West Coast MPA Demonstration Project

Fact Sheet

Primary Cooperating Agencies:

National MPA Center
NMFS
PFMC

Project Purpose:

The overarching purpose of this project is to demonstrate collaborative consideration of MPA development on the West Coast by the primary cooperating agencies, in a manner fully integrated with contemporary fisheries management under the Magnuson-Stevens Fishery and Conservation Act .

Project Abstract:

In recent years, there has been increasing policy and scientific momentum for consideration of fisheries-related MPAs on the West Coast, by federal, regional and state jurisdictions[1]. However, there has not been resources allocated to support a coordinated integration of MPA considerations into contemporary fisheries management under the Magnuson-Stevens Fishery and Conservation Act (MSA), including the public processes of the Pacific Council. Lack of support resources for comprehensive MPA considerations have placed the Pacific Council in a reactive mode to MPA initiatives and unable to participate in important activities associated with MPA planning and evaluation. The Council has adopted certain closed areas to fishing without full consultation with MPA Center resources, which may have otherwise yielded different characteristics or designations. There has been public perception that the principle federal agencies have not been acting in full synchrony, and that fishery management authority is being relocated outside the MSA. This project will demonstrate how the three primary cooperating agencies can work efficiently together in the comprehensive and proper consideration of MPAs on the West Coast. Potential project products during the project time line range from planning and analysis for generalized use, to the public processes leading to and including a Pacific Council vote on specific geographic MPA boundaries and purposes.

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[1] Such policy momentum in evidenced on the national level by Executive Order 13158, the creation of the National MPA Center within NOS, and increased Congressional line item funding for MPA matters ; on the regional level by the adoption of the Groundfish Fishery Strategic Plan by the Pacific Fishery Management Council, the announced programmatic consideration of MPAs in four (five?) West Coast National Marine Sanctuaries, and the consideration of a West Coast Groundfish EFH EIS as a settlement to the *A.O.C. vs. Daley* litigation; and on the State level by the California Marine Life Protection Act, the Oregon Ocean Policy Advisory Council recommendations to Governor Kitzhaber, and various marine protected area considerations in Washington State.

Project Objectives:

- Full coordination of MPA considerations in the 2005 -2006 Annual Groundfish Fishery Management Specifications
  - The continental shelf closures
  - The Cowcod Conservation Area
  - Additional measures
- Full coordination of MPA considerations in the West Coast Groundfish EFH EIS
- Integration of emerging MPA science into all PFMC fishery management considerations
- Full Coordination in the CINMS Marine Reserves process for federal waters
- Full coordination in the mid-California Sancturaries JMPR process

Potential Project Products:

- "Integrated MPA Science" workshops and workshop proceedings
- "Integrated MPA Science" workgroup papers
- Pacific Council SSC white paper on
  - the implications of marine reserves for contemporary fishery management
  - criteria and standards for marine reserve proposals submitted for Pacific Council consideration
- Alternatives for specific MPA areas for Council adoption consideration
  - in the 2005 -2006 Annual Groundfish Fishery Management Specifications
  - in the West Coast Groundfish EFH EIS
- California National Marine Sanctuary federal waters MPA analyses

Timeline:

November 1, 2003 through December 31, 2004

Affected/Participating Agencies:

California Department of Fish and Game
Oregon Department of Fish and Wildlife
Washington Department of Fish and Wildlife
Channel Islands National Marine Sanctuary
Monterey Bay National Marine Sanctuary
Gulf of the Farallones National Marine Sanctuary
Cordell Bank National Marine Sanctuary
Olympic Coast National Marine Sanctuary

PROJECT TITLE:
Integration of Marine Protected Areas and Fishery Science and Management

PROJECT LEADERS:
National Marine Fisheries Service, Santa Cruz Laboratory and the National Marine Protected Areas, Science Institute

BACKGROUND AND RATIONALE:

In the United States and in other parts of the world Marine Protected Areas (MPAs), i.e., areas designated for special protection to improve the management of marine resources, have proven to be an effective tool for marine resource protection and enhancement. No-take MPAs, a type of MPA that prohibits all forms of extractive activity, have provided evidence of biodiversity enhancement, population growth, expanded size/age composition and habitat recovery inside reserve boundaries, and population spillover outside reserve boundaries. The benefits and role of MPAs in the larger context of fishery management, however, are controversial and have not been conclusively demonstrated. Specifically, the function and impact of MPAs within the context of traditional fishery stock dynamics and management remains poorly understood. For example, how do MPAs nested within existing management methods and strategies affect catch rates, yields, habitats and fishing effort outside reserve boundaries, how will overall stock dynamics (e.g., potential yield, spawning stock-recruitment relations, spawning biomass targets and rebuilding trajectories) be affected by the eventual decline of density-dependent compensation inside reserve boundaries and how will the time-delayed impact of MPAs affect ecological and stock dynamics both inside and outside the reserve? The potential of MPAs to improve fisheries would greatly benefit from a systematic integration with traditional fishery stock dynamics concepts and management measures. Conversely, a more systematic and integrative approach to how fisheries affect MPAs, or ecosystem function, would also greatly improve the dialogue between agencies focused on ecosystem integrity and agencies responsible for managing sustainable fisheries.

The west coast of the U.S. provides timely examples for the urgency of addressing the integration of MPAs with fishery science and management. First, the Pacific Fishery Management Council (Pacific Council) recently adopted coast-wide closures, based on depth gradients, to drastically reduce by-catch of severely impacted groundfish species. Simultaneously, the Channel Islands National Marine Sanctuary has implemented no-take MPAs within their state waters, and is seeking to commence a process to extend the MPA boundaries into federal waters. Thirdly, the three central California coast Sanctuaries are in the process of their joint management review and are considering the role of MPAs as a means to increase ecosystem protection within their sanctuary waters. These California examples illustrate the need to consider how MPA and fishery actions and plans can best be advanced using a matrix management approach for better integrating the science, legislative mandates, and management of program offices within the National Oceanic and Atmospheric Administration (NOAA). Although these examples highlight the situation off the California coast, similar situations have unfolded or are in development in other regional waters. We suggest using the California coast as a model to develop a framework for more effective regional integration of MPAs and fishery science and management. Herein we propose a means to accomplish this integration.

