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## **Channel Islands National Marine Sanctuary**

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## **Social Science Plan (2007 - 2010)**

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### **Socioeconomic Research & Monitoring of Marine Reserves and Conservation Areas**



**August 2007**

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

Cover Photo: Private boater and hook and line fisherman,  
Willows Anchorage, Santa Cruz Island (Chris LaFranchi 2006)

This document is the social science plan for the Channel Islands National Marine Sanctuary (CINMS or Sanctuary). This plan will guide Sanctuary management of social science activities from 2007 – 2010. This document was prepared in May 2007 by Chris LaFranchi (Social Science Coordinator, CINMS, National Marine Sanctuary Program, National Ocean Service), and Bob Leeworthy (Special Projects Leader, Coastal and Ocean Resource Economics Program, National Ocean Service).

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# EXECUTIVE SUMMARY

## Overview

Designated in 1980, the Channel Islands National Marine Sanctuary (CINMS or Sanctuary) consists of an area of approximately 1128 square nautical miles (nmi) of coastal and ocean waters, and the submerged lands there under, off the southern coast of California. The Sanctuary boundary begins at the Mean High Water Line of and extends seaward to a distance of approximately six nmi from the following islands and offshore rocks: San Miguel Island, Santa Cruz Island, Santa Rosa Island, Anacapa Island, Santa Barbara Island, Richardson Rock, and Castle Rock (the Islands).

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

Since 1981, several public agencies<sup>1</sup> have been monitoring the condition of marine resources in the Channel Islands. Depletion of a number of species, such as abalone, spiny lobsters, California sheephead, rockfish, and red sea urchins, has been documented- largely in relation to human activities (Davis, 2005). In 1998, the Channel Islands National Park and a group of recreational anglers (Channel Islands Marine Resources Restoration Committee) asked the California Department of Fish and Game (DFG) to create a network of “no-take” marine reserves. At that time, marine reserves were perceived as a relatively new tool and approach to marine management and stewardship, at least in the Channel Islands.

In April 2003, a network of no-take marine reserves was established in the state-waters of the sanctuary by the State of California. In 2006, to provide protection to the seafloor and groundfish, NOAA Fisheries Service designated the federal water portions offshore of the state marine zones as habitat areas of particular concern and prohibited bottom fishing under the Magnuson-Stevens Fishery Conservation and Management Act. In July 2007, the sanctuary established additional protection in the federal-water zones under the National Marine Sanctuaries Act. These reserves prohibit the take of all living, non-living and geological resources in over 300 square miles or 21% of the sanctuary; lawful fishing is still allowed outside marine reserves.

## Socioeconomic Monitoring

Under a state and federal partnership, a commitment was made in 2003 to monitor and adaptively manage the marine reserve network. In particular, a commitment was made to

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<sup>1</sup> These agencies include the National Park Service (NPS), California Department of Fish and Game (DFG), and the Channel Islands National Marine Sanctuary (CINMS).

monitor biological and socioeconomic changes occurring inside and outside the reserves and cooperatively and adaptively manage them<sup>2</sup>. The overall goal of socioeconomic monitoring is to identify marine reserve effects on human spatial use of the Sanctuary, economic values, local and regional economic impacts, and the knowledge, attitudes and perceptions of Sanctuary users.

## **This Plan**

This social science plan is an explicit three-year effort to acquire and analyze scientifically rigorous socioeconomic data on all human uses of the Sanctuary. The spectrum of human uses is categorized as consumptive (e.g., commercial and recreational fishing, spear fishing), non-consumptive (e.g., kayaking, diving), passive (e.g., learning about the sanctuary through reading), and education and research related (e.g., lectures and exhibits). A strategy for addressing reserve effects to each of these user groups is included in this plan.

Data are required to address three main objectives: (i) test socioeconomic predictions made prior to marine reserve network imposition, (ii) monitor human-sanctuary interactions to inform adaptive management of marine reserves, and (ii) contribute to an ecosystem-based approach to management.

In 2003, over 100 scientists, agency staff, and stakeholders met to provide formal research and monitoring recommendations. With further input from CINMS stakeholders and scientists, these formal recommendations were used to devise the three-year program of research and monitoring presented in this plan, including a strategy for each user group, a consultative process for working with stakeholders, and process for establishing priorities and allocating funds.

**Outline of recommended research:** This plan presents, by user group, the full spectrum of recommended actions for acquiring and analyzing data, and using findings to inform the adaptive management process.

1. Research questions to be addressed: These are the research questions, referred to in Figure 1, that are pertinent to understanding reserve effects and, where possible, net socioeconomic benefits of marine reserves.
2. Information required: The data and associated analyses that are necessary to address research questions.
3. Research and monitoring activities: Specific activities that will provide the information required to address research questions.
4. Integrated assessment: Notes on incorporation of an ecosystem-based approach to management.

A strategy is defined for each user group that presents the abovementioned items, defines priorities, differentiates funded from planned activities, and identifies who will be responsible for each activity.

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<sup>2</sup> Section 309(b)(1)(a) of the National Marine Sanctuary Act stipulates that Sanctuaries “ support, promote, and coordinate research on, and long-term monitoring of, sanctuary resources and natural processes that occur in national marine sanctuaries, including exploration, mapping, and environmental and socioeconomic assessment.”

**Priorities and process for funds allocation:** The plan identifies the order in which activities will be undertaken and the principals used to derive priorities and allocate new funds.

**Consultative process:** It is recognized in this plan that socioeconomic research and monitoring cannot take place without cooperation from Sanctuary users, and that human surveys are an important tool for collecting spatial use data. A consultative process is presented that defines protocols for interacting with users, sharing information, and, where necessary, keeping data confidential (with few exceptions, all data are made publicly available).

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# INTRODUCTION

## Purpose

This three-year plan presents a set of research and monitoring activities, identified through formal planning processes, that contribute to our understanding of the socioeconomic dimensions of marine protected areas (MPAs) in the Channel Islands National Marine Sanctuary (CINMS or Sanctuary).<sup>3</sup> It has several purposes:

1. To explain how the CINMS will acquire data and perform analyses that (i) Enhance our understanding of how marine reserves affect human users of the Sanctuary (e.g., in terms of human motivations, values, and perceptions), and (ii) Enhance our understanding of human spatial use patterns and anthropogenic pressures in the Sanctuary, especially how such patterns and pressures may be changing after imposition of marine reserves in 2003.
2. To inform discussions with potential outside funding sources and academic research partners, including foundations, non-profits, universities, and other public agencies.
3. To inform discussions with CINMS user groups who may have an interest in participating in or supporting research and monitoring.

This plan describes how research and monitoring will be prioritized, the anticipated timeframe, and collaboration with CINMS partners. It does not explore implementation, in terms of developing dedicated capacity, institutional structure, and strategy. For a thoughtful discussion on monitoring in California's marine protected areas, see Chornesky, 2005.

## Background

Under a state and federal partnership, MPAs were established in state waters (0-3 nautical miles from shore) within the CINMS in 2003. The reserves prohibit the take of fish and other biological organisms and abiotic material, such as rocks and cultural artifacts. Diving, kayaking, wildlife viewing, boating, and other non-consumptive uses are allowed in the reserves. Along with the reserve designations, a state and federal partnership is committed to monitoring biological and socioeconomic changes occurring inside and outside the reserves and cooperatively and adaptively managing them<sup>4</sup>. To date, the California Department of Fish and Game (CDFG) has led coordination of biological monitoring and the CINMS has led socioeconomic monitoring. Additional information on the reserves and general background can be found at [www.channelislands.noaa.gov/](http://www.channelislands.noaa.gov/).

In conjunction with the establishment and subsequent monitoring of MPAs within the Sanctuary boundaries, the application of social science to inform CINMS policy and management has been growing steadily in a number of ways, including:

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<sup>3</sup> Two types of marine protected areas were designated in the CINMS: no-take marine reserves in which all extractive activities are prohibited and marine conservation areas, which allow limited take of certain CINMS resources.

<sup>4</sup> Section 309(b)(1)(a) of the National Marine Sanctuary Act stipulates that Sanctuaries “ support, promote, and coordinate research on, and long-term monitoring of, sanctuary resources and natural processes that occur in national marine sanctuaries, including exploration, mapping, and environmental and socioeconomic assessment.”

1. In 2002, National Oceanic and Atmospheric Administration (NOAA) economists estimated the maximum potential socioeconomic impacts associated with reserves proposed in state waters, primarily using data from existing sources.
2. When reserves were established in 2003, a commitment was made, under a state/federal partnership, to monitor socioeconomic conditions.
3. Also in 2003, a three-day reserve monitoring workshop was held, during which scientists, policy-makers, and stakeholders formulated recommendations for future actions, including the hiring of a socioeconomic coordinator.
4. In 2005, a coordinator was hired on a contractual basis to launch socioeconomic monitoring of reserves (and test above-mentioned predictions).
5. In 2005, a draft plan for socioeconomic monitoring, based on formal recommendations made in 2003, was established and in 2006 vetted by CINMS users.
6. In 2005, a significant step in the development of CINMS socioeconomic monitoring was launched: a multi-year study of non-consumptive uses, which will fill a gap in scientific data on a group of CINMS users and intended reserve beneficiaries.
7. In 2007, this study was expanded to include consumptive forms of recreations, including recreational fishing and spearfishing.

## Overall Program Goals and Objectives

As MPA designations in state and federal waters are completed, the question arises as to whether MPAs, including reserves, can be adaptively managed to realize their full potential. How accurate were the original estimates of maximum potential socioeconomic impact? Are non-consumptive users receiving any net benefits from reserve designation? Overall, do CINMS reserves verifiably contribute to the maintenance and enhancement of productive and resilient ecosystems that sustainably provide what humans want and need? Because the CINMS is a human-dominated ecosystem, answering these questions with scientific information is an essential aspect of a successful monitoring program.

The overall goal of socioeconomic monitoring is to identify marine reserve effects on human spatial use of the Sanctuary, economic values, local and regional economic impacts, and the knowledge, attitudes and perceptions of Sanctuary users. In support of this goal, the socioeconomic monitoring program has three primary objectives:

1. Test socioeconomic predictions

Socioeconomic analyses predict that the short-term impacts of reserves should be relatively small, while the long term net benefits should be potentially large. Without long-term monitoring, it is difficult to know whether the short term costs of reserves, such as lost fishing opportunities, are outweighed by long-term benefits. As such, an objective of socioeconomic research and monitoring is to test these predictions and provide a scientific basis for adaptive management. A necessary task is to monitor use patterns and net benefit flows, and, where possible, attribute observed changes to marine reserves, other human actions, state and federal management, or natural occurrences and

cycles. Monitoring requires the acquisition of baseline data on human spatial use patterns and associated net socioeconomic benefit flows.

