place. Formalized agreements may include the sanctuary providing restoration and maintenance funds in return for use of the building(s). (This effort may be coordinated with Activity 1.5 C – Pacific Coast Learning Center [PCLC]).

Activity 1.4 Increase the sanctuary staff's ability to access the marine waters of the sanctuary by expanding vessel capabilities and contracting more vessel time to support research and monitoring efforts. Currently, the sanctuary's research vessel *C. magister*, a 33' Gaski, serves as a day-use platform supporting research efforts of the sanctuary and its partners. This effort will include annual vessel time planning for research and education programs. Vessel planning will include CBNMS' vessel, NOAA ship time, and chartered boat time.

Activity 1.5 Complete priorities and implement facilities plan for visitor centers and outreach venues. CBNMS has identified a number of outreach opportunities that cover the sanctuary's interpretive needs from both geographical and thematic points of view. The proposed plan covers a geographic area from Oakland to Salt Point in Sonoma County, and includes shared signage with GFNMS. Outreach and interpretive exhibit venues being considered include:

- A. Bear Valley Visitor Center at PRNS headquarters provides space to CBNMS for its exhibit needs. The visitor center averages 350,000 visitors per year and is a destination for school programs local, national and international visitors. Funds have been approved for design of the exhibits.
- B. Point Reyes Lighthouse averages 110,000 visitors a year and is the closest landfall to CBNMS. The Park has offered two vacant buildings next to the lighthouse for wayside signage or other forms of exhibitry.
- C. Pacific Coast Learning Center (PCLC) at PRNS is part of a network of centers across the nation facilitating science-based management and education. CBNMS is interested in participating in the construction of a wet lab that would be co-developed with PRNS (also see Activity 1.3).
- D. Bodega Marine Laboratory (BML) is the marine research arm of University of California at Davis (UCD), and the center of marine research on the north coast. CBNMS, in partnership with GFNMS, is proposing to update and expand its interpretive panels at the lab.
- E. Fort Ross State Park celebrates the Russian presence in northern California in the 19th century during the heydays of the Russian-American Company. It also tells the story of local Native American tribes who fished and hunted in the area. CBNMS and GFNMS are proposing to develop wayside signage themed on wildlife watching, including tidepool etiquette and marine mammal viewing.
- F. Salt Point State Park is a major access point for recreational scuba divers. CBNMS proposes to create signage on marine stewardship and wildlife watching

etiquette (diving, whale watching, marine mammals, seabirds and rocky intertidal). Additional signage would provide a map of the sanctuary and its mission. An interactive kiosk could be placed at the campground.

- G. Bodega Head State Park is the best vantage for getting a perspective on GFNMS and CBNMS. This is a popular whale-watching and sunset-watching location. GFNMS and CBNMS propose to build a permanent whale-watching station modeled after one under construction at Beach 6, along the Olympic coastline. This signage would complement the CBNMS Bodega satellite office signage.
- H. Gleason Beach, Marshall Gulch, North Salmon Creek Beach and Salmon Creek are pullout areas located between Fort Ross and Bodega Bay, and are ideal wayside signage locations that could be used to interpret various sanctuary themes.
- I. The Oakland Museum of California is undergoing an \$80 million renovation that includes reinstallation of its science wing, with a greater emphasis on marine education. CBNMS is considering entering into a long-term partnership that would include exhibitry and outreach opportunities, with a focus on minorities and low-income families. This project would be a regional effort, including Gulf of the Farallones, Monterey Bay, and Channel Islands National Marine Sanctuaries.

Staffing

STRATEGY AD-2: *CBNMS will fill basic staffing requirements to provide support for administration and the program areas of conservation science, education and outreach, and resource management.*

Activity 2.1 Sanctuary staff skills should collectively represent expertise in policy, marine resource management, education, outreach, volunteer development, research, monitoring, geographic information systems (GIS), communications technology, and administration. The actual number and expertise of staff will depend on budget allocations and the operating priorities of CBNMS. In order to meet the objectives of this management plan, minimum staffing requirements have been laid out (see pg. 95).

Activity 2.2 Each staff member must exhibit general knowledge about all CBNMS program areas and the ability to effectively communicate with constituents, other professionals, and the community at large. In an effort to attract and maintain a consistent and high caliber staff base, the CBNMS manager will allocate 1.5 percent of the base budget, and offer and encourage staff participation in professional development.