GOALS AND OBJECTIVES:

The overall aim of this proposal is to develop the scientific information necessary to integrate MPAs with the broader context of fishery science and management. Specific objectives are to: 1) Convene a NOAA planning group to determine the scope of the investigation and the main questions and goals of the working group, 2) Assemble a working group with appropriate expertise in fishery and ecosystem science, and management to participate in a series of workshops and discuss the important concepts and issues, and synthesize a rational approach for integration of MPAs with traditional fishery management; 3) Produce a workshop proceedings to serve as a blueprint for all opportunities to integrate MPAs with existing fishery science and ecosystem management programs; and 4) Establish a graduate research fellowship and post doctoral appointment to conduct research relevant to improving the understanding of the role of MPAs with fishery science and management.

APPROACH:

Because of their institutional responsibilities for marine fishery management and MPA science, the convening authorities of the workshops shall be NOAA's National Marine Fisheries Service (NMFS) and National MPA Center, Science Institute (NMPAC-SI). The Pacific Council, because of the central roles of the Fishery Management Councils in marine fishery management under the Sustainable Fisheries Act, and the National Center for Ecological Analysis and Synthesis of the University of California at Santa Barbara (NCEAS), because it best represents the United States academic community from which most of the scientific pressure to adopt MPAs for fishery management has come, will be sought as full partners.

The convening authorities will first form a NOAA planning committee to consist of members representing NOAA Fisheries: Office of Protected Resources, Office of Sustainable Fisheries, Office of Science and Technology, and Office of Habitat and Conservation; NMPAC-SI; the National Marine Sanctuary Program; the Pacific Council; and the MPA Federal Advisory Committee. The NOAA planning committee will determine the scope of the working group's investigations and the specific questions and goals to be addressed by the working group. The working group will consist of invited scientists and managers to include expertise from fishery population dynamics and stock assessment, ecology, economics, and fishery management. The composition of the working group with respect to expertise and individual representation will be subject to discussion and approval of the NOAA planning committee. The NOAA planning committee shall select a chair of the working group.

The working group will conduct a series of at least two workshops of 3-4 days duration at a venue to be decided by the planning committee, with the understanding that substantial and additional effort will be expended between workshops to complete projected tasks. The first workshop will consist of at least a full day of presentations by appropriate members of the working group on topics agreed upon by the planning committee to set forth the principal concepts and issues to be discussed. The remaining time will be used for discussion and debate to define a structure, process and time line for reaching a synthesis on a rational approach for integrating MPAs with traditional fishery management. The second workshop would take place after an appropriate time for additional metadata collection, analysis, and synthesis required to support the second workshop, as agreed upon by the working group. By the end of the second workshop the working group should have substantially completed a draft proceedings, and established a plan to develop peer reviewed papers from the workshop proceedings.

Administrative support for the workshops will be provided by the NOAA Fisheries, Southwest Fishery Science Center, Santa Cruz Laboratory.

The graduate research fellowship and post doctoral appointment will be co-established and co-funded by the NMFS and the NMPAC-SI to conduct research broadly relevant to improving the understanding of the role of MPAs in fishery science and management, and especially on those knowledge deficiencies identified in the workshops. The positions will be advertised nationally, and as part of the application process candidates will propose the research they would undertake. A selection committee comprised of representatives of NMFS and the NMPAC-SI would choose the best qualified applicants. The post doctoral position will be located at the NMPAC-SI in the NMFS Santa Cruz Laboratory. The graduate research fellowship will be established at the successful applicant's university of choice, or at the institution where they are currently enrolled. The field component of research can be conducted regionally, but must address a general problem, and except while engaged in field work or completing course work, the fellow will reside at NMPAC-SI in the Santa Cruz Laboratory.

The Ocean Conservancy

SAVE OUR SHORES

WWF

June 25, 2003

Stephanie Harlan and
Members of the Sanctuary Advisory Council
Monterey Bay National Marine Sanctuary
299 Foam Street
Monterey, CA 93940

RE: Special Marine Protected Areas Working Group and Action Plan

Dear Chair Harlan and Members of the Sanctuary Advisory Council:

On behalf of The Ocean Conservancy (TOC), World Wildlife Fund (WWF), and Save Our Shores (SOS), please accept the following comments regarding the Special Marine Protected Areas (SMPA) Working Group and proposed Action Plan. As active participants on the SMPA Working Group, we write to encourage the Sanctuary Advisory Council to adopt the proposed SMPA Action Plan and to continue the dialogue started in the Working Group. The SMPA Action Plan developed by the Working Group reflects a reasonable, science-based, balanced stakeholder approach to addressing a critical marine management issue and deserves the support of the Sanctuary Advisory Council.

This letter addresses the following key points:

- Support for the Joint Management Plan Review and the Working Group process.
- Support for the SMPA Action Plan.
- The Sanctuary's mandate to protect living resources.
- The National Marine Sanctuary Act's requirement that the management plan review address new information, the problems affecting Sanctuary resources and promising new management tools such as marine zoning.
- The Sanctuary's designation documents outline a process for addressing marine zoning.
- The roles and responsibilities of stakeholders in a collaborative process.

(1) The Sanctuary Advisory Council Should Support the JMPR and Working Group Process.

As the Sanctuary Advisory Council is aware, over the past several months, the Sanctuary Program has hosted an unprecedented public process to insure the broadest possible community and stakeholder input in the important task of updating the Monterey Bay National Marine Sanctuary's (MBNMS) management plan. As part of this public process, our organizations served on numerous Joint Management Plan Review (JMPR) "working groups" during Winter 2003 including the 21-member SMPA Working Group During the SMPA Working Group

process, TOC, WWF, and SOS staff dedicated significant time, energy and resources while negotiating in good faith with other stakeholders. We believe this process was a successful effort to reach consensus regarding the appropriate initial steps for the MBNMS to address a controversial but critical marine conservation issue.