## 2. Monitor human-sanctuary interactions to inform adaptive management

Data and analysis of human-sanctuary interactions are needed for multiple purposes: (i) to inform future management and policy decisions by the National Marine Sanctuary Program (NMSP) and its partners, (ii) to underpin collaboration, proposals, and negotiations with other agencies (e.g., fishery management agencies), and (iii) to support management of human-sanctuary interactions at a relatively fine spatial scale, which is important to management of areas that are heavily used, valued, and potentially impacted ecologically, both inside and outside of MPAs. Marine reserves and, to varying degrees, state and federal management of marine resources, are designed to be adaptive. State and federal entities are prepared to adapt or revise management and policies – reserves included - if, for example, such policies and management are shown not to be achieving desired outcomes and objectives<sup>5</sup>. Understanding and tracking human use of marine resources, furthermore, is critical to (i) fostering a cooperative and public management process in which all stakeholders have reliable information they can use to represent their interests, and (ii) anticipating problems and avoiding conflicts between different sets of marine resource users.

## 3. Contribute to an ecosystem-based management approach

Humans derive benefits by interacting with CINMS ecosystems and, in the process, influence ecosystem function, productivity, and resilience. Understanding human spatial use patterns is essential to marine ecosystem-based management (EBM), which entails an integrated approach to management that considers the entire ecosystem, including humans. Socioeconomic research and monitoring provides data that are necessary to understanding biological/ecological changes that may in part be explained by anthropogenic disturbances; hence, it allows marine managers to account for a greater range of anthropogenic disturbances and more completely explain and anticipate biological/ecological changes associated with MPAs.

## **Program Coordination and Management**

Management and coordination of socioeconomic monitoring is currently the responsibility of Chris LaFranchi, CINMS social science program coordinator. Mr. LaFranchi is employed on a contractual basis by the CINMS and works directly with the Resource Protection Coordinator. Mr. LaFranchi is the founder of a small, non-commercial/non-partisan organization ([www.naturalequity.com](http://www.naturalequity.com)), under which he raised matching funds used to finance the multi-year study of non-consumptive uses.

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<sup>5</sup> It should be noted that a certain length of time, perhaps more than 6-10 years, might be required before it can be shown whether some management and policy actions, such as marine reserves, achieve their objectives. Moreover, monitoring of both biological and socioeconomic effects is needed to make such a determination.

## Plan Development

A three-year socioeconomic research and monitoring plan is presented that draws from a set of formal recommendations made during a meeting of more than 100 CINMS stakeholders and experts in 2003. Recommendations made in 2003, while extensive, constitute a ‘menu of options’ with associated costs; they did not form a concrete plan that could be implemented. This final plan takes these options and prioritizes and develops them into a concrete plan for a finite period.

The following steps were taken to develop the three-year plan:

1. Review of recommendations made in April 2003
2. Direct consultation with CINMS stakeholders through two workshops (see Appendices for Workshop Reports)
3. Application of prioritization criteria (explained below)
4. Development of a draft plan for review by stakeholders
5. Final priorities set after review by the state/federal partnership that oversees CINMS marine reserve research and monitoring

The core of the proposed plan is a set of research and monitoring activities, which are divided into two major categories: 1. On-going and planned research, data collection, and analysis (funded), and 2. New and original research that may necessitate the collection of new data (not funded). On-going research and data collection that are part of the plan include the on-going study of non-consumptive uses in the CINMS (to fill a major information gap) and the updating of available data sets and analyses that were conducted to estimate the socioeconomic impacts of establishing no-take marine reserves in the CINMS. New and original research will also be conducted as funds for such efforts become available. The three-year plan serves to establish priorities for new research and/or data collection that will be conducted as funds materialize, and allow stakeholders to work cooperatively with the CINMS Social Science Program. Formal invitations to stakeholders and experts were made in 2005 to collect input regarding research methods and priorities. A review by stakeholders of the draft plan was conducted prior to finalization of this plan. Ultimately, selection and prioritization of activities is conducted by the state/federal partnership.

Research and monitoring activities are broken down according to five user groups defined for the CINMS:

1. Commercial fishing
2. Recreational fishing
3. Non-consumptive use
4. Non-use/passive use
5. Education, research, and outreach

## Integration With Other Efforts

There are many other plans and activities that serve as either drivers for this Social Science Plan or for which this plan needs to integrate efforts. Each is individually explained below:

CDFG Biological Monitoring: This plan is of key importance and provides the basis for integrating the biophysical sciences with the social sciences.

[http://www.dfg.ca.gov/mrd/channel\\_islands/monitoring.html](http://www.dfg.ca.gov/mrd/channel_islands/monitoring.html)

Deepwater Biological Monitoring Plan: NOAA has extended the network of existing marine protected areas into the deeper waters of the CINMS. A well-structured monitoring program is required to assess effectiveness. Details can be found online:

[http://sanctuaries.noaa.gov/science/conservation/pdfs/cinms\\_workshop.pdf](http://sanctuaries.noaa.gov/science/conservation/pdfs/cinms_workshop.pdf)

NMFS Social Science Plan: This plan identifies opportunities to partner with NOAA's National Marine Fisheries Service (NMFS) on social science projects where there are overlapping issues.

NOS Social Science Plan: This National Ocean Service (NOS) plan serves as a driver and identifies numerous opportunities for integrated efforts with State, Federal, and private partners to leverage resources.

NOAA, Sanctuary Planning Process: This plan will serve as a driver in identifying priorities of the Sanctuary Program.

CDFG, California Recreational Fishing Survey (CRFS) Program: This effort provides a basis for integrating efforts to obtain information important to this plan.

CDFG, Commercial fisheries landing receipt and log book databases: this effort provides important information and the basis of efforts to obtain additional information required in this plan.

## Stakeholder Involvement: Consultative and Cooperative Process for CINMS

Socioeconomic research and monitoring requires close consultation and cooperative efforts with stakeholder representatives. In the case of the CINMS, such consultation is achieved by first working with the Sanctuary Advisory Council (SAC) and, to the extent possible, by directly communicating with stakeholder representatives and social science researchers. Close consultation allows for the exploration of collaborative research and various other options that hold promise for maximizing the efficiency with which research is conducted, tapping the local knowledge of stakeholders, and generally enhancing the likelihood that stakeholders will benefit from the CINMS Social Science Program.

As part of this plan, a consultative and cooperative process for stakeholder involvement in the CINMS is presented below.

### ***Background***

In response to requests at public meetings, a “working” consultative process for CINMS users was developed. Users specifically requested a structured process for being consulted on matters relating to their use of CINMS natural resources and participation at public meetings. An approach toward developing a consultative process for all CINMS users is presented below. Our intent is to propose an initial process that can be adapted over time to form an increasingly functional, efficient, and equitable process for involving public users in the CINMS reserve monitoring and adaptive management process.

### ***The Need For a Consultative Process***

The CINMS reserve monitoring effort is one of several multi-stakeholder processes that are underway in California to either monitor existing MPAs or evaluate the possibility of establishing new ones. These efforts are relevant to both state and federal waters and will affect a variety of consumptive, non-consumptive, and passive marine resource users.

If designed and managed properly, reserves could advance the economic health and sustainability of fisheries and non-consumptive uses, such as diving, kayaking, and wildlife viewing. Reserves may also enhance opportunities for research and education<sup>6</sup>. A key issue is whether short-run costs (e.g., lost or forgone fishing opportunities) will be outweighed by long-run benefits. In other words, will long-run net benefits of MPA establishment be positive?

The long-run success of MPAs will also be affected by how CINMS users perceive the MPA establishment and monitoring process and its outcomes. CINMS user perceptions are influenced by the way they are allowed to participate in public forums, the way their input is used, the way pertinent information is shared, and their ability to organize and represent themselves. Consequently, an effective consultative process is entirely relevant to the long-run success of MPAs established in the CINMS.

Moreover, the process of monitoring the effect MPAs are having on CINMS users will greatly benefit from honest and mutually beneficial participation by CINMS users. This is because effective monitoring requires the collection of CINMS user data, some of which are considered by users to be sensitive or proprietary in nature. For example, study of how the costs and earnings of commercial fishing or recreational charter boat fishing may be changing over time, perhaps in conjunction with MPAs, may require that these private enterprises agree to release cost and earnings data. A pre-defined process for consulting CINMS users – and sharing information about MPA policies and offering opportunities for CINMS users to provide input – can help to establish the trust between CINMS users and policy makers that is crucial to social science research and monitoring.

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<sup>6</sup> Achieving the socioeconomic and environmental objectives of MPAs, however, requires that, in conjunction with scientific research and analysis of the coastal and marine ecosystems, protected areas be developed using the best available socioeconomic data to fully understand socioeconomic impacts.

A consultative and cooperative process can serve several functions:

1. Raising awareness among CINMS users and the public about MPAs and how socioeconomic costs and benefits are measured over time.
2. Providing CINMS users with opportunities to obtain information that can be used to advance and represent their interests
3. Providing opportunities for policy and decision-makers to learn from informed CINMS users in ways that will enhance their capacity to minimize short-run costs and avoid or resolve conflicts.
4. Providing a forum for brokering collaborative research, policy, and decision-making, and actively mitigating conflict.
5. Complementing the CINMS education and outreach program by informing avid CINMS users who have assumed leadership roles in their respective user groups and who represent and communicate with large groups of CINMS users

### ***Guidelines For a Functional Process***

The CINMS Social Science Program:

- Is committed to linking CINMS users, regulators, and researchers.
- Does not pursue an agenda or advocate for one or more user groups, but helps CINMS users use data adopted by the CINMS Social Science Program and develop and refine research to be undertaken and/or financed by CINMS users<sup>7</sup>.
- Is committed to working with CINMS users that demonstrate a sincere and legitimate interest in using science and collaboration to find new and better solutions to coastal resource problems and conflicts, but does not guarantee or predict the outcomes of scientific inquiry or collaboration.<sup>8</sup>
- Is committed to bringing the highest quality of natural and social science to bear on CINMS research and monitoring issues.
- Is committed to making the results of collaborative endeavors available to the public.
- Strives to ensure that research designs, methods, data collection, and analysis are the best available given the circumstances and level of funding.

The CINMS Social Science Program is committed to a public meeting process that:

- Presents equal opportunities for participation across all stakeholder groups;
- Fully discloses pertinent information that is timely and in a form that is accessible to virtually all CINMS users;

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<sup>7</sup> At the discretion of the social science coordinator, he or she shall assist CINMS users in 1) Using available data and analyses to inform their own ideas and perspectives, 2) Finding technical assistance needed to better understand, design, or propose specific research methods, and 3) Understanding how existing and planned research can be applied in the context of the expressed needs of CINMS users.

<sup>8</sup> Note that not all CINMS policy or management decisions will be subject to a consultative and/or public process, especially when, for example, a decision or management action is urgently needed. In such cases, however, the CINMS Sanctuary Advisory Council is often consulted before a decision is made.