Partnerships

STRATEGY AD-3: *With limited staff and financial resources, CBNMS will develop partnerships and identify outside funding sources and in-kind services to assist in the implementation of the management plan.*

Activity 3.1 In partnership with regional research and educational institutions and agencies, establish a Sanctuary supported internship program with graduate students to assist the sanctuary in monitoring, research, and education priorities. Agreements could be entered into with academic institutions and agencies such as:

- A. Bodega Marine Lab (BML) to provide on-going support for a graduate student internship program.
- B. Moss Landing Marine Lab (MLML) to provide on-going support for a graduate student internship program.
- C. San Francisco State University (SFSU)-Romberg/Tiburon Center to provide on-going support for a graduate student internship program.
- D. Point Reyes National Seashore (PRNS) to provide housing for graduate student internship program.

Complementary Strategies: CBNMS Management Plan (FMP), Partnerships with Community Groups, STRATEGY PC-1

Activity 3.2 Maintain and expand informal working relationship with federal, state, and local agencies. Partnership activities include coordination on education and outreach projects, research projects, data analysis, and cruise operations.

STRATEGY AD-4: *As the sanctuary advisory council matures and develops a strong voice within the community, its role in resource management will be more clearly defined. With experience, the advisory council will assume a leading role in providing advice to the sanctuary manager.*

Activity 4.1 In consultation with the sanctuary advisory council (SAC), strengthen the structure of the council by: evaluating and amending as necessary the SAC charter; evaluating and developing organizational strategies to enhance the council's level of participation and effectiveness; evaluating and adjusting, if necessary, council membership; and providing support to help the council develop a respected voice in the community.

Activity 4.2 Identify the role of the advisory council in addressing resource management issues by developing a format for assisting in the building of CBNMS policies and procedures.

Activity 4.3 Provide support, resources, and guidance to help the council engage and educate the public about current, new, and emerging resource management issues in the sanctuary.

Activity 4.4 Advisory council members will be asked to serve on various council working groups. Working groups will be convened by the council to focus on specific issues and to allow for participation by additional stakeholders and community experts.

Complementary Strategies: CBNMS FMP, Partnerships with Community Groups, STRATEGY PC-2; GFNMS FMP, Administration, STRATEGY AD-4; Monterey Bay National Marine Sanctuary (MBNMS) FMP, Sanctuary Advisory Council, STRATEGY SAC-1

Interagency Coordination

STRATEGY AD-5: *CBNMS will formalize intra- and interagency partnerships to ensure coordination and cooperation with federal, state, and local jurisdictions within or adjacent to the sanctuary. NOAA and CBNMS recognize all other authorities in and around sanctuary waters as important components of effective ecosystem management.*

Activity 5.1 CBNMS will engage other agencies in reviewing each other's proposed actions, responding to Environmental Impact Statements, participating in sanctuary panels and working groups. Building agency relationships allows for: coordination of the development of policies at the federal, state and local level; the sharing of research and education resources; and the opportunity to work together to identify resource management issues.

Activity 5.2 CBNMS will formalize agreements with federal co-trustee managers signaling that the cooperative and integrated management approach established for the CBNMS has been adopted by other agencies. To formally implement cooperative management of the sanctuary, a number of separate types of agreements may be entered into, including: cooperative agreements, memoranda of understanding, memoranda of agreement, and consultation.

Activity 5.3 CBNMS will formalize agreements for the following programs: (1) Protected Resources Enforcement Plan (USCG, NMFS, Sonoma County Sheriff's Department, CDFG) (see below); and (2) Emergency Response Plan (local, state and federal emergency response agencies).

Protected Resources Enforcement Plan

STRATEGY AD-6: *Enhance resource protection through increased compliance with sanctuary regulations and other applicable state and federal statutes. The mission of sanctuary enforcement is to ensure compliance with the National Marine Sanctuaries Act (16 USC § 1431 et seq.) and appropriate regulations of the sanctuary (15 CFR § 922).*

The approach to the enforcement program should be two-fold in nature: (1) the use of interpretive enforcement (such as public outreach) as a tool to inform and encourage voluntary compliance; and (2) the use of patrols and other traditional law enforcement methods to enforce regulations and investigate and respond to suspected prohibited activities. Together, these two programs should result in a regular and ongoing enforcement presence in sanctuary waters and compliance with sanctuary regulations.