The SMPA Working Group met monthly from January 2003 through April 2003 in half-day meetings. An additional meeting was convened by a subset of the SMPA Working Group (primarily the fishing representatives) expressly to address the fishing representatives concerns regarding the specific language of the draft Action Plan. At each of these five meetings, stakeholders expressed their interests and concerns, and a full and robust discussion occurred. Considerable effort was made by all participants to address issues raised by others. As a result of these negotiations, the proposed Action Plan, adopted by the consensus of the Working Group at the April 10, 2003 meeting, reflected a compromise that addressed the concerns raised by all participants.

(2) The Proposed Action Plan Reflects a Reasoned Approach to SMPAs.

Our organizations support the recommendations of the SMPA Action Plan. The Action Plan represents a thoughtful process for moving forward to address an important tool for ecosystem protection: marine protected areas where harvest is limited or prohibited. While the MBNMS is itself a marine protected area, the SMPA Action Plan specifically addresses MPAs with harvest limitations or prohibitions. The plan refers to such areas as "special marine protected areas" or "SMPAs". Experts including the American Fisheries Society, the American Association for the Advancement of Science, the National Research Council of the National Academy of Sciences, the Pew Oceans Commission and the United Nations, have all identified marine protected areas with harvest limitations and marine reserves that preclude harvest as an important (even necessary) tool for protecting and restoring marine ecosystems.[1] See Appendix 2 for additional background on the value of and scientific consensus on MPAs and marine reserves.

Establishment of marine protected areas including marine reserves in state waters is mandated under both the California Marine Life Protection Act (MLPA) and the Nearshore Fishery Management Plan created pursuant to the California Marine Life Management Act. The Pacific Fisheries Management Council has also identified marine reserves as a valuable management tool for federal waters. The Council has formally adopted marine reserves as a tool for managing the groundfish fishery but has been unable to implement reserves due to budget constraints.[2]

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[1] American Fisheries Society Policy Statement #31a, Protection of Fish Stocks at Risk of Extinction; Pew Oceans Commission. 2003. American's Living Oceans - Charting a Course for Sea Change; National Research Council. 2001. Marine Protected Areas: Tool for sustaining ocean ecosystems. National Academy Press; United Nations. 2002. Highlights of Commitments and Implementation Initiatives [from Johannesburg World Summit on Sustainable Development.]

[2] The PFMC's Strategic Plan for the Groundfish Fishery includes the following goal: To use marine reserves as a fishery management tool that contributes to groundfish conservation and management goals, has measurable effects, and is integrated with other fishery management approaches. See Marine Reserves section of PFMC website at: www.pcouncil.org.

The proposed SMPA Action Plan provides a framework, containing strategies and activities that lay out a longer-term work plan for the MBNMS to address the timely issue of SMPAs. Virtually all of the recommendations in the plan include state and federal fisheries management agencies as potential partners.

Recognizing the value of special marine protected areas, both the Florida Keys National Marine Sanctuary and the Channel Islands National Marine Sanctuary included marine zoning in their recent management plan review processes. In both cases, the issue of marine zoning was sufficiently complicated to warrant its own process, distinct from the timeline of the management plan reviews themselves. The proposed SMPA Action Plan essentially suggests a similar model for the MBNMS.

(3) The Sanctuary Has a Mandate to Protect Living Resources.

The overall purpose of the National Marine Sanctuaries Act (NMSA) is to "improve the conservation, understanding, management, and wise and sustainable use of marine resources [;] . . . to maintain the natural biological communities in the national marine sanctuaries, and to protect, and where appropriate, restore and enhance natural habitats, populations, and ecological processes [;] . . . [and] to create models of, and incentives for, ways to conserve and manage these areas, including the application of innovative management techniques."[3] The Sanctuary system has a statutory mandate to "maintain the natural biological communities in the national marine sanctuaries, and to protect, and, where appropriate, restore and enhance natural habitats, populations, and ecological processes."[4]

According to the 1992 Final Environmental Impact Statement for the MBNMS, "[t]he purpose of the Monterey Bay National Marine Sanctuary is to provide a comprehensive ecosystem approach to natural and historical resource management. Sanctuary status would permit the implementation of a coordinated and comprehensive management scheme resulting in enhanced resource protection of ecological and historic resources."[5] The MBNMS Management Plan states that "the highest priority goal for the Sanctuary is the protection of its marine environment, resources and qualities" and notes that the Sanctuary must work with other resource management agencies to reduce threats to Sanctuary resources and qualities and ensure that management agencies adopt effective resource protection strategies.[6]

The fundamental purpose of the NMSA's management plan review requirement is to ensure that sanctuary management remains effective over time. [7] The Act require a periodic evaluation of existing management techniques, an assessment of whether a sanctuary has made "substantive progress" towards achieving its stated goals, and adoption of changes to the management plan if warranted by new information or changed

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[3] 16 U.S.C. § 1431(a)(4)(A) & (b)(3), (8).
[4] 16 U.S.C §1431(b)(3).
[5] NOAA. June 1992. Monterey Bay National Marine Sanctuary Final Environmental Impact Statement and Management Plan. Executive Summary.
[6] NOAA. 1992. Management Plan for the Monterey Bay National Marine Sanctuary. Page 3.
[7] 16 U.S.C §1431(e).

conditions. Thus a sanctuary management plan is intended to be a "living" document that incorporates the best available science and innovative management techniques.

(4) The JMPR Must Respond to New Information Regarding the Ecological Impacts of Fishing and the Problems of Declining Sanctuary Living Resources.