- Can, when requested, ensure that sensitive information shared by CINMS users is kept confidential (yet, as mentioned, can still be used to undertake independent and verifiable analyses);
- Creates opportunities to track, verify, and corroborate over time the views and interests of CINMS users (for example, to help decision-makers and other CINMS users to understand who is being represented by stated interests and positions and how such positions and interests may be changing);
- To the extent possible, minimizes the barriers to participation by CINMS users (for example, scheduling meetings at times that are least likely to conflict with income-earning activities such as commercial fishing).

### ***Structuring a Consultative Process***

To adhere to the above guidelines, we propose several structural elements:

#### ***Provision of Information***

Provision of information on topical issues, meeting schedules, technical definitions and concepts, and relevant reports will be made available using several means:

- E-mail communication, using several list serves and a list of invitees e-mail addresses used to announce CINMS public meetings
- Website postings
- Hard copies of some announcements and reports posted at the fuel docks in Ventura and Santa Barbara harbors

#### ***Provision and Management of Data***

All data that is professionally peer-reviewed and adopted by the CINMS social science program will be publicly displayed using one or more of the means cited above EXCEPT data and information that is provided under the condition that it is kept confidential. Such confidential data shall be collected and managed by an individual or group of individuals that has been pre-approved by the set of CINMS users that agree to release confidential data. Upon agreement with such users, one or more independent parties will review and analyze the confidential data. The results of independent analyses and reviews of confidential data shall be made publicly available, except in such cases where it can be shown that release of such analyses and reviews would compromise the confidentiality of the data or data source. The CINMS social science coordinator will work directly with MPA planners and CINMS users and associated working groups to help interpret data collection methods, raw data, and data analysis. The coordinator will speak to the technical quality of the data and analysis, but will not attempt to represent the position of individual CINMS users or user groups.

#### ***Direct Consultation With CINMS Users***

Direct consultation between the CINMS social science coordinator and CINMS users will occur in four ways:

1. Through public meetings that adhere to the “guidelines” described above



2. Through informal meetings, for specific purposes, at Ventura Harbor, Santa Barbara Harbor, and other locations that may be requested by CINMS users and agreed to by the social science coordinator<sup>9</sup>
3. Through e-mail exchanges<sup>10</sup>
4. Through a limited number of phone calls<sup>11</sup>

## CINMS Adaptive Management

The relationship between proposed research and monitoring activities and CINMS adaptive management can be traced through a series of steps (see Figure 1 below). The capacity to adaptively manage requires research and monitoring of human activities in the sanctuary to determine the flow of net socioeconomic benefits such activities provide. Research and monitoring begins by first defining a set of questions, pertaining to specific human activities and related benefits, that can be answered with scientific inquiry. For example, will existing charter businesses that rely on recreational fishing in the CINMS be affected by marine reserves in the short and long-run? Answering research questions will require collection of specific data sets and analyses. Determining whether charter fishing businesses (e.g., commercial passenger

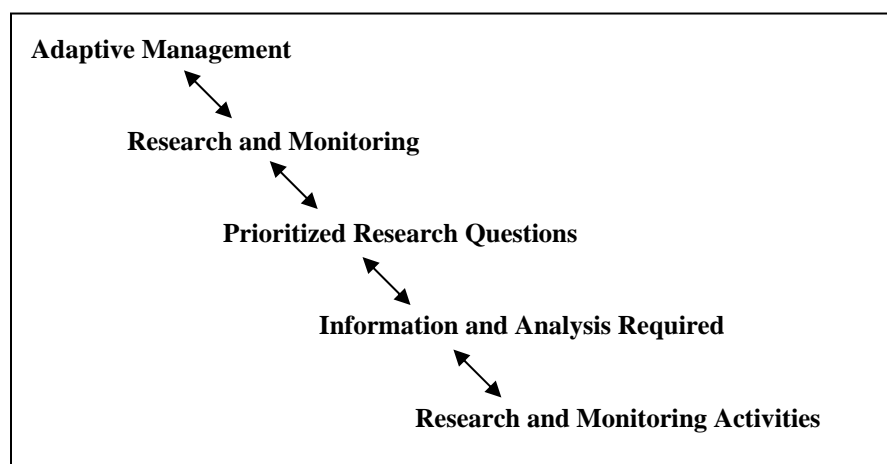


Figure 1. Socioeconomic Research and Monitoring Activities and CINMS Adaptive Management.

fishing vessels, CPFVs) are impacted by marine reserves, for example, requires information on recreational fishing spatial patterns, associated expenditures, and charter business income and employment. Research and monitoring activities are designed to provide information and analysis to address the research questions that are most pressing to adaptive management – considering probable

<sup>9</sup> The CINMS social science coordinator shall, on a limited basis, be available to meet with small groups of users (~15 or fewer) to informally discuss issues pertinent to CINMS MPA monitoring and research. Issues could include, but would not be limited to, collaborative research and related activities, discussing topics that are sensitive or proprietary in nature, and providing briefings to some users that can demonstrate that they are unable to participate in public meetings. The CINMS social science coordinator may also choose to convene such informal meetings with users who do not habitually participate in CINMS public meetings, but who may be able to contribute information that is critical to development of the CINMS social science program.

<sup>10</sup> The CINMS social science coordinator may not be able to respond to all e-mail exchanges, depending on the workload experienced at the time e-mails are received.

<sup>11</sup> The CINMS social science coordinator shall, on a limited basis, be available to answer questions, receive input, and schedule informal meetings by phone.

costs, available funds, and technical feasibility of research required to address questions.

By answering prioritized research questions and presenting findings, social science undertaken by or in collaboration with the CINMS Social Science Program credibly informs<sup>12</sup> CINMS policy and management actions.

## Marine Ecosystem-Based Management

Adaptive management will be subject to a marine ecosystem-based approach, or one that considers the entire ecosystem and all its functions, include the role and effect of human use.

Humans derive benefits from marine ecosystems by interacting with them. Marine ecosystem productivity, structure, and function change over time because of human and non-human interactions within and between ecosystems. Such changes affect the level of potential benefits that humans are able to derive from human-ecosystem interactions. Thus, the benefit that humans derive through their ecosystem interactions is affected by biological/ecological and socioeconomic outcomes, which are, of course, interdependent.

To answer socioeconomic research and monitoring questions, consequently, will require an integrated assessment that is consistent with marine ecosystem-based management (see McLeod *et al*). An integrated assessment requires information from both biological/ecological and socioeconomic monitoring.

An integrated assessment will require some time period for collecting and preparing information that reflects time periods long enough for marine reserves to have impacts. This will vary by species and so some choices will have to be made about which species/species groups to include in the assessment. While all ecosystems are strongly interactive, the consequences of some species' interactions can produce large ecosystem responses. Thus, an integrated assessment will require identifying and focusing on the role of key interactions, not all possible interactions. Species of interest in the Channel Islands have been identified in the Channel Islands Marine Protected Area Monitoring Plan (see Table 1 below). While the integrated assessment may not be in the three-year monitoring plan, it must be the basis of information collection in this plan.

The CDFG, NOAA, National Park Service and academic partners are committed to monitoring focal species abundance, sizes/compositions, indices of fish recruitment, and habitat characteristics. Information on the CDFG plan can be found at [http://www.dfg.ca.gov/mrd/channel\\_islands/monitoring.html](http://www.dfg.ca.gov/mrd/channel_islands/monitoring.html).

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<sup>12</sup> Credible information, for the purpose of this plan, is defined as information and findings resulting from scientific studies that have been formally reviewed by a set of two or more professional peer reviewers who, having reviewed study methods and findings in detail, recommend the adoption of study findings into the CINMS Social Science program.

Common Name	Scientific Name
<b><i>Invertebrates</i></b>	
Aggregating anemone	<i>Anthopleura elegantissima/A.sola</i>
Bat star	<i>Asterina miniata</i>
Large acorn barnacle	<i>Balanus glandula</i>
Rock crabs	<i>Cancer spp.</i>
Small acorn barnacle	<i>Chthamalus dalli, C. fissus</i>
Black abalone	<i>Haliotis cracherodii</i>
Red abalone	<i>Haliotis rufescens</i>
White abalone	<i>Haliotis sorenseni</i>
Market squid	<i>Loligo opalescens</i>
Owl limpet	<i>Lottia gigantea</i>
California mussel	<i>Mytilus californianus</i>
California spiny lobster	<i>Panulirus interruptus</i>
Warty sea cucumber	<i>Parastichopus parvimensis</i>
Giant-spined sea star	<i>Pisaster giganteus</i>
Ochre sea star	<i>Pisaster ochraceus</i>
Gooseneck barnacle	<i>Pollicipes polymerus</i>
Sunflower star	<i>Pycnopodia helianthoides</i>
Red sea urchin	<i>Strongylocentrotus franciscanus</i>
Purple sea urchin	<i>Strongylocentrotus purpuratus</i>
Thatched barnacle	<i>Tetraclita rubescens</i>
<b><i>Fishes</i></b>	
Black surfperch	<i>Embiotoca jacksoni</i>
Rock wrasse	<i>Halichoeres semicinctus</i>
Garibaldi	<i>Hypsypops rubicundus</i>
Lingcod	<i>Ophiodon elongates</i>
Kelp bass	<i>Paralabrax clathratus</i>
California halibut	<i>Paralichthys californicus</i>
Cabezon	<i>Scorpaenichthys marmoratus</i>
Kelp rockfish	<i>Sebastes atrovirens</i>
Copper rockfish	<i>Sebastes caurinus</i>
Swordspine rockfish	<i>Sebastes ensifer</i>
Squarespot rockfish	<i>Sebastes hopkinsi</i>
Cowcod	<i>Sebastes levis</i>
Vermilion rockfish	<i>Sebastes miniatus</i>
Blue rockfish	<i>Sebastes mystinus</i>
Bocaccio	<i>Sebastes paucispinis</i>
Olive rockfish	<i>Sebastes serranoides</i>
Pygmy rockfish	<i>Sebastes wilsoni</i>
California sheephead	<i>Semicossyphus pulcher</i>
Angel shark	<i>Squatina californica</i>
Black sea bass	<i>Stereolepis gigas</i>

Table 1. Species of Interest in the Channel Islands, Identified in the "Channel Islands Marine Protected Area Monitoring Plan," December 2004.

# RESEARCH & MONITORING ACTIVITIES

## Overview

We first present the full spectrum of activities required to address all research and monitoring questions identified in formal planning processes (Sections I-V, broken down by user group). Each activity in the plan is either:

1. On-going and planned for completion prior to the 5-year, post-designation mark for CINMS no-take marine reserves (April 2008), or
2. Unplanned and not funded at this time.