Activity 6.1 Ensure sufficient patrol presence in the sanctuary through the development of partnerships and interagency coordination. Additionally, CBNMS needs to maintain an active

enforcement relationship with the USCG, NOAA Office of Law Enforcement, CDFG, and Sonoma County Sheriff's Department (Bodega Bay).

- A. CBNMS will coordinate with other enforcement authorities on investigations, regulatory violations, permit violations, incidents, and citizen complaints.

Activity 6.2 Use interpretive enforcement as a tool to inform and encourage voluntary compliance with sanctuary regulations. Interpretive enforcement may be used to affect behavior and change values. Interpretive enforcement efforts will include:

- A. Train Sanctuary Naturalist Program volunteers to use interpretive enforcement (see Education STRATEGY ED-2, page 30).
- B. Develop signage program at Bodega Harbor.
- C. Work with California Department of Motor Vehicles to include informational inserts in boat license renewal packets (to be coordinated with all California national marine sanctuaries).
- D. Give presentations at yacht clubs and the Coast Guard Auxiliary.
- E. Provide follow-up letters to possible violators with “you may be in violation” notices that inform the boater about sanctuary regulations.

Potential Partners: Coast Guard Auxiliary, CA Department of Motor Vehicles, GFNMS

Complementary Strategies: CBNMS FMP, Administration, Regulations and Permitting, STRATEGY AD-9; Education, STRATEGY ED-1

Emergency Response

STRATEGY AD-7: *Develop a plan that prepares sanctuary staff to respond to an emergency in or adjacent to the sanctuary. This plan will provide the framework for a seamless operation in cooperation with other federal, state, and local emergency response agencies in California. The plan will be developed in coordination with GFNMS and MBNMS.*

Activity 7.1 CBNMS will review and revise its emergency response plan, based on the Incident Command System (ICS) and the USCG's Area Contingency Plan (ACP), to respond to oil spills, hazardous material spills, sunken vessels, or natural disasters. In coordination with GFNMS and MBNMS, the response plan will be reviewed, evaluated, and updated on an annual basis. CBNMS' emergency response plan will:

- A. Lay out emergency response notification plans (including all relevant agencies, user groups and media) and preparation procedures.
- B. The plan will include coordination and decision-making responsibilities on use of dispersants

- C. Identify specific duties for sanctuary staff.
- D. Develop damage assessment guidelines.

Activity 7.2 All appropriate sanctuary staff will be trained on an ongoing basis with regular updates and refresher courses, and will be ready to respond in the case of an emergency. Staff training to include:

- A. Understanding the ICS.
- B. Familiarization with the ACP.
- C. Assigned emergency response duties.
- D. Taking part in emergency response drills.
- E. Developing resource damage assessment skills.

Complementary Strategies: GFNMS FMP, Resource Protection, Emergency Response, STRATEGY RP-7; MBNMS FMP, Operations and Administration, STRATEGY OA-4

Regulations and Permitting

STRATEGY AD-8: *Continuously evaluate the appropriateness and effectiveness of current sanctuary regulations (prohibitions) and permitting authority (15 CFR §922) in addressing the priority resource management issues identified in the management plan.*

Activity 8.1 CBNMS uses two complementary and strategic tools to carry out an ecosystem management approach: (1) programs, or action plans, which address resource management issues through the use of Education and Outreach, Conservation Science, and Resource Protection; and (2) regulations, which help establish priorities for guiding or restricting human behavior that may not be compatible with resource protection (see Appendix III). To ensure that CBNMS' regulations provide protection for natural resources and address the site's priority resource management issues, CBNMS will take the following steps:

- A. On a regular basis, the sanctuary staff and superintendent will, in consultation with the NMSP, evaluate the appropriateness and effectiveness of current regulatory language.
- B. Based on the evaluation and need for action in response to current, new and emerging human-use activities that may be inconsistent with the sanctuary's primary goal of resource protection, the sanctuary manager may propose new regulations or amendments to current regulations.
- C. CBNMS will provide guidance and understanding of policy in the NMSA.