The decade since designation of the MBNMS has brought significant advancement in scientific understanding of the state of the ocean and marine resources. It has become increasingly evident that the oceans are facing serious problems including overfishing, habitat damage, and various forms of pollution. On June 4, 2003, the Pew Oceans Commission, chaired by former Monterey Bay Congressman Leon Panetta, released its final report on the state of the oceans: *American's Living Oceans - Charting a Course for Sea Change.* Citing literally hundreds of peer-reviewed scientific studies, the Pew Report clearly and convincingly documents the severe problems facing the ocean and identifies specific steps that must be taken to address these problems. Among its many recommendations, the Pew Ocean Commission concluded that a national system of marine reserves is necessary to protect marine ecosystems.[8]

A growing body of scientific evidence documents new understandings of the environmental impacts associated with fishing practices. A 1998 paper prepared by the National Oceanic and Atmospheric Administration, titled "Ecological Effects of Fishing" details a number of direct and indirect deleterious ecological effects including: reduced population sustainability, alteration of food chains and species composition, ghost fishing, and habitat damage.[9] A recent paper in *Science* concluded that, in the past fifty years, there has been a global shift in the composition of capture fisheries to a lower trophic level.[10] A study published in *Nature* this year estimated that worldwide, large predatory fish have declined by approximately 90% when compared to pre-industrial levels, resulting in significant changes to ecosystem structure and function.[11] A 2002 report summarizing much of the recent research on the ecological impacts of fishing concludes: "[t]he weight of evidence overwhelmingly indicates that the unintended consequences of fishing on marine ecosystems are severe, dramatic, and in some cases irreversible."[12]

Nor is the MBNMS immune from the problems facing the world's oceans. In the Sanctuary, many resident and transitory fish populations have declined, some severely, over the past decade. In 1991, several rockfish species found in the Sanctuary were listed as federally "overfished", in 1997, the abalone fishery south of San Francisco was closed because of population declines, and there are concerns about the sustainability of nearshore fish populations. According to *Trends in Fisheries and Fishery Resources Associated with the Monterey Bay National Marine Sanctuary From 1981 – 2000 (Starr, Cope, and Kerr, 2002),*

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[8] Pew Oceans Commission. 2003. America's Living Oceans: Charting A Course for Sea Change. Summary Report. Page 8 & 21.
[9] National Oceanic and Atmospheric Administration (NOAA). 1998. (on-line). Ecological Effects of Fishing by Brown, S. et al. *NOAA's State of the Coast Report.* Silver Spring, MD.
[10] D. Pauly, et al. 1998. Fishing down the marine food webs. *Science* 279, 860-863.
[11] R. Myers and B. Worm. 2003. Rapid worldwide depletion of predatory fish communities. *Nature* 423, 280 - 283 (15 May 2003).
[12] Dayton et. al. 2002. Ecological Effects of Fishing in Marine Ecosystems of the United States. Prepared for the Pew Oceans Commission. Page 1.

> "The population status of a great many species harvested in the MBNMS is unknown. Available data, however, indicate that populations in shallow rocky habitats declined in the 1990s. In shallow soft bottom habitats in the MBNMS, the types of legal fishing gear are greatly limited, and populations of many species appear to be strong. Deep rocky habitats in the MBNMS harbor a large number of rockfishes and other species that have been heavily fished for decades. Population sizes of most of these species greatly declined in the 1980s, resulting in severe catch limitations in the 1990s. Because many of the fishes inhabiting deep rocky habitats are long-lived, slow growing, and have sporadic recruitment, it may take 10–20 years or more before we learn if current harvest levels are appropriate."

Significantly, most of these declines were not evident at the time of Sanctuary designation as landings for many of these fish stocks peaked in the early 1990's.[13] In November 2000, the American Fisheries Society published a list of North American fish species "at risk of extinction; The list included 22 fish species found along the Central Coast"[14] Additional documentation of "the problem" facing Sanctuary living resources is found in Appendix 2. The MBNMS is legally obligated to respond to this new information regarding the status of, and threats to, the living resources and habitats of the MBNMS.

(5) <u>The JMPR Must Address Promising Management Tools Including SMPAs and Marine Reserves.</u>

Under the NMSA, a management plan review process must include an assessment of the effectiveness of existing sanctuary management techniques and adoption of revised management plans and regulations as necessary to fulfill the purposes and policies of the Act.[15] According to the National Marine Sanctuary Management Plan Review Handbook prepared by the NMSP, one of the primary reasons reviews of management plans have been undertaken is because "most existing management plans do not incorporate state-of-the-art concepts and practices associated with management of marine protect areas." [16]

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[13] This is clearly indicated in the designation documents for the MBNMS. See for example the FEIS response to comments: " NOAA agrees that there is little evidence that current fisheries management initiatives are inadequate. Therefore, fishing is not being regulated as part of the Sanctuary regime and is not included in the Designation Document as an activity subject to future regulations. However, if data does become available demonstrating that additional fishing regulations are necessary, NOAA can provide the PFMC with appropriate recommendations for PFMC action, or take appropriate direct action ..." NOAA. June 1992. Monterey Bay National Marine Sanctuary Final Environmental Impact Statement and Management Plan. Response to Comments, Section 13: Fishing Activities. Pages F-41 through F-43.

[14] American Fisheries Society (AFS). 2000. Marine, Estuarine and Diadromous Fish Stocks at Risk of Extinction in North America (exclusive of Pacific Salmonids). *Fisheries* 25(11): 1-25

[15] 16 U.S.C. §1431(e)

[16] NOAA. February 2002. National Marine Sanctuaries Management Plan Review Handbook. Third Edition. Page 5.

The Handbook also sets out fundamental principles for the review and revision of management plans. The first two of these principles are:

- Revised management plans will be consistent with principles of sound marine resource management, available scientific information, legal mandates, and program policies.
- The management plan review process will examine the conservation role of each Sanctuary and determine if that role is as strong as is warranted to protect Sanctuary resources.

Application of these principles to the JMPR process demonstrates that the MBNMS must address marine zoning as a marine management tool capable of helping achieve many of the Sanctuary's stated goals related to ecosystem protection and research. Furthermore, the Handbook specifically notes that "[a]n examination of the conservation role [of a Sanctuary] will involve a consideration of whether marine zoning is appropriate for the Sanctuary, and what types of zones, including those that restrict or prohibit harvest activities, are warranted."[17] The Handbook thus requires each sanctuary to take a "hard look" at marine zoning during its management plan review.