On-going and planned activities described below are a sub-set of the full spectrum of activities and reflect priorities developed in view of time and budget constraints (these are funded). We also name partners who are integral to completion of on-going and planned activities.

Unplanned activities, for which funds are not yet available, will be planned for completion as funds become available. Finally, we present in the last part of this section the likely allocation of new funds toward yet unplanned activities, including a rationale for such allocations.

Activities and the planning status of the full spectrum of activities are summarized in Table 1 below.

## Full Spectrum of Socioeconomic Research and Monitoring Activities

A strategy for each CINMS user group covers four key areas:

1. Research questions to be addressed: These are the research questions, referred to in Figure 1, that are pertinent to understanding reserve effects and, where possible, net socioeconomic benefits of marine reserves.
2. Information required: The data and associated analyses that are necessary to address research questions.
3. Research and monitoring activities: Specific activities that will provide the information required to address research questions.<sup>13</sup>
4. Integrated assessment: Notes on incorporation of an Ecosystem-Based Management (EBM) approach (not applicable to all user groups).

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<sup>13</sup> Research and monitoring activities presented in this plan can be executed according to one of two modes: 1\_) By the Social Science Program Coordinator with, in some cases, assistance from CINMS or NMSP staff and partners (Execution mode: "CINMS"), or 2) Under contract to a qualified research entity outside the CINMS (Execution mode: "CONTRACT"), in which case a preliminary cost range is stated (\$thousands).

## STRATEGY SS.1 – COMMERCIAL FISHING

- *Objective:* Identify and measure the effect, if any, that the marine reserve network is having on commercial fishing businesses, fishing communities, and economies that benefit from fishing.

### *Questions to Be Addressed*

1. Do impacts of marine reserves financially harm or benefit individual fishermen/businesses (or have no discernable impact)?
2. Do impacts of marine reserves harm or benefit local and/or regional economies?
3. Are there broader social/community impacts from marine reserves?
4. Will habitat maps and socioeconomic maps support GIS analyses?
5. Will data on spillover/replenishment effects support an integrated assessment?

### *Information Required*

1. Use, Catch and Value of Catch. Catch measured as pounds by species/species groups and value measured as ex vessel value or amount the fishermen receive from their catch. There are two sources for this data; 1) California Department of Fish and Game (CDFG) “fish ticket” data, which is available by month, CDFG 10-minute by 10-minute blocks, species/species groups, gear, port where landed, and vessel id and 2) CDFG logbooks for selected species/species groups. Information should be collected for the whole State<sup>14</sup>; a 22-CDFG block definition is used for the CINMS. Vessel id (encoded by CDFG before providing to Social Science Coordinator to protect privacy) can be used to track individual vessels over time/space and assess their dependency on CINMS and the fisheries throughout California and for assessing the multi-fishery dependency (many fishermen fish for multiple species/species groups and this may be a seasonal aspect of dependency). Port where landed provides the basis to connect to local economies and communities. Gear types might be important for example in the prawn fishery, which due to the current trawl prohibition may be switching to traps. Logbooks may support developing estimates of spatial distribution of catch.
2. Spatial Distribution of Catch-Finer Resolution. Logbooks for some fisheries may meet this requirement. Spatial distributions need to be consistent with habitat maps so the relationship between habitats and catch can be established. This will require an integrated effort with the biological/ecological monitoring. For fisheries without logbooks, surveys of fishermen may be conducted as was done during the Channel Islands Marine Reserves process<sup>15</sup>. This is expensive and requires significant participation by fishermen to ensure spatial distributions are precise enough so that comparisons over time can reveal statistically significant changes. The issue of time

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<sup>14</sup> While findings relate to commercial fisherman using the Channel Islands and not all fisherman, statewide data are necessary to remove non-local factors that affect the Channel Island fisherman. Moreover, fisherman who fish the Channel Islands also fish in other areas and are not always highly dependent on the Channel Islands for their total catch; thus, statewide data are necessary for assessing dependency on the Channel Islands.

<sup>15</sup> For a complete history of the Channel Islands Marine Reserves Process, please see <http://channelislands.noaa.gov/marineres/cp.html>.

period is also important since there is spatial variability over time and one needs to determine the period each distribution represents (e.g. every four years, five years...ten years). Existing logbooks need to be assessed for their ability to provide appropriately scaled spatial distribution of catch. Also, existing logbooks could be revised and new logbooks established for fisheries without logbooks.

3. Socioeconomics Profiles of Fishermen. Information on who is impacted and their ability to adapt to change is important in assessing the need for compensation or assistance or the need for a policy/management change. Socioeconomic profiles would include demographic information such as age, education level, race/ethnicity, years of fishing experience, household income, proportion of household income derived from fishing, and proportion of fishing revenues from CINMS. Other information would include investment in boat and fishing equipment and detailed costs and earnings from fishing. A survey of all fisherman could be done for the baseline, and then panels of commercial fishermen could be designed to track annual changes in catch and costs and earnings.
4. Knowledge, Attitudes & Perceptions (also referred to as "KAP") of Sanctuary Management Strategies and Regulations. This supports adaptive management by providing an understanding of users and their perceptions of how management strategies and regulations are affecting them. Because this effort requires the use of surveys, this effort should be combined with the effort to get socioeconomic profile information.
5. Compilation of information on other factors, aside from marine reserves, that may impact fishermen (see above).
6. Habitat maps that will overlay with commercial catch data maps in a geographic information system.
7. Information from the biological/ecological monitoring on spillover/replenishment effects of marine reserves.

### **Activities (6)**

**(1) Continue Collection of CDFG "Fish Ticket" Data.** Social Science Coordinator works with CDFG to update from 2003. Update annually.

Execution Mode: CINMS

Status: planned for completion by April 2008

Partner: CDFG

**(2) Evaluate Existing Logbook Data.** Evaluate existing logbook data for spatial distribution of catch and effort. If existing logbook data is not adequate, evaluate requirements (costs and willingness of fishermen to fill-out and provide) of modifying logbooks to meet spatial distribution needs. In addition, evaluate whether logbooks could be extended to fisheries that currently do not have logbooks. Further, evaluate whether surveys of fishermen, as was done in the MRWG process, can be used to develop precise enough estimates of spatial distributions of catch that would support detecting statistically significant changes over time.

Execution Mode: contract, \$50 - \$100k

Status: unplanned

**(3) Baseline Socioeconomic Profile.** Conduct a baseline socioeconomic profile, including costs and earnings and KAP of sanctuary management strategies and regulations.

Execution Mode: contract, \$100k - \$150k

Status: unplanned

**(4) Commercial Fishing Panels.** Once baseline is established from item 3 above, design set of representative panels of fishermen to track over time. Do annual updates of panel on catch and costs and earnings.

Execution Mode: contract, \$50 to \$100k per year

Status: unplanned

**(5) Ensure Consistency Between Habitat and Socioeconomic Maps.** Evaluate current efforts in ecological/biological monitoring to ensure habitat maps and socioeconomic maps are consistent and will support geographic information system (GIS) analyses.

Execution Mode: CINMS Social Science Coordinator

Status: unplanned

**(6) Evaluate Whether Current Monitoring Will Adequately Address Spillover/Replenishment Effects.** Evaluate current efforts in ecological/biological monitoring on the issue of spillover/replenishment effects of marine reserves. Will the information be adequate to support the integrated assessment?

Execution Mode: CINMS

Status: unplanned

### ***Integrated Assessment***

In the context of evaluating marine reserves, the assessment would focus on whether spillover/replenishment effects or congestion effects (displacement of effort from closed areas to open areas resulting in a net decrease in catch) are dominant.

The integrated assessment must take into account many factors both on the supply and demand sides. Overall catch, measured in pounds and ex vessel value, will reflect the culmination of many factors (e.g. environmental conditions; economic conditions both locally, nationally and internationally, since demand for seafood products are dependent on these conditions; coastal development and pollution and associated impacts on habitats and fish stocks; coastal development can also put pressure on property values and displace commercial fisheries—available dock space, unloading facilities, processing facilities, maintenance and repair facilities, and affordable housing for fishermen/crew; and other fisheries regulations).

<b>SUMMARY OF ACTIVITIES: <u>COMMERCIAL FISHING</u></b>					
<b>CINMS Social Science Program 2007-2010</b>					
	<b>RESEARCH AND MONITORING ACTIVITIES</b>	<b>RESEARCH QUESTIONS ADDRESSED</b>	<b>MODE OF EXECUTION</b>	<b>ON-GOING OR PLANNED</b> <small>(To be completed by April 2008)</small>	<b>UNPLANNED</b>
	1. "Fish ticket" data	1. Do impacts of marine reserves (no-take areas) financially harm or benefit individual fishermen/businesses? 2. Do impacts of marine reserves harm or benefit local and/or regional economies? 3. Are there broader social/community impacts from marine reserves?	CINMS	X	
	2. Evaluate logbook data		Contract: \$50-100K		X
	3. Baseline socioeconomic profile		Contract: \$100-150K		X
	4. Commercial fishing panels		Contract: \$50-100K		X
	5. Evaluate habitat and socioeconomic maps	4. Will habitat maps and socioeconomic maps support GIS analyses? 5. Will data on spillover/replenishment effects support an integrated assessment?	CINMS	X	
	6. Evaluate biological/ecological monitoring			X	

Table 2. Summary of Activities: Commercial Fishing.



## STRATEGY SS.2 – RECREATIONAL FISHING

- *Objective:* Identify and measure the effect, if any, that the marine reserve network is having on recreational fishing businesses, individuals, and economies that benefit from fishing.

### *Questions to Be Addressed*

1. What are the spatial use patterns and intensity of recreational fishing in the Channel Islands (two modes: CPFV, private boaters; four gear types: hook and line, hoop net, collection by hand, spear)
2. How have the spatial use patterns and intensity of recreational fishing changed since no-take marine reserves were instituted (CPFV only, baseline for private boaters is more uncertain and an assessment of the new CRFS<sup>16</sup> data is required to determine if samples sizes need to be increased to yield reliable estimates of use in and around the CINMS)<sup>17</sup>
3. Do impacts of marine reserves financially harm or benefit individual fishermen/businesses?
4. How do the perceptions of recreational fisherman toward marine reserves affect their spatial use patterns and individual businesses that serve them?