- D. CBNMS will ensure, to the extent appropriate, coordination and consistency with other resource management agencies' regulations and permits.
- E. CBNMS will track, review, and comment on Environmental Assessments and Environmental Impact Statements prepared by other agencies.

Activity 8.2 The sanctuary permit program provides a mechanism to review requests to conduct prohibited activities within the sanctuary, and where possible, permit these activities to be conducted in a way that results in negligible effects. Generally, these requests are for research or education purposes. The sanctuary evaluates these requests on a case-by-case basis in detail to consider factors such as whether the activity needs to be conducted in the sanctuary; the value of the activity; the proposed methods and procedures; and the activity's effect in the sanctuary.

- A. In order to understand, measure, and control prohibited activities within the sanctuary, and to minimize cumulative impacts from these activities, the permit program will:
 - i. Evaluate permit requests on a case-by-case basis.
 - ii. Develop permit requirements to applicants on procedures and operations to avoid or reduce impacts to sanctuary resources.
 - iii. Monitor permitted activities to ensure compliance with permit conditions and to understand direct and cumulative impacts.
 - iv. Require applicants provide the sanctuary with the data and findings gained through research conducted with research permits.
- B. Certain educational or research activities may violate sanctuary prohibitions, although actual environmental impacts to sanctuary resources may be negligible. A streamlined application process could be developed for activities that clearly fall within this category.
 - i. Develop a streamlined application process by creating a simple form on which applicants can submit concise and relevant information.
 - ii. Develop a system to issue programmatic permits that may include many activities conducted by one organization or institution under one permit.

New and Emerging Issues

STRATEGY AD-9: *It is the sanctuary's responsibility to track existing, emerging, and potential future activities and their impacts on living marine resources and habitats of the sanctuary. In an effort to take a proactive ecosystem approach to resource management, CBNMS, GFNMS and MBNMS will need to coordinate on examining and evaluating activities that take place in and adjacent to each or all of the sanctuaries in order to better understand and anticipate impacts from these activities.*

Activity 9.1 Establish a framework for identifying and addressing new and emerging issues.

- A. Establish an evaluation system for determining if the issue (eg. climate change) is relevant to the site and develop steps for addressing as appropriate.
- B. Set up an electronic Web-based cataloging system to capture information on new and emerging issues (including sources and references). This system should be easily accessible by sanctuary staff for both adding information and accessing information.

Activity 9.2 Establish better coordination between sanctuary sites, the NMSP, and other resource management agencies.

- A. Establish a dynamic and up-to-date electronic system to inform one another of new and emerging issues, share information, and provide a forum for exchange and policy discussion.
- B. Track and comment on a variety of related resource protection projects and plans, including the review of Environmental Impact Statements and Environmental Assessments.

Complementary Strategies: GFNMS FMP, Administration, New and Emerging Issues, STRATEGY RP-1; MBNMS FMP, New and Emerging Issues, STRATEGY EI-1, STRATEGY EI-2

Boundary Modifications

STRATEGY AD-10: *To ensure that CBNMS' boundary reflects and is inclusive of the area's natural resource and ecological qualities, including the biogeographic representation of the area, the sanctuary will develop and implement an analytical process designed to evaluate boundary alternatives relative to CBNMS using the best available information and decision-making tools.*

Activity AD-10 Develop an incremental process for gathering information, analyzing data, and developing a recommendation on boundary options. This process will be in place, and executed

as appropriate, based on the identification of specific areas outside the current sanctuary boundary that warrant further investigation.