The MBNMS' JMPR process is also guided by Executive Order 13158.[18] The purpose of the Executive Order is to strengthen the management, protection, and conservation of existing marine protected areas. Among the Executive Order's provisions is a requirement that federal bodies, such as the Sanctuary, prepare biological assessments of the minimum areas where consumptive uses should be prohibited to preserve representative habitats in different geographic areas of the marine environment; and assessments of threats and gaps in levels of protection currently afforded to natural and cultural resources.

The Sanctuary not only has the legal authority, but, as noted above, the legal obligation, to review changed conditions and, within the detailed and rigorous public process spelled out under the law, adopt changes to its management plan as necessary to meet its mandate of resource protection. Indeed, this is the very purpose of the legal requirement that management plans undergo comprehensive review.[19]

(6) The MBNMS Designation Documents Establish the Process for Addressing Marine Zoning.

The designation documents for the MBNMS currently do not include fishing under the activities to be regulated, in part because fishing was not considered a major threat to the sanctuary's resources in 1992. However, the documents do contemplate potential changes in the future as new information becomes available, which is why they expressly discuss the process that must be followed to make such changes. Significantly, regarding fisheries issues, the designation documents note that changes to Sanctuary management, or to the designations documents

[17] Id.
[18] 65 Fed. Reg. 34909.
[19] 16 U.S.C. § 1431(e).

themselves, require a public process including consultation with fisheries management agencies, the fishing community and the public.

The designation documents clearly identify the distinction in mandates between the fisheries agencies and the Sanctuary Program and establish the process for future collaboration on resource protection, as needed. As noted in the 1992 Monterey Bay National Marine Sanctuary Final Environmental Impact Statement and Management Plan for the MBNMS:

> "Existing fishery management agencies are primarily concerned with the regulation and management of fish stocks for a healthy fishery. In contrast, the National Marine Sanctuary Program has a different and broader mandate under the [NMSA] to protect all Sanctuary resources on an ecosystem-wide basis...
>
> Due to the different mandate of the Sanctuary and the need to address this critical component of the Monterey Bay ecosystem should problems arise in the future, NOAA would consult with the state, PFMC and NMFS, as well as the industry to determine an appropriate course of action...
>
> NOAA agrees that certain fish species in the Sanctuary may eventually need to be regulated."

As discussed above, scientific evidence collected over the past ten years makes a strong case that current fisheries management initiatives are not adequate to protect Sanctuary living resources and new approaches must be considered. The proposed SMPA Action Plan commits the MBNMS to a collaborative process for addressing SMPAs, exactly the approach directed by the Sanctuary's designation documents. Staff from NOAA Fisheries, the Pacific Fisheries Management Council and the California Department of Fish and Game all served on the SMPA Working Group. Fully one third of the representatives of the SMPA Working Group were members of the fishing community and harbormasters representing fishing concerns. The rest of the group included a range of interests from science and education, agencies (including fisheries agencies), diving and conservation. Furthermore, the fishing community and fisheries management agencies are listed as potential partners on virtually every activity listed in the proposed SMPA Action Plan. Thus, the MBNMS is following the precise requirements set out in the Designation Documents as it considers the issue of marine zoning, SMPAs and marine reserves. Finally, the SMPA Action Plan recommends continuing this collaborative effort with continued involvement by the SMPA Work Group.

(7) Roles and Responsibilities of Stakeholders.

Over the past two years, our organizations have witnessed the Monterey Bay National Marine Sanctuary make repeated and consistent efforts to reach out to members of the fishing community in an attempt to improve communication and address issues of mutual interest. The MBNMS spent many months working with the Alliance of Communities for Sustainable Fisheries, sponsoring a facilitator to assist with Alliance marine protected area discussions, and recently hosted a special JMPR meeting with the fishing community – a service not provided to

any other interest group. Fishing representatives participated in many of the JMPR Working Groups and were particularly well represented on the SMPA Working Group.

Our organizations recognize the importance of working with the fishing community in good faith to ensure Sanctuary resources are protected. SOS, TOC and WWF staff have attended and participated in a number of meetings and discussion hosted by the Alliance of Communities for Sustainable Fisheries. We supported formalizing the Business and Tourism Advisory Panel in an effort to improve communication between coastal dependent businesses and the SAC. In 2002, SOS hosted a fisherman's forum on MPAs attended by over 100 fishermen. Our organizations also supported adding a trawling seat to the SMPA Working Group to ensure the fullest representation of the fishing community. We are committed to continued collaboration with a broad range of stakeholders and believe that open communication between all interested parties will help ensure that management of the MBNMS is cutting edge and fully protects all the unique resources of the Sanctuary.

Before closing we want to briefly address a letter written to the Sanctuary Resource Protection Director Holly Price, dated May 29, 2003, and signed by the fishing representatives on the SMPA Working Group. This letter was also circulated to a long list of additional parties. As members of the SMPA Working Group we were puzzled about the purpose of this letter and disappointed by its circulation. Although a careful comparison of the points raised in the May 29, 2003 letter and the proposed SMPA Action Plan demonstrates that the fishing representatives concerns were specifically addressed in the Working Group process, the tone of the letter implies otherwise. For readers (such as those on the lengthy cc list) who have not read the SMPA Action Plan, or are not familiar with the JMPR and its broad stakeholder process, the May 29, 2003 letter may give an inaccurate impression. To be clear: the fishing representatives' concerns were fully discussed in the Working Group and reflected in the consensus agreement.

We welcome opportunities to engage in constructive dialog with all interested stakeholders and look forward to continued discussions as the JMPR process moves forward. However, we do note that participation in a cooperative stakeholder process includes a responsibility on all involved stakeholders to negotiate in good faith. We do not believe it is appropriate for any one interest group to try to exercise "veto power" over decisions that affect management of public resources. Ultimately, it is the National Marine Sanctuary Program's responsibility to manage the resources under its jurisdiction for the benefit of all Americans, consistent with its resource protection mandate.