### *Information Required*

1. Spatial distribution and intensity of recreational fishing: CPFV logbooks provide data on effort (number of anglers and hours fished) and take (type and number of fish caught). CPFV logbook data with effort and catch information by trip have been stored on CDFG databases since 1980. All data provided by port and CDFG block. The CRFS is acquiring spatial data (catch/effort) for four major recreational fishing modes in California: 1. Private and rental boats; 2. CPFV; 3. Man-made structures; and 4. Beaches and banks (CDFG, 2004). Currently, CRFS is not addressing spear fishing or fishing for invertebrates (non finfish species). CRFS documents say the program may be expanded in the future to cover invertebrates and spear fishing. Surveys proposed in this plan will be used to address these other uses.
2. Expenditure profile of recreational fishing: The NMFS has recently entered an agreement to fund an economic expenditure add-on to the CRFS program.
3. Consumer surplus of recreational fishing: The NMFS has a random utility model (RUM) that can be used for estimating consumer's surplus for recreational fishing and how those values change with changes in catch rates. They are also using Stated Preference Methods for accomplishing these tasks. There is a potential of partnering with NMFS and developing an add-on survey component to the CRFS Program.
4. Knowledge, attitudes, and perceptions of recreational fishing: Could be another add-on to the CRFS Program.

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<sup>16</sup> For additional information on CRFS, see: <http://www.dfg.ca.gov/MRD/crfs.html>

<sup>17</sup> This is a two-part question: 1. How have recreational fishing activities been displaced within the CINMS, and, 2. To what extent, if any, have recreational fisherman opted to select sites outside the CINMS after (or as a result of) the establishment of marine reserves?

5. CPFV business income and employment: Replicate baseline study of all for hire operation.

### *Activities (7)*

#### *(1) Update Data from CDFG Logbooks on CPFV.*

Execution Mode: CINMS

Status: planned for completion by April 2008

Partner: CDFG

*(2) Update CPFV Recreational Fishing Data.* Draw upon the CRFS program to update data on recreational fishing from CPFV, working with CDFG to associate catch and effort data to 1 nautical mile x1 nautical mile micro-blocks (22 defined for CINMS).

Execution Mode: CINMS

Status: planned for completion by April 2008

Partner: CDFG

*(3) Add New Survey Questions to CRFS.* Add new survey question layers to CRFS on KAP for private boat fishermen. For CPFV, see non-consumptive recreation section below because efforts are combined.

Execution Mode: contract, cost unknown

Status: unplanned

*(4) Estimate Private Boat Spatial User Patterns and Intensity.* Use data from the Non-consumptive use study on recreational fishing and diving to estimate spatial use patterns and intensity from private boats.<sup>18</sup>

Execution Mode: CINMS

Status: planned for completion by April 2008

Partner: UCLA

*(5) Evaluate CRFS Private Boat Data and Sample Size.* For private boats, assess CRFS for providing this information and identify if sample size increases are necessary to achieve our objectives.

Execution Mode: CINMS.

Status: planned for completion by April 2008.

Partner: CDFG

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<sup>18</sup> While this study is focused on non-consumptive use patterns such as kayaking and diving, it will identify hook and line fisherman, hoop-net fisherman, and lobster divers during intercept surveys conducted in the Channel Islands.

**(6) Conduct CPFV Passenger and Operator Surveys.** Survey CPFV business operations and passengers. Replicate previous work in this area conducted by Dr. Charles Kolstad, University of California at Santa Barbara, adding survey of passengers, see consumptive recreation below.

Execution Mode: contract, \$30k or less

Status: unplanned

**(7) Conduct CPFV Lobster Fishery Postcard Survey.** Institute CPFV postcard survey of recreational lobster divers/fisherman developed by University of California Santa Barbara (UCSB) Bren students (assuming not covered by CRFS).

Execution Mode: contract, \$15k - \$20k

Status: unplanned

NOTE: Additional information needs for CPFV for both operations and for customers of these operations such as, expenditures, socioeconomic/demographic profiles, KAP, and consumer's surplus may be achieved by a combined effort addressing non-consumptive recreation (see below).

### ***Integrated Assessment***

In the context of evaluating marine reserves, the assessment would focus on whether spillover/replenishment effects or congestion effects (displacement of effort from closed areas to open areas resulting in a net decrease in catch) are dominant. Making this determination will require research and monitoring of the quantity and spatial distribution of recreational catch by species.

<p><b>SUMMARY OF ACTIVITIES: <u>RECREATIONAL FISHING</u></b></p> <p><b>CINMS Social Science Program 2007-2010</b></p>					
	<p><b>RESEARCH AND MONITORING ACTIVITIES</b></p>	<p><b>RESEARCH QUESTIONS ADDRESSED</b></p>	<p><b>MODE OF EXECUTION</b></p>	<p><b>ON-GOING OR PLANNED</b> (To be completed by April 2008)</p>	<p><b>UNPLANNED</b></p>
	1. Update DFG logbooks on CPFV	1. What are the spatial use patterns and intensity of recreational fishing?	CINMS	X	
	2. Use CRFS to update data on CPFV	2. How have the spatial use patterns and intensity changed since no-take marine reserves were instituted?	CINMS	X	
	3. Add new survey questions to CRFS on KAP, private boat fisherman	3. Do impacts of marine reserves financially harm or benefit individual fishermen/businesses?	Contract: cost unknown, CDFG partner		X
	4. Use data from non-consumptive use study to estimate spatial use/intensity	4. How do the perceptions of recreational fisherman toward marine reserves affect their spatial use patterns and individual businesses that serve them?	CINMS		X
	5. Increase sample size of CRFS (to increase spatial resolution)		Contract: cost unknown, CDFG partner		X
	6. Survey CPFV business operations and passengers		Contract: \$30K or less		X
	7. CPFV postcard survey of rec. lobster divers/fisherman (developed by UCSB Bren students)		Contract: \$15-20K		X

Table 3. Summary of Activities: Recreational Fishing.

## STRATEGY SS.3 – NON-CONSUMPTIVE USE

- *Objective:* Identify and measure the effect, if any, that the marine reserve network is having on non-consumptive uses such as diving, kayaking, and wildlife viewing.

### *Background*

This strategy describes an on-going, multi-year study of users who access the CINMS via private boats.

### *Questions to Be Addressed*

1. What are the spatial use patterns and intensity of non-consumptive uses (e.g., kayaking, diving, wildlife viewing)?
2. What are the local expenditures and associated economic impacts on local economies (e.g. sales/output, value added, income and employment), and consumer/producer surplus levels associated with spatial use patterns and intensity?
3. What attitudes, perceptions, and level of knowledge do non-consumptive users have in relation to the CINMS?
4. What are the biological and physical attributes of the CINMS that best explain non-consumptive use patterns and associated values (market and non-market)<sup>19</sup>?
5. How are such use patterns and associated values likely to change if attributes of the CINMS change?

### *Information Required*

1. Spatial use and intensity of non-consumptive use
2. Expenditure patterns of users undertaking non-consumptive activities
3. Knowledge, attitudes, and perceptions of non-consumptive users
4. Biophysical attributes that statistically explain site choice by boaters and non-consumptive activity spatial use patterns

### *Activities (5)*

**(1) Conduct Private Boater Surveys.** Conduct surveys of private boaters to acquire data on spatial use patterns, associated expenditures, and KAP of non-consumptive users.

*Execution Mode:* CINMS

*Status:* on-going, to be completed by April 2008

*Partner:* UCLA

**(2) Develop CINMS Biogeophysical Spatial Database.** Develop a spatial database of biogeophysical attributes of the CINMS and statistically relate such attributes to spatial use patterns for private boaters.

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<sup>19</sup> A definition of market and non-market values can be found at: <http://noep.csUMB.edu/nonmarket/NMmain.html>

Execution Mode: CINMS

Status: on-going, to be completed by April 2008

Partner: UCLA

**(3) Estimate a Random Utility Model for Private Boaters.** Model non-consumptive user behavior by estimating a random utility model or “RUM” for private boaters.

Execution Mode: contract, cost to be determined

Status: planned, completion date unknown

Partner: UCLA

**(4) Survey All For Hire Operations.** Survey of all for hire operations (replication of Kolstad survey, which provided baseline estimates of use, both consumptive and nonconsumptive, spatial distribution of use and economics of for hire operations (costs and earnings). This information must be done in combination with survey of customers or passengers in order to aggregate survey of passengers/customers to population estimates.

Execution Mode: contract, \$30k or less.

Status: unplanned

**(5) Survey Passengers and Customers of For Hire Operations.** Surveying passengers/customers of for hire operations will require a combination of on-site and mail back surveys. The on-site survey will gather information on socioeconomic/demographic information to address who are the users. Mail back surveys will be given to on-site survey participants to address expenditures, KAP, and consumer’s surplus.

Execution Mode: contract, \$170-\$180k

Status: unplanned

### ***Integrated Assessment***

The integrated assessment will identify and focus on ecological indicators that are most pertinent to the socioeconomic values of non-consumptive users. To identify such ecological indicators, it will first be necessary to identify CINMS attributes that: 1. Statistically explain non-consumptive site choice within the CINMS, and 2. Are measurably affected by the establishment and management of marine reserves. Second, the measurable ecological parameters that meet both of the above necessary conditions will be cross-referenced with a list of ecological indicators that are being monitored by the Biological Monitoring Plan, through its CINMS MPA monitoring program, or other efforts, such as the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) ecological monitoring program (<http://www.piscoweb.org/>). To the extent possible, data from existing ecological monitoring of indices that are most pertinent to non-consumptive socioeconomic values will be used to gain a better understanding of how marine reserves affect the flow of socioeconomic benefits to non-consumptive users.

<p><b>SUMMARY OF ACTIVITIES: <u>NON-CONSUMPTIVE USES</u></b></p> <p><b>CINMS Social Science Program 2007-2010</b></p>					
	RESEARCH AND MONITORING ACTIVITIES	RESEARCH QUESTIONS ADDRESSED	MODE OF EXECUTION	ON-GOING OR PLANNED (To be completed by April 2008)	UNPLANNED
	1. Conduct surveys of private boaters	1. What are the spatial use patterns and intensity of uses?	CINMS	X	
	2. Develop spatial database of sanctuary attributes; relate to non-consumptive use patterns	2. What are the local expenditures and associated economic impacts on local economies (e.g. sales/output, value added, income and employment), and consumer/producer surplus levels associated with spatial use patterns and intensity?	CINMS	X	
	3. Estimate RUM model of user behavior	3. What attitudes, perceptions, and level of knowledge do non-consumptive users have in relation to the CINMS?	Planned for 2008, UCLA partner	X	
	4. Survey for hire operations	4. What are the biological, geological, and physical attributes of the CINMS that best explain non-consumptive use patterns and associated values (market and non-market) <sup>20</sup> in the CINMS.	Contract: \$25-35k		X
	5. Survey passengers of for hire operations	5. How are such use patterns and associated values likely to change if attributes of the CINMS change?	Contract: \$150-180k		X

Table 4. Summary of Activities: Non-Consumptive Uses.

<sup>20</sup> A definition of market and non-market values can be found at: <http://noep.csUMB.edu/nonmarket/NMmain.html>

## STRATEGY SS.4 – NON-USE

- *Objective:* Identify and measure the effect, if any, that the marine reserve network is having on existence, bequest, and option values of so-called non-users.