- A. Review and analyze the biogeographic assessment to make an initial determination if there are particular areas that require immediate attention.
- B. Identify additional data sets not provided by the biogeographic assessment that may be needed for further analysis. In particular, identify smaller scale features and refined spatial scales that were either not available, or not analyzed on a fine enough scale by the biogeographic assessment.
- C. Conduct a literature search to identify additional data sets (also see research recommendations).
- D. Identify sanctuary research needs (opportunistic and planned) to answer boundary questions. Data needs to be received by the sanctuary in a format that is usable for answering boundary questions.
- E. Propose that SAC assemble a working group with broad-based stakeholder representation and scientific expertise.
- F. Develop a framework for quantitative analysis and evaluation of data by working group.
- G. The working group should strive to come to consensus on building a recommendation(s) on boundary options. The following recommended criteria could be used by the working group to evaluate different boundary options:
 - A boundary change should:
 - i. Provide additional comprehensive and coordinated conservation and management of this area.
 - ii. Ensure the maintenance of the area's natural resource and ecological qualities, including its contribution to biological productivity, maintenance of ecosystem structure, maintenance of ecologically or commercially important threatened or endangered species or species assemblages, maintenance of critical habitat of endangered species, and the biogeographic representation of the site.
 - iii. Increase protection, and where appropriate, restore natural habitats, populations, and ecological processes.
 - iv. Enhance public awareness, understanding, appreciation, participation, stewardship, and sustainable use of the marine environment, and the natural, historical, cultural, and archeological resources of the marine area.
 - v. Enhance coordination of scientific research and long-term monitoring of the resources of the marine area.

- H. The working group will forward their recommendation to SAC for their review and comments before forwarding a final recommendation to the sanctuary superintendent.

Potential Partnerships: NCCOS, SAC, research community

Complementary Strategies: CBNMS FMP, Ecosystem Protection, STRATEGY FA-4 and FA-6; Conservation Science, STRATEGY CS-1, STRATEGY CS-2, AND STRATEGY CS-7

Planning and Evaluation

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 sanctuary program's existence, but a process for integrating a system for performance evaluation has not been implemented up to now. 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 sanctuary 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 FMP, however, CBNMS is initiating the performance measurement process for the sanctuary and, therefore, is beginning to establish a baseline of information that can be used by the NMSP to evaluate effectiveness of both the site and the sanctuary program over time.

Program Description

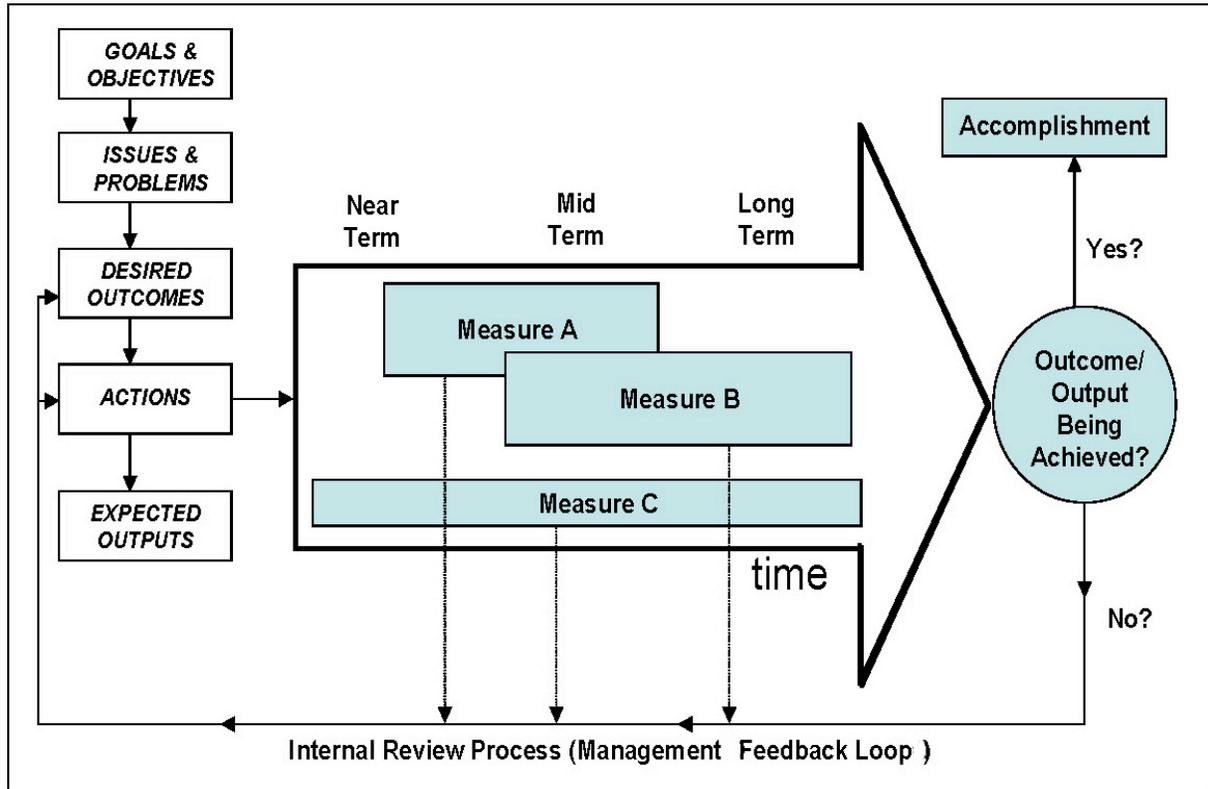
As part of an effort to improve overall management of sanctuaries, ongoing and routine performance evaluation is a priority for the NMSP. Both site-specific and programmatic efforts are underway to better understand the sanctuary program's ability to meet the objectives outlined in each of the action plans. 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 management identify resource gaps so that 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 possible, 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.