(8) Conclusion

When former Congressman and Pew Commission Chair Leon Panetta attended a SAC meeting in April 2002, he warned the Advisory Council that we had the choice of governing the oceans by leadership or by crisis and recommended that the MBNMS govern by leadership, even though it meant tackling difficult issues. Congressman Panetta advised the SAC that controversial issues, like marine reserves, should not be avoided, but should be addressed by bringing all participants to the table to negotiate in good faith. This is precisely the process the SMPA Working Group followed and that the proposed SMPA Action Plan recommends continuing. Our organizations urge the SAC to support the proposed SMPA Action Plan.

Thank you for your consideration of these comments.

Sincerely,

Kaitilin Gaffney
The Ocean Conservancy

Mike Osmond
World Wildlife Fund

Vicki Nichols
Save Our Shores

Attachments: Appendix 1 – Evidence of the Problem
Appendix 2 – Marine Reserves (including AAS Scientific Consensus Statement)
Appendix 3 – MBNMS FEIS Response to Comments regarding Fishing Activities

cc: Members of the SMPA Working Group
The Honorable Sam Farr
Conrad Lautenbacher, Undersecretary for Oceans and Atmosphere, NOAA
Jamison Hawkins, NOAA
William Hogarth, NMFS
Donald McIsaac, PFMC
Robert Hight, CDFG
Dan Basta, NMSP
William Douros, MBNMS

APPENDIX 1

PROBLEMS FACING THE MARINE RESOURCES OF THE MBNMS

The May 29, 2003 letter to the Sanctuary states that that evidence of "the problem" is required before the Sanctuary can proceed to further consider marine protected areas. This is an issue that was also discussed at length in the MPAWG process. The most cursory review of the literature provides voluminous evidence of serious problems facing marine resources of the West Coast including the MBNMS.

Examples of Problems with Fisheries

According to the 2002 Status of Stocks prepared for Congress by NOAA Fisheries, of the 22 Pacific coastal pelagic, rockfish, and flatfish stocks that are assessed, nine are overfished and 13 are not (41% of known stocks are overfished). Seven of the nine overfished stocks are fished in the waters of the MBNMS.[1]

According to a 2002 report prepared by California Seagrant to specifically address the fisheries of the Monterey Bay National Marine Sanctuary:

> "The combined catch of all other species [aside from small pelagic fishes and squid] decreased by about 50% from the mid-1980's to the late 1990's. The decline in landings was directly related to reduced population sizes of many of the species inhabiting deep-water bottom habitats, caused by excessively high rates of fishing in the 1980's, when fishery scientists and resource managers overestimated the productively of bottom fish."[2]

Many of the fish populations of the California coast have been significantly depleted from overexploitation for decades.[3] Some fisheries in the area have followed a boom-and-bust pattern, in which excessive investment in a fishery has resulted in periods of very high yields, followed by dramatic declines in both population and harvest levels. In some cases, stocks have recovered when fishing pressure is removed, either due to a shift in fishing effort to more abundant species or when regulations are finally put into effect. Examples of this include the sardine fishery and the Dungeness crab fishery.[4]

However, many of the currently most severely depleted fisheries have been subject to intense pressure in relatively recent times. In some cases, fishing pressure actually increased after Sanctuary designation in 1992 and management measures have been slow to address developing crises. For example, the commercial abalone fishery declined by more than 50% from 1992 to

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[1] National Atmospheric and Oceanic Administration. 2003. Status of U.S. Fisheries Report to Congress for 2002.
[2] Starr et al. 2002. Trends in Fisheries and Fishery Resources Associated with the Monterey Bay National Marine Sanctuary from 1981-2000. California Seagrant Program. Page i.
[3] McEvoy, A. 1986. The Fisherman's Problem: Ecology and the Law in California Fisheries 1850-1980. Cambridge University Press.
[4] Both sardines and crabs are also strongly influenced by environmental conditions, however, it is widely recognized that intense fishing pressure was a major factor in the decline in these species in the first half of the 20th Century.

1997 when it was closed completely. [5] Just after the creation of the MBNMS came the advent of the live fish fishery, and the introduction of stick gear, in the Central Coast. Live fish fishery landings at MBNMS ports increased from 25,429 pounds in 1993 to 923,584 lbs in 1998 before dropping to 340,983 in 2000.[6] The average annual commercial landings of all fishes from shallow rocky habitats in the period from 1991 to 1998 were double those of the 1980's, and by 1998, these fisheries were in sharp decline. In 2000, commercial landings of Nearshore rocky reef fish were down approximately 2/3 from 1992 levels. [7]

Fishing pressure in the MBNMS is not limited to the commercial sector as recreational harvest exceeds commercial landings for many nearshore species.[8] Declining rockfish lengths in the Monterey Bay area recreational rockfish fisheries are another indication of excessive fishing pressure. A 1998 study documented that the mean length of bocaccio, chilipepper, yellowtail, canary and blue rockfish caught on recreational charter boats dropped below the size at which 50% of the females were mature.[9] Bocaccio and canary rockfish have since been declared "overfished" by the NMFS.

Nor are the problems relegated to the nearshore: the combined catch of all rocky deep shelf and slope species in the MBNMS (a category that includes a variety of rockfish) declined by approximately 80% from 1992 to 2000. In response to these declines, in January 2000 the federal government declared a disaster in the Pacific groundfish fishery, which includes rockfish. In June 2002, the Pacific Council voted to closed much of the Pacific coast to bottom fishing. Clearly fisheries within Sanctuary waters currently face severe problems that were not evident at the time of Sanctuary designation.