### *Background*

Non-use value refers to the value that people derive from economic goods (public goods in this case, such as marine resources) independent of any use, present or future, that people might make of those goods. They are generally differentiated from use values, which people derive from direct use of a good. Non-use value includes existence value, bequest value, and option value.

The original March 2003 Workshop generated low, medium, and high cost strategies for addressing non-use values. In the follow-up prioritization workshop, these strategies were further refined.

Non-use values are potentially relevant to every US citizen, regardless of whether they have visited and physically interacted with the CINMS. Efforts to measure values from such a large sample frame, consequently, are relatively expensive. Hence, low, medium and high strategies are defined. The low strategy constrains the sample frame to a local population with, ostensibly, a greater awareness of the CINMS – and, hence, non-use value. The medium cost option would constrain the sample frame to the state population; the high cost option would involve a national random sample.

### *Question to Be Addressed*

1. Do marine reserves affect non-use values such as existence value, bequest value, and option value?

### *Information Required*

1. Survey data required to estimate existence, bequest, and option values
2. Demographic information of respondents

### *Activities (3)*

**(1) General Population Survey of Los Angeles, Ventura, and Santa Barbara Counties.** The low cost strategy would include samples from the general populations of Los Angeles, Ventura, and Santa Barbara counties. We recommend a sample size of 1,000 randomly selected households in the three-county area. The surveys could be conducted using Internet panels or mail surveys. Mail surveys are much cheaper, but of lower quality.

*Execution Mode:* contract, Internet Survey, \$100,000; Mail Survey, \$50,000

*Status:* unplanned



(2) **California-Wide General Population Survey.** The medium cost strategy would include samples of the general California population. We recommend a sample size of 1,000 randomly selected households.

Execution Mode: contract, Internet Survey, \$150,000; Mail Survey, \$85,000

Status: unplanned

(3) **Nation-Wide General Population Survey.** The high cost strategy would include a National Sample. We recommend a sample size of 2,000 randomly selected households.

Execution Mode: contract, Internet Survey, \$250,000; Mail Survey, \$100,000

Status: unplanned

<b>SUMMARY OF ACTIVITIES: <u>NON-USE</u></b> <b>CINMS Social Science Program 2007-2010</b>					
	<b>RESEARCH AND MONITORING ACTIVITIES</b>	<b>RESEARCH QUESTIONS ADDRESSED</b>	<b>MODE OF EXECUTION</b>	<b>ON-GOING OR PLANNED</b> (To be completed by April 2008)	<b>UNPLANNED</b>
	1. Estimate non-use economic values	1. What are the estimated non-use/passive use values associated with populations in southern California (low strategy), California (medium strategy), and the nation (high strategy)?	Contract: \$50-250k (range reflects low, medium, and high strategies)		X

Table 5. Summary of Activities: Non-Use.

## STRATEGY SS.5 – OUTREACH, RESEARCH, AND EDUCATION

- *Objective:* Identify and measure the effect, if any, that the marine reserve network is having on both the quantity and economic impacts associated with outreach, research, and education activities.

### *Background*

The CINMS has set up a research permit tracking system called the Online Sanctuary Permitting Reporting and Evaluation System (OSPREY) that may be used to address scientific research associated with the CINMS. Other efforts by CINMS staff may be used to document the number of education and outreach efforts.

### *Questions to Be Addressed*

1. What are the economic impacts of expenditures on scientific research, education, and outreach in local economies and the associated economic impacts (e.g. output/sales, value added, income and employment)?
2. What are the net economic values of scientific research, education, and outreach efforts?<sup>21</sup>

### *Information Required*

1. Quantity and description of existing education, research, and outreach efforts
2. Direct expenditures associated with existing education, research, and outreach efforts

### *Activities (3)*

**(1) Evaluate Past Research Contracts and Grants.** Compile a list of research contracts and grants within or in relation to the CINMS. Conduct surveys on where and how the money was spent and estimate economic impact on local economies.

*Execution Mode:* contract, \$25k-\$50k

*Status:* unplanned

**(2) Evaluate Past Education and Outreach Programs.** Compile a list of education and outreach programs. Conduct surveys on cost of programs and where and how money was spent and estimate impact on local economies.

*Execution Mode:* contract, \$25k-\$50k

*Status:* unplanned

**(3) Assess CINMS Impact on Students.** For research, education and outreach efforts within or in relation to the CINMS, identify the number of students trained in physical and social sciences

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<sup>21</sup> Here we most likely will not be able to quantify this as dollars and will attempt to list indicators of value (e.g., number of students supported in research projects, number of students educated, number of outreach efforts).

through research on the CINMS, the number of students receiving education classes, CINMS science, and the number of outreach efforts on the CINMS.

Execution Mode: contract, \$25k-\$50k

Status: unplanned

<b>SUMMARY OF ACTIVITIES: <u>OUTREACH, RESEARCH, AND EDUCATION</u></b>					
<b>CINMS Social Science Program 2007-2010</b>					
	<b>RESEARCH AND MONITORING ACTIVITIES</b>	<b>RESEARCH QUESTIONS ADDRESSED</b>	<b>MODE OF EXECUTION</b>	<b>ON-GOING OR PLANNED</b> (To be completed by April 2008)	<b>UNPLANNED</b>
	1. Compile list of research contracts/grants for CINMS	1. What are the economic impacts of expenditures on scientific research, education and outreach in local economies and the associated economic impacts (e.g. output/sales, value added, income and employment)? 2. What are the net economic values of scientific research, education and outreach efforts? Note, here we most likely will not be able to quantify this in dollars and will attempt to list indicators of value (e.g. number of students supported in research projects, number of students educated, number of outreach efforts).	Contract: \$25-50K		X
	2. Compile list of education/outreach programs		Contract: \$25-50K		X
	3. Identify number of students trained in sciences through CINMS research		Contract: \$25-50K		X

Table 6. Summary of Activities: Outreach, Research, and Education.

## PRIORITIES AND PROCESS FOR ALLOCATING NEW FUNDS

During the three-year timeframe of this plan (2007-2010), additional funds may become available either from a CINMS partner or the National Marine Sanctuary Program (NMSP) budget process.

Allocation of new funds will be made by NMSP/CINMS staff by applying the criteria below and in consultation with partners and the CINMS Sanctuary Advisory Council.

For funding purposes, research and monitoring activities will be prioritized across user groups by applying a set of four criteria:

1. Fund at least one project per user group (to the extent financially feasible)
2. Give higher priority to groups with little or no existing data (e.g., non-consumptive users)
3. Give higher priority to groups impacted by no-take marine reserves (e.g., consumptive users)
4. Prioritize according to issues, not funds (i.e., work toward equity in relation to how well existing data and analysis can inform highly prioritized issues, not according to funds allocated by the CINMS Social Science Program)

Emerging priorities, in relation to yet unplanned activities:

1. Activity #3, Recreational Fishing: acquire data on the KAP, and expenditures of recreational fisherman (one option is to expand the CRFS program by designing a new survey module that collects this data). *Rationale*: While data exist for recreational anglers (from the CRFS program), they do not address an often cited dimension of the effect that reserves are having on this group: the way that reserves affect the perceptions of recreational anglers. Moreover, CRFS is not yet (as planned) supplying expenditure data for this user group.
2. Activity #4 and #5 (partial), Non-consumptive use, charter mode: acquire data on the spatial use patterns, expenditures, and (KAP) for visitors who access the Channel Islands via charter mode such as Island Packers. *Rationale*: The existing multi-year study of non-consumptive uses acquires data only for visitors who access the Channel Islands by private boat. The Channel Islands National Park (CINP), a CINMS partner, has identified charter-access visitors as an important segment of the visitor population, in terms of park use, anthropogenic disturbance, and outreach. The CINP, furthermore, has tentatively offered to co-finance the acquisition of these data.

**While these activities are strong candidates for implementation, allocation of new funding will be subject to a final vetting process.**

## **GENERAL REFERENCES**

California Department of Fish and Game (CDFG). 2004. California's Plan for Surveying Marine Recreational Fisheries. January 1 to December 31, 2004. Marine Region. Rev: July 16, 2004.

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Davis, G. 2005. "Science and Society: Marine Reserve Design for the California Channel Islands". *Conservation Biology* 1745-1751. Volume 19, No. 6, December 2005.

McLeod, K.L., J. Lubchenco, S.R. Palumbi, and A. A. Rosenberg. 2005. Scientific Consensus Statement on Marine Ecosystem-based Management. Signed by 219 academic scientists and policy experts with relevant expertise and published by the Communication Partnership for Science and the Sea at <http://compassonline.org/?q=EBM>.

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

# APPENDIX A: SUMMARY OF STAKEHOLDER WORKSHOPS

## RECREATIONAL AND COMMERCIAL FISHING STAKEHOLDER WORKSHOP

### Introduction

On September 20, 2005, the CINMS Social Science Program held a recreational and commercial fishing stakeholder workshop on marine reserves monitoring. The objective of this workshop was to obtain meaningful input from stakeholders on research and monitoring priorities for the next 1-3 years to use directly in designing the CINMS socioeconomic research plan. This first meeting targeted the commercial and recreational fishing stakeholders.

Approximately fifteen people attended the session including CINMS staff and facilitators. Six fishermen attended; three commercial and three recreational. Of the recreational fishermen, one was a charter boat captain while the other two were retired. In addition, several University of California Santa Barbara graduate students and representatives from academia were in attendance.

During the introduction, participants were reminded of the recommendations from the *Socioeconomic Research and Monitoring Recommendations for MPAs in CINMS* report. Accomplishments and progress since 2003 were reviewed. Participants were told that although this workshop is to help prioritize strategies, there were no guarantees on any funding amounts due to budget constraints. Finally, the approach for developing a plan was explained, including a list of criteria to be used after the stakeholders provide input.

Participants then separated into two breakout groups: one focusing on recreational fishing and the other on Commercial Fishing (results summarized below). They reconvened as one group for the final discussion on recommendations and next steps.

### Summary of the Recreational Fishing Breakout Group

#### *I. Review and Prioritization of Issues Areas*

The group informally reviewed the issue areas and strategies outlined in the 2003 Socioeconomic Research and Monitoring Recommendations for MPAs in CINMS report. They discussed the strategies and made some additions/changes to help update the 2003 information. They also attempted to prioritize the issue areas and strategies, though several of the strategies would be included at no cost by implementing the Use and Catch issue area.

#### **A. Use and Catch by Consumptive Users:**

- Identified to be the most important issue area.



- The Medium option (including private boaters) was identified to be the first priority.
  - At first, the High option (including divers) was recommended to be the first strategy, but then they thought it was possibly infeasible.
- The low option was prioritized to be last.
 

Suggested Additions/Changes to 2003 Information:

  - CRFS should replace references to the marine recreational fishery statistical survey (MRFSS) in the description for Use and Catch option.