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Throughout the management plan review process, CBNMS staff worked towards developing performance measures for the action plans. The principal objective of these measures is to present a set of performance targets that demonstrate progress towards desired outcomes for each action plan. The flowchart (page 82) depicts the basic idea behind this process, which will be implemented in all sanctuaries undergoing management plan review.

NMSP Performance Evaluation Logic Model



Priority resource management issues were identified during the management plan review process relative to CBNMS’ goals and objectives. Staff developed desired outcomes (targets based on a desired change in the status quo of the ecosystem, such as the sanctuary’s environmental condition or management capacities). Strategies (as identified in each of the action plans) are then grouped under the relevant outcomes. Expected outputs, or products, are also identified. Performance measures are then created, which identify the means by which the sanctuary will evaluate its progress towards achievement of the desired outcomes (based on goals and objectives). As represented by the large arrow in the figure above, measures were 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. Outcomes that are being achieved and outputs that are being produced are reported as accomplishments; the inability to achieve outcomes or produce outputs is reported as an area that is falling short of target. In these areas, staff will work to identify the obstacles that

are preventing management from reaching targets (represented in the figure above by the arrow that runs along the bottom of the graphic). This internal review is one of the primary benefits of the performance evaluation process as it provides an opportunity for staff to think carefully about why particular strategies in the management plan are not meeting stated targets and how they can be altered to do so.

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 the sanctuary program's performance evaluation through the NMSP Report Card.

The NMSP Report Card will use action-plan-specific performance information from the site management plans (along with information on headquarters-specific tasks) to evaluate the sanctuary program's performance in a wide variety of functional areas (such as education, research and monitoring, planning and policy, enforcement, and operations). Although this will be an internal process, results will be compiled, synthesized and then reported by the NMSP Director in a public document (such as the *State of the Sanctuary Report*).

Performance Evaluation Goal

1. Ensure that CBNMS' management plan strategies are producing effective results in addressing the priority resource management issues identified in the management plan.

Performance Evaluation Objectives

1. CBNMS will continuously measure and evaluate the successes and challenges of the strategies put forth in the five-year management plan.
2. Based on the outcome of these evaluations, the sanctuary will modify existing programs and make recommendations for the future that best support the sanctuary's primary objective of ecosystem protection.

Performance Evaluation Strategy

STRATEGY AD-11: *Develop and make use of performance indicators to measure effectiveness of the management of the sanctuary as a whole, as well as to evaluate specific strategies within the management plan.*

Activity 11.1 CBNMS staff will conduct routine performance evaluations to collect and record data on sanctuary performance over time. Using this data, staff will determine the effectiveness of management plan strategies 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.

Activity 11.2 Results from performance monitoring will be collected, analyzed and used to populate and inform the NMSP Report Card and, when necessary, National Ocean Service (NOS) or NOAA-wide performance requirements. Performance data may also be presented in a

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site-specific annual report that would explain each measure, how it was evaluated, the site team that conducted 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 that need 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).

Activity 11.3 An annual assessment on the implementation of the CBNMS Management Plan will be conducted. This assessment will be conducted internally by CBNMS staff who will consider the progress and effectiveness of activities implemented over the previous year. In this activity, successes or weaknesses of specific activities will be determined. Activities deemed less than successful in achieving desired outcomes will be addressed to correct or improve the outcomes/outputs. Successful activities will be recognized with application of positive lessons learned to other programs.