As noted earlier, while overall landings of all species combined in the MBNMS increased in the period from 1981-2000; this increase is attributed to the dramatic surge in catches of some small pelagic fishes (anchovy and sardines) and squid.[10] The increase in landings of small coastal pelagic fishes and squid is of significant concern because these species are highly variable, strongly influenced by environmental conditions, and are important components of the food chain, serving as prey for fish, as well as seabirds and marine mammals including endangered and threatened Sanctuary species. For example, small squid are known to provide at least 30% of the diet for at least 10 species of marine mammals.[11] In addition, several recreationally and commercially important fish species, including Pacific rockfish, rely on small squid for food.[12]

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[5] The abalone harvest in California reached a peak of 3.9 million pounds in 1935. Although pollution, disease and the presence of sea otters on the Central Coast are contributing factors affecting the recovery of abalone species, it was commercial and recreational fishing that drove abalone populations down to near extinction levels.

[6] Starr at 46. Table 6.

[7] Starr at ii.

[8] Starr at 1.

[9] Mason, J. 1998. Declining Rockfish Lengths in the Monterey Bay, California Recreational Fishery, 1959-94. *Marine Fisheries Review* 60 (3). Page 27.

[10] Starr at 56.

[11] Pauly, D, A Trites, E Capuli, V Christensen. 1995. Diet composition and trophic levels of marine mammals. ICES CM 1995 Marine Mammal Committee 13.

[12] Love, M. 1996. Probably More Than You Want to Know About the Fishes of the Pacific Coast. Really Big Press, Santa Barbara.

Our organizations are concerned that the Market squid fishery in Monterey could be headed for disaster. The 2002 fishery yielded over a 300% increase from the average catch since 1980 and was the highest recorded in the 75-year history of the Northern California squid fishery. The only management measures currently in existence to "protect the squid resource" are weekend closures, and a catch cap that is a three-year average of the highest recorded landings in the 75-year history of the fishery. The landings cap for the squid fishery, adopted in 2001, was intended to keep squid catch at a status quo level. However, the cap was issued for statewide catches. When unfavorable conditions hit Southern California this year, it created an unprecedented, dramatic increase in fishing pressure in Monterey. Little is known about the present size, structure or population status of California squid.

Perhaps of greatest concern is the fact that most of the fish species targeted by commercial and recreational fisheries in the Sanctuary, such as tuna, swordfish, many rockfish and flatfish, are not assessed. Our organizations are extremely concerned about the inadequacy of existing information regarding the status of fish stocks as well as the indirect effects of fishing on non-target species and habitat. According to the 2002 Status of Stock, only 22% of the 165 federally managed fish stocks in the Pacific Region are currently assessed. State managed fisheries face similar information limitations.

Examples of Problems Associated with Fishing

Fishing can also result in significant ecological impacts including habitat damage and impacts to non-target species. [13] Scientific knowledge regarding these impacts has advanced significantly in the decade since Sanctuary designation, disproving many of the assumptions about the [lack of] impacts of fishing that were included in the FEIS.

According to the MBNMS FEIS, "There is almost no data regarding the effects of roller trawling, or the one to two boat trap-fishery, to resources near and on the bottom such as benthic organisms and habitats (Edward Melvin, pers. comm., March, 1990). However, preliminary estimates from the few boats that roller trawl and trap would indicate very minimal impact (pers. comm., CDFG, March 1990)." Since that time, significant new data has demonstrated the adverse impacts of trawling including a study within the Monterey Bay National Marine Sanctuary itself.

According to a 2002 report published by the Ocean Studies Board of the National Academy of Science, high intensity trawling results in lower biodiversity and habitat complexity, and creates areas that are dominated by opportunistic species and bottom trawling has both long and short-term effects on ocean floor ecosystems, habitats, and species composition. The report also noted: "[i]mportant trawl grounds for California are, for the most part, found from Monterey

[13] Dayton, et al. 2002. Ecological Effects of Fishing in Marine Ecosystems of the United States, a report prepared for the Pew Oceans Commission; Jennings and Kaiser. 1998. The effects of fishing on marine ecosystems. *Advances in Marine Biology* 34:203-314; Pauly, D. et al. 1998. Fishing down the marine food webs. *Science* 279-860-863; & National Research Council (NRC). 1998. Improving Fish Stock Assessments. National Academy Press. Washington D.C.

north to the Oregon border, with relatively intense fishing between Santa Cruz and San Francisco..."[14].

A 1998 study by Engel and Kvitek examined trawled areas in Monterey Bay, concluding that, "bottom trawling is one of the most disruptive and widespread human-induced physical disturbances to seabed communities and has become a global environmental concern. [The] study provides evidence that high levels of trawling can decrease bottom habitat complexity and biodiversity and enhance the abundance of opportunistic species and certain prey important in the diet of commercially important species."[15] The study showed that sea pens, sea stars, sea anemones, sea slugs, and most polychaete worms were all far less abundant and overall biodiversity was about 50% less in a highly trawled area compared with lightly trawled areas. Another Pacific study found significant differences in rockfish assemblages between trawled and untrawled areas. The rockfish assemblages differed significantly in species composition, biodiversity, and biomass, with the untrawlable regions having significantly larger catches than the trawlable habitats.[16]

Aside from direct removal of targeted species and gear induced habitat damage, fishing also impacts species that are taken incidentally including both fish and nonfish bycatch. Fishermen trap, hook, and drown thousands of marine mammals, seabirds, and turtles accidentally every year. Gillnets are particularly effective at capturing these species and thousands of seabirds and marine mammals were destroyed by gillnets in Central Coast fisheries in the early 1980s. After regulations on gillnets were imposed by the State of California in the late 1980's, the 1992 MBNMS FEIS concluded that gillnets did not present a problem for Sanctuary living resources: "The current regulations on this fishery prevent gill-netters from fishing within 30 fathoms and would effectively move the current gill-net inshore fishery beyond the zone of distribution of shore birds and coastal marine mammals." This conclusion has since been proven false. During the 1990's, gillnet mortality of Common Murres average in the low thousands of birds per year – high enough to affect species recovery.[17] NMFS observer data for the year 2000, with coverage on 20-25% of all fishing trips, resulted in estimated mortality in Monterey area of over 3000 seabirds, 26 cetaceans, and 214 pinnipeds.[18] In 2002, the CDFG was required to issue an emergency closure of the gillnet fishery in waters 60 fathoms or less from Point Reyes to Point Arguello to protected seabirds and marine mammals.