#### **B. Edge Effects:**

- Issue area not considered during prioritization exercise because it would already be included in Use and Catch strategies.

#### **C. Knowledge, Perceptions and Attitudes - Consumptive:**

- Issue area was not considered during prioritization exercise because it would already be included in the Use and Catch strategies.
- The group felt this issue area needs to be explained more.
 

Suggested Additions/Changes to 2003 Information:

  - Agreed that the cost would be low, but not \$0.

#### **D. Option/Nonuse Values of Consumptive Users of Reserves:**

- Seemed important, but not as important as strategies in Use and Catch (lower priority than implementing Use and Catch strategies).

Issue Area	Priority <i>(1 = highest)</i>
Use and Catch by Consumptive Users	1
Option/Nonuse Values of Consumptive Users of Reserves	2
<i>Edge Effects</i>	<i>(included in 1)</i>
<i>Knowledge, Perceptions and Attitudes - Consumptive</i>	<i>(included in 1)</i>

Table 7. Recreational Fishing Breakout Group: Issue Area Prioritization Results.

Strategy	Priority <i>(1 = highest)</i>
Medium	1
High	2
Low	3

Table 8. Recreational Fishing Breakout Group: Strategy Ranking for Priority Issue Area (Use and Catch by Consumptive Users).

## **II. Data Discussion**

The group discussed recreational fishing issues, identified additional data needs, suggested potential approaches to help fill these gaps and inquired about socio-economic methodology.

**A. Data Gaps:**

- Should subdivide fishing groups further, not just commercial and recreational (i.e. consumptive divers vs. charter boats).
- Have no reliable data on sport divers.
- Currently private boaters who use ramps (hidden boats) are not included.
- Person days are used as an indicator for monitoring (trends) and in models, but using person days misses data on net revenues (e.g. open party fishing charters).
- Not enough information on gross income.
- How to capture loss of revenue (gross and net)? For example, the decline of abalone and scallop populations has impacted dive boats and cut costs because boats don't go to same areas anymore.
- Important to capture change of cost if boats no longer run for as many days per year (e.g. previously ran boats 150 days, now only 10-20 days).
- 2003 report doesn't account for hoop net fishing (now makes up 60% of lobster fishermen).
- 2003 report doesn't capture those who fish from kayaks.
- Subsistence fishermen should be considered (i.e., those who fill freezer with fish to eat using charter boats to fish).
- Fishermen are concerned that the users don't have enough input into how plan is being developed.
- Some fishermen may have sought other activities as a result of changing state of resources (perception of depleted resources)

**B. Specifics about the California Recreational Fishing Survey (CRFS):**

- CRFS is a new version of MRFSS.
- State Contact: Steve Crooke, CDFG.
- The CRFS system:
  - Reported to have 2 -3 times better resolution than MRFSS.
  - Includes party boat (CPFV) and private boat data
  - Does not sample invertebrate fishermen, only finfish (no lobster, scallops).
  - Does not include economic/cost data, but could be added for additional funding.

**Follow-up:** Need more details about the specific data included in this system (e.g. number of anglers, biological information, etc.) and clarify opportunities to add-on to this survey for an additional cost. (**contact:** Steve Crooke)

**C. Issues of Concern and Recommended Solutions:****1. Issue: Including Private Boaters?**

Are private boaters important to consider? If so, there are two kinds: 1) those who rent slips; 2) those who pay a fee to use ramps (ramp users have more freedom to change behavior).

**Recommendations:**

- Fill in postcards and target participation through fishing publications

- Some private vessel information might be derived through the licensed angler name and phone database (contact: Steve Crooke)

## 2. Issue: CPFV Logbook Data

Recording CPFV is very time consuming and the format doesn't consider the difference between users (i.e. who is fishing and who is not). For example, there are often fishermen and photographers on the same charter boats but the logbooks do not capture this difference (e.g. CPFV instrument records 35 fishermen even when there are 35 people on a boat + 3 spear guns). Also, different captains filling in forms might be interpreting and answering questions differently. There is no reliable data attained from sport divers, nobody really keeps track. CPFV data will capture most sanctuary users, just need to refine some of the questions.

### Recommendations:

- Modify CPFV logs to include total anglers and total passengers.
- Compare number of passengers on charter boat in one year versus another.
- Instead of measuring fish, ask "How much was spent for this day of fishing?" Try to capture economic data.

## 3. Issue: Cost of Doing Business?

How to best answer, "What is the cost of doing business?"

### Recommendations:

- Look at expenditures most directly linked to fishing, supplies bought for the boat (e.g. fuel, ice, ramp fees, slip fees, etc.).
- Where applicable, try to capture the cost of specific fishing equipment related to fishing within the reserve (e.g. specific fishing poles are used to fish halibut in the sanctuary).
- Should use same survey format as on IRS Schedule C.
- Consider what is the biggest expenditure (e.g. fuel)?
- Consider what expenditure is most likely to change (e.g. cost of food)?

## 4. Issue: Raising Awareness

How to include and reach more recreational fishermen and private boat owners to help raise their awareness about marine reserves and this process?

### Recommendations:

- Use fishing publications to ask recreational fishermen to fill in surveys and to publicize issues.
  - Use Great American Fish Count approach.
  - Provide fish measurement stickers to increase survey participation.

## **D. Clarification of Socioeconomic Terms and Methods:**

- Random samples (i.e., why can't fishing magazines be used to disseminate surveys to recreational fishermen?). Clarify problems related to using non-random samples.
- Knowledge, perceptions and attitudes

- Passive use

**E. Other Issues:**

- Why are so few recreational fishermen in attendance?
- Focus on correcting public perception towards recreational fishermen. There has been a change in public perception following establishment of protected areas.
- Recreational fishermen have issues with trust related to the CINMS (e.g. Recreational fishermen have 100% confidence that their views will not be considered by managers).
- Need to minimize burden to fill in surveys, currently is a time consuming process.
- Can the CINMS better educate the public regarding the specifics of closures?
- Need for action, enough prioritizing.

**Summary of the Commercial Fishing Breakout Group*****I. Review of Issues Areas and Research Questions***

Rather than start with the 2003 recommendations, the commercial fishing group wanted to revisit the social science monitoring research questions and strategies. Specifically, the major priority that emerged was not covered under the 2003 recommendations. Integration of biological monitoring data (e.g. larval transport) with socioeconomic monitoring to determine whether marine reserves “work” was clearly identified as a priority for the commercial fishing group.

As described below, other research questions and strategies that emerged included (1) developing a database of all existing regulations affecting fishing in the Channel Islands and (2) identifying how marine reserves impact fisheries infrastructure, such as buyers and processors.

**A. Major Research Need - Biological/Socioeconomic Monitoring:**

- There is a major need to combine socio- and biological information. (This point was echoed throughout the workshop).

**B. Major Research Questions:**

- Are marine reserves working?
- Does larval dispersion and spillover compensate for area closures?
- How well are we meeting conservation goals?

**C. Current Levels of Scientific Knowledge:**

- Some participants noted that there are no biological programs in place to measure spillover and larval transport.
- It was also noted that not all species will be affected equally by marine reserves in terms of larval transport and spillover.
- It is not currently known if increased lobster larval transport will positively affect the Santa Barbara population, although there is a study underway to partially address this question.

- Participants who had also attended the 2003 workshops noted that biological monitoring was a separate group from socioeconomic monitoring. During that time, participants had to choose between the two groups and there was not much chance for integration.

## **II. Data Discussion**

### **A. Issues of Concern and Potential Recommended Solutions:**

The group discussed commercial fishing issues and suggested potential approaches to help resolve these issues.

#### **1. Issue: Need for Consistent GIS Access/Support Tools**

There is a need for a GIS support tool for ecological and socioeconomic data sets. Fishermen don't have access to GIS resources. Ensuring that all relevant information is included in process will allow for a generation of better maps.

##### Recommendation:

- Fishermen would like to see more resources put into developing spatial dimension of fisheries and baseline of regulations (for example, how much total area of the Channel Islands is under stock rebuilding programs? How does this contribute to existing goals of Sanctuary? )

#### **2. Issue: Current Business Service Providers**

Whole community is affected with the implementation of reserves. When marine reserves are implemented, infrastructure is affected (e.g., supply, fuel docks, tackle shops, etc.) and it is important to remember that the businesses/service providers that support fishing need to have a thriving fishing community to support or they'll go under.

##### Recommendations:

- There have been efforts to update data on business service providers, but this has not been done at a level that is specific to the CINMS region.
- Develop economic model of Ventura Harbor as a prototype to assess impacts of marine reserves on fishery business service providers.

#### **3. Issue: Feasibility of Data Collection**

There are different ways of getting information rather than asking individuals to disclose information. What is best way to generate information? Ethnographic survey needs refining, some information is accurate (e.g., kelp bed locations); however, lobster data seems to be way off. There is also concern about the lack of use of fishermen's data in ethnographic survey.

##### Recommendations:

- Fishermen will participate if their well-being is benefited
- Fishermen see need for dedicated human resources within Sanctuary who are committed to help us to get this information

4. Issue: Public Education Campaign

There is currently hype in the public arena that islands are overfished.

Recommendation:

- Develop a campaign to promote the Channel Islands' tasty seafood and fishing industry.

5. Issue: Displacement

How does Channel Islands displacement affect the fishery resources, both in the Channel Islands and elsewhere (e.g., Catalina and San Nicolas Islands)?

Recommendations:

- Biological component is important, but fishermen's information is also important--specifically, learning how displacement is affecting the fishermen (interpret how the spillover effects affect fishermen and socioeconomics). Social scientists can figure out what happened to a representative sample of different groups, while recognizing it is a function of other circumstances
- Need to work with the different fishing groups interested in answering similar questions (e.g., how have your fishing patterns changed over time?) Then, these questions need to be replicated every few years.
- The human question is about overcapacity, not overfishing, and if people can make a living fishing. You can't figure out overcapacity on biological data alone – need to know who is fishing and how much they're catching.
- Fishermen want thresholds defined so that there is no threat of overfishing

6. Issue: Increasing Workshop Participation

Fishermen don't believe in the process and are no longer willing to attend meetings like this. Recognized need for NMFS participation. It is important to have stock assessment expertise at meetings like this one.

Recommendation:

- CINMS should be more supportive of fishing efforts.

## Overall Recommendations and Next steps

### *I. General Issues and Recommendations*

Participants rejoined as one group and collectively brainstormed suggestions to rectify issues that came up during the workshop and breakout sessions.

1. Issue: Assumed more understanding about socio-economic methodologies by participants.

Recommendations:

- Hold a 1-day workshop explaining socioeconomic processes, sampling, etc, a structured Monitoring 101 session). This should be a directed session that includes dialogue/feedback opportunities
- Identify important questions and explain how research can address them
- Make link between data and methodology (e.g. how question is asked and what it will answer)
- Have a technical expert explain the types of data, how it is collected and why

2. Issue: Format of session was too detailed, how can it be improved?Recommendation:

- Explain general areas first, prioritize them, and then get into specific details.