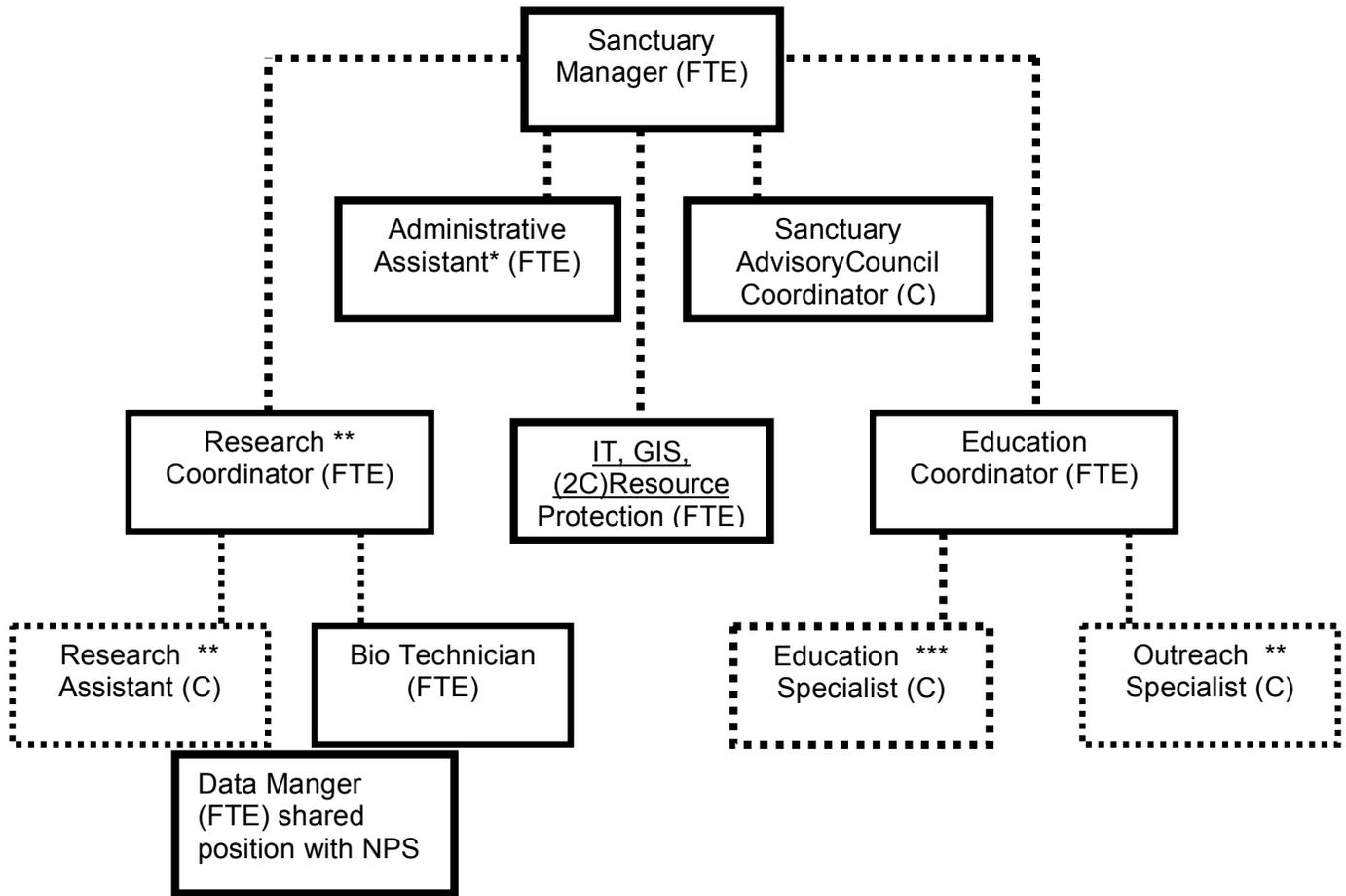
Activity 11.4 As the NMSP continues to increase the rigor of its internal evaluation process, CBNMS will begin to increase the frequency with which partners collaboratively join with CBNMS in assessing the effectiveness of joint-management actions (those actions conducted primarily in partnership with others). Toward this end, regular evaluation of partner dependent strategies within this management plan is proposed.