3. Issue: Who is doing the monitoring and why not included at the session? Where is NMFS?Recommendation:

- Must have NMFS representatives at all sessions

4. Issue: How to get more stakeholders to attend meetings and to participate in process?

A broader sample of user interests needs to be represented to help increase understanding of the issues and to discuss more types of data (e.g. only 3 recreational fishermen attended – did not have depth of representation needed)

Recommendations:

- Post meeting notices at fuel docks, tackle shops, fish markets and in fishing magazines well in advance of meeting date.
- Meeting announcement should include the subject (outline issues and process), date, time, location and expected outcome.
- Hold several meetings (2 - 3) at a variety of times to reach all fishing groups.
- Try to have meetings in the middle of winter (e.g. January) or during times of bad weather
- Target the kelp restoration group, they should provide good feedback.
- Ventura County fishermen need to be included in process since it has 2/3 of the boats in the area and 2 marinas.
- Chris LaFranchi should personally meet and talk to more of the fishermen. Important to let them know that there is an independent socioeconomic study that offers a new opportunity for fishermen.
- Improve communication and outreach; use fishing publications, newspapers, speak at fishing clubs (commercial and recreational).
- Use grassroots approach, stress that participants go back and sell the process to others.

- Assist key members of user groups with setting up meetings with other fishermen, acting as sub-representatives. Pitch messages to other fishermen. (Provide support and funding if possible, e.g. money for pizza, copies, etc.)

## **II. Next Steps**

- Despite the low attendance, the participants recommended that the team move forward with the CINMS socioeconomic plan outline using information and priorities from workshop.
- Create a straw man and share with stakeholders, and solicit comments on draft.
- Invest in community outreach.

# **NON-CONSUMPTIVE USERS AND NON-USERS STAKEHOLDER WORKSHOP**

## **Introduction**

On October 18, 2005, the CINMS staff held a non-consumptive user and non-user stakeholder workshop on marine reserves monitoring. The objective of this workshop was to obtain meaningful input from stakeholders on research and monitoring priorities for the next 1-3 years to use directly in designing the CINMS socioeconomic research plan. This was the second of two meetings, targeting the non-consumptive users and non-users. The first meeting, which targeted commercial and recreational fishermen, was held on September 20, 2005.

Approximately thirty people attended the session, including recreational divers, charter boat operators, and non-governmental organization (NGO) staff members. In addition, several University of California Santa Barbara graduate students and representatives from academia were in attendance.

During the introduction, participants were reminded of the recommendations from the Socioeconomic Research and Monitoring Recommendations for MPAs in CINMS report. Accomplishments and progress since 2003 were reviewed. Participants were told that although this workshop is to help prioritize strategies, there were no guarantees on any funding amounts due to budget constraints. Finally, the approach for developing a plan was explained, including a list of criteria to be used after the stakeholders provide input.

Participants were offered the option of breaking out into two groups during the meeting according to affiliation with non-consumptive use or non-use. However, as expected, the participants wanted to discuss both issues together in a large group and therefore chose not to break out into groups. Non-consumptive use strategies were discussed first, followed by non-use strategies.

The following summary is provided in order of the workshop's agenda. Refer to pages 3 and 4 for results of the strategy prioritization exercise.



### **Workshop Welcome**

- Chris Mobley— Emphasized desire for more money to be spent on socioeconomic research of non-consumptive use of Sanctuary waters
- Chris LaFranchi— explained purpose of meeting
- Bob Leeworthy—
  - We will prioritize monitoring because it will help us to determine whether certain groups are being impacted and whether or not they need assistance.
  - It has previously been very costly to conduct non-consumptive use surveys due to need for federal Office of Management and Budget (OMB) approval. Due to high costs, may need to go through a university Sea Grant program or private or non-profit funding mechanism to make costs more reasonable.
- It was determined that about 1/3 of the those present attended the 2003 meeting

### **Questions on Private Boater Study**

After a brief review of the 2003 recommendations and the private boater study that is currently underway, the floor was opened to specific questions on the private boater study. Comments and questions received are summarized below.

- “Boating” itself should be considered a non-consumptive use.
- Question – How will data on participants be collected?
  - A database of boaters in Santa Barbara and Ventura counties will be used and researchers will determine which of these boaters have been to Channel Islands in last few months
  - Also, a method for to how to determine spatial use needs to be designed. Historically, researchers have sat down with charter boat captains to get this information.
- Utilizing local businesses to gather data is a good way to get community involvement.
- Data and study results will be made accessible to the public after completion of study.
- Individuals will not be singled out in the data; individual information will be kept confidential in accordance with government rules about disclosing personal information.
  - Study participants will be randomly chosen. Samples may be stratified to ensure that each user category is equally represented.

### **Comments on 2003 Recommendations – Is Anything Missing?**

Participants were asked whether anything should be added to the 2003 recommendations, recognizing up front that biological monitoring needs to be integrated with socioeconomic monitoring. Participants responded that the following strategies/studies should be added:

- Evaluation of impacts to resources from non-consumptive users (note: this comment was echoed during the meeting).
- Study of public perception of the Sanctuary resources, particularly with respect to fisheries. That is, people may not think there are many fish left in the Channel Islands. Outreach to educate people environmental quality and current research efforts would be helpful.

- Study of whether business from non-consumptive users will rise to compensate for losses in consumptive business as a result of marine reserves.
- Educators should also be considered as a stakeholder group (note: it was explained that educators are not non-users; they may be non-consumptive users).
- Consideration of economic impacts on local businesses (note: this is being considered as part of current efforts).
- Consideration of bird watching as a use (note: this is being considered as part of current efforts).

## Prioritization for Non-Consumptive User Strategies

During the first prioritization session, participants discussed which of four strategies for non-consumptive users should be completed first. Going around the room, participants voiced which strategy they would “vote” for. This was not a scientific process, and not all participants voiced their “votes.” However, a clear consensus emerged. The prioritization scheme workshop participants assigned to each strategy is shown in Table 7.

PRIORITY	STRATEGY	ORIGINAL #
1	Use and economic value for passengers (5.5 “votes” <sup>22</sup> )	Strategy #4
2	Use and economic value for operators (1 “vote”)	Strategy #3
3	Knowledge attitudes, and perceptions of passengers (0.5 “vote”)	Strategy #2
4	Knowledge attitudes, and perceptions of operators (0 “votes”)	Strategy #1

Table 9. Non-consumptive User Strategy Prioritization.

Specific comments on the strategies and reasons behind “votes” are as follows:

- We need to know use and economic value for passengers (Strategy #4)
- We need to know what impact the sanctuary has had on non-consumptive users and operators. Strategy #3 should be undertaken because we have baseline data (Strategy #3).
- We don’t know enough about use and economic value of passengers & we will get some information regarding operators when surveying clients (Strategy #4).
- Economic value of operators is derived from passengers – values held by passengers can give insight to how operator value is changing (Strategy #4).

Other comments from participants:

- In terms of frequency of study replication, use and economic value for operators should be replicated more often than that of passengers so that economic effects of marine reserves to local operators can be accurately tracked over time.
- Economic values of reserves may change over time
- It is difficult to prioritize when we don’t know how much money there is for monitoring.

<sup>22</sup> One person split their “vote” between 2 strategies; hence, these strategies each include 0.5 votes

Comments/questions from technical experts:

- Strategy #3 gives economic impact values; Strategy #4 gives above and beyond value, perhaps to include willingness to pay
- In terms of cost, Strategy #3 could be conducted 3 times over the course of 9 years, as opposed to Strategy #4 being conducted once
- Question from expert: will operators cooperate with survey efforts? Answer from group: if operators see this effort as beneficial to their well-being.

## **Non-Use/Passive-Use Prioritization**

### ***I. Primary Questions on Non-User Prioritization***

There were two outstanding questions to be answered during this prioritization session:

1. Which non-use survey option should be selected:
  - low (sample frame= Los Angeles, Ventura, and Santa Barbara counties);
  - medium (sample frame= all of California); or
  - high (sample frame = all of U.S.)?
2. For the low and medium groups, should we stick with the 2003 recommendations and survey just boaters, or should they be of the general population?

The answer to question #2 was clear: survey should be of general population.

For question #1, the LOW option was mentioned most often by participants (7 times), followed by HIGH (5 times), then MEDIUM (2 times). However, this was a qualitative discussion meant to generate consensus and understand why participants voted for the options that they chose. See below for further comments.

Rationale behind votes for each survey:

- From those who voted for HIGH (all of U.S.):
  - Channel Islands National Park is a national treasure (referred to recent NY Times article)
  - Locals all benefit from the Sanctuary in some way; therefore, the scale must be increased to capture true non-users
- From those who voted for LOW (local 3 counties):
  - Marine reserves are specific to the area and are therefore a local issue.
  - Locals have a pride of ownership
- From those who voted for MEDIUM option (all of California):
  - California-scale may be large enough to sample people who value the Sanctuary

### ***II. Other Comments/Questions on Non-user Prioritization***

- Marine reserves include intrinsic values

- National surveys require large sample size. Also, we should consider what the data are going to be used for.
- Some were highly skeptical of the value of a survey; that is, a survey may measure what people know or do not know. Is the surveyor trying to educate constituents?
- Most people in California do not know where the Channel Islands are.
- We should also include a “no survey” option.

## **Wrap-up**

In closing, Chris LaFranchi asked the participants what could have been done differently to improve the workshop. The participants responded with the following comments:

- Provide more definitions of technical/economic terms at the outset of the meeting.
- Clarify passive vs. non-use.
- Better clarify of past work vs. proposed work.
- Provide more lead time.
- Integrate technical input (e.g., Linwood’s and Bob’s comments) more formally.

## APPENDIX B: ACRONYMS USED

CDFG	California Department of Fish and Game
CINMS	Channel Islands National Marine Sanctuary
CINP	Channel Islands National Park
CPFD	commercial passenger fishing day
CPFV	commercial passenger fishing vessel
CRFS	California Recreational Fishing Survey
CRFS	California recreational fishing statistical survey
EBM	ecosystem-based management
GIS	geographic information system
KAP	knowledge, attitudes, perceptions
MPA	marine protected area
MRFSS	marine recreational fishery statistics survey
MRWG	Marine Reserve Working Group
NMFS	National Marine Fisheries Service
NMSP	National Marine Sanctuary Program
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
OMB	Office of Management and Budget
OSPNEY	Online Sanctuary Permitting Reporting and Evaluation System
PISCO	Partnership for Interdisciplinary Studies of Coastal Oceans
RUM	random utility model
SAC	Sanctuary Advisory Council
UCLA	University of California Los Angeles
UCSB	University of California Santa Barbara