Potential Partnerships: NMSP, SAC, strategy partners

Complementary Strategies: All strategies

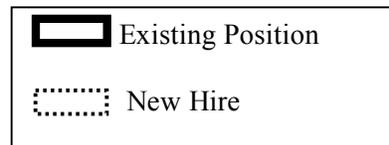
Cordell Bank National Marine Sanctuary

Proposed Staffing Plan



- * Requires budget and finance experience
- ** To be located in Bodega Bay
- *** Requires web experience

FTE Full Time Government Employee
C Contractor



CBNMS Administration

Timeline

| ADMINISTRATION STRATEGY | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--|-----------|-----------|-----------|-----------|-----------|
| Strategy AD-1: Facilities | | | | | ▶ |
| Strategy AD-2: Staffing | | | | | ▶ |
| Strategy AD-3: Partnerships | | | | | ▶ |
| Strategy AD-4: Strengthen structure and function of sanctuary advisory council | | | | | ▶ |
| Strategy AD-5: Interagency Coordination | | | | | ▶ |
| Strategy AD-6: Protected Resources Enforcement Plan | | | | | ▶ |
| Strategy AD-7: Emergency Response | | | | | ▶ |
| Strategy AD-8: Regulations and Permitting | | | | | ▶ |
| Strategy AD-9: New and Emerging Issues | | | | | ▶ |
| Strategy AD-10: Boundary Modifications. | | | | | ▶ |
| Strategy AD-11: Planning and Evaluation | | | | | ▶ |

Legend:

-  **Ongoing Activity**
-  **Planning Stage**
-  **Completed Action**

CBNMS Administration

Budget

| ADMINISTRATION STRATEGY | Estimated Annual Cost (1000's)* | | | | | Total Est. 5-YR Cost (1000's) |
|--|---------------------------------|--------------|--------------|--------------|--------------|-------------------------------|
| | YR 1 | YR 2 | YR 3 | YR 4 | YR 5 | |
| Strategy AD-1: Develop additional facilities through partnerships | \$8 | \$8 | \$8 | \$8 | \$8 | \$40 |
| Strategy AD-2: Acquire basic staffing requirements to support administration and program areas | \$80 | \$95 | \$185 | \$285 | \$365 | \$1,010 |
| Strategy AD-3: Develop partnerships to assist in the implementation of the management plan | \$24 | \$24 | \$24 | \$24 | \$24 | \$120 |
| Strategy AD-4: Clearly define a leading role for the advisory council in providing advice to the sanctuary manager | \$26 | \$26 | \$26 | \$26 | \$26 | \$130 |
| Strategy AD-5: Formalize intra- and interagency efforts | \$8 | \$8 | \$8 | \$8 | \$8 | \$40 |
| Strategy AD-6: Create a regular, on-going enforcement presence in sanctuary waters and compliance with sanctuary regulations | \$15 | \$15 | \$15 | \$15 | \$15 | \$75 |
| Strategy AD-7: Review and revise emergency response plan | \$10 | \$10 | \$10 | \$10 | \$10 | \$50 |
| Strategy AD-8: Continuously measure and evaluate activities | \$5 | \$5 | \$5 | \$5 | \$5 | \$25 |
| Strategy AD-9: Continuously evaluate the effectiveness of current sanctuary regulatory language and permitting authority | \$15 | \$15 | \$15 | \$15 | \$15 | \$75 |
| Strategy AD-10: Track existing, emerging, and potential future issues | \$0 | \$0 | \$0 | \$5 | \$5 | \$10 |
| Strategy AD-11: Continuously measure and evaluate activities | \$15 | \$15 | \$15 | \$15 | \$15 | \$75 |
| Total Estimated Annual Cost | \$206 | \$221 | \$311 | \$416 | \$496 | \$1,650 |

The sanctuary's base budget is available each year from appropriated funds.

There is both availability of and opportunity to receive additional funding from appropriated funds.

The estimates do not take into account increasing personnel costs each year or inflation.

The estimates do not take into account unexpected events or emergencies or unforeseen projects.