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[14] Ocean Studies Board. 2002. Effects of Trawling and Dredging on Seafloor Habitat. National Academy of Science. Page 46

[15] Engel, J. and R. Kvitek. 1998. Effects of otter trawling on a benthic community in Monterey Bay National Marine Sanctuary. *Conservation Biology* 12: 1204-1214.

[16] Matthews, K.R. and L.J. Richards. 1991. Rockfish (Scorpaenidae) assemblages of trawlable and untrawlable habitats off Vancouver Island, B.C. *N. Am. J. Fish. Manag.* 11: 312-318.

[17] Forney, K. A., S. R. Benson, and G. A. Cameron. 2001. Central California gillnet effort and bycatch of sensitive species, 1990-98. *In* E. F. Melvin and J. K. Parrish (eds.), Seabird bycatch: trends, roadblocks and solutions, p. 141-170. AK-SG-01-01, Univ. Alaska Sea Grant, Fairbanks.

[18] Carretta, J. 2001. Preliminary estimates of Cetacean Mortality in California Gillnet Fisheries for 2000. Southwest fisheries Science Center, NOAA, U.S. NMFS.

APPENDIX - 2

MARINE RESERVES: AN EFFECTIVE MANAGEMENT TOOL

In the decade since the designation of the Monterey Bay National Marine Sanctuary, a scientific consensus has emerged regarding the effectiveness of marine protected areas and marine reserves as an ocean management tool – particularly for protecting biodiversity and habitat. Currently, the MBNMS contains three tiny marine reserves covering approximately .05% of Sanctuary waters.

In the past few years, literally dozens of peer- reviewed articles have appeared in scientific journals documenting the effectiveness of marine reserves. For example, the February 2003 supplemental issue of Ecological Applications was devoted exclusively to marine reserves[19]including an article that provides a comprehensive review of studies on the performance of 89 marine reserves which "reveals that most well-enforced marine reserve result in relatively large, rapid, and long lasting increases in the population sizes, numbers of species, and reproductive output of the marine animals and plants." [20] Significantly, more than half of the studies cited in this paper were published *after* the MBNMS designation; demonstrating the relative recentness of such evidence.

On average, the reserves studied had twice as many fish overall and three times as many large fish as exploited areas. According to a report prepared for the Pew Oceans Commission, "[t]he overwhelming result of decades of study of reserves is that heavily exploited species recover within reserve borders, becoming more numerous and larger."[21] These positive effects held true in temperate and tropical waters, for fish and shellfish, and in a wide range of habitats. Sport fishermen working at the borders of reserves report catching record-sized fish. [22] There is growing evidence that marine reserves can help sustain nearby fisheries by exporting adults into the surrounding waters.[23]

The ability of reserves to shelter large fish is particularly critical to the ecosystem. Many fish take years to mature and reproduce—some begin spawning after only a couple of years, others require at least a decade. As fish grow larger, their ability to produce eggs increases exponentially so that in terms of making new fish, one big fish can equal a hundred smaller fish. In very long-lived species such as Pacific rockfish, large individuals (over 20 years old) produce the majority of eggs for the entire population of fish. Marine reserves also play a critical role by protecting large predators. In California, large fish are important urchin predators; so protecting

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[19] February 2003. The Science of Marine Reserves. *Ecological Applications* 13(1). This issue contains 17 articles on marine reserves.

[20] Partnership for Interdisciplinary Studies of Coastal Oceans. 2002. The Science of Marine Reserves. http://www.piscoweb.org 22 pages.

[21] Palumbi, S. 2002. Marine Reserves A Tool for Ecosystem Management and Conservation. 2002. Prepared for the Pew Oceans Commission. Page 24.

[22] Stevens, P.W. and K.J. Sulak. 2001. Egress of adult sport fish from an estuarine reserve within Merritt Island National Wildlife Refuge, Florida. *Gulf of Mexico Science*. 19(2): 77-89.

[23] Gell, F & C. Roberts. 2002. The Fishery Effects of Marine Reserves and fishery Closures. WWF U.S.

large animals also helps protect kelp forests. When fishing depletes these predators, purple urchin populations explode, mowing down kelps and leaving areas barren.[24]

For all that is known about the ocean, far more remains unknown. Many of the species targeted in California, are poorly understood and have never been scientifically assessed. Our power to predict the consequences of our actions in a constantly changing sea is extremely low. New discoveries about the influence on fish abundance of El Nino and other shifts in ocean temperature and productivity underscore that a high level of uncertainty is inherent in our estimates of fish population trends. Marine reserves protect real fish, rather than fish populations estimated in computer models. Marine reserve networks provide marine resource managers with insurance in the face of limited knowledge, uncertainty, and unpredictable changes in the ocean environment.

THE SCIENTIFIC CONSENSUS STATEMENT

At the February 2001 annual meeting of the American Association for the Advancement of the Sciences (AAAS), 161 leading marine scientists and experts on marine reserves (signatories all hold Ph.D. degrees and are employed by academic institutions) took the extremely unusual step of signing onto a joint scientific consensus statement on marine reserves.[25] See attached.

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[24] Lafferty, K.D. & D.J. Kushner. 2000. Population regulation for the purple sea urchin. Stronglocentrotus purpuratus, at California Channel Islands. Pp. 379-381 in Brown, D.R. et al. Eds. *Proceedings of the Fifth California Islands Symposium,* MMS Publication #99-0038.

[25] http://www.CompassOnline.org. At the 1997 AAAS annual meeting, a symposium on marine protected areas raised a number of unresolved critical scientific issues and identified research priorities. In response, an international team of scientists was convened at the National Center for Ecological Analysis and Synthesis (NCEAS) and charged with developing better scientific understanding of marine protected areas and marine reserves. Conclusions from the two-and-a-half-year efforts of this working group are in the February 2003 Ecological Applications. This Scientific Consensus Statement is based upon the results of those studies and other research already published elsewhere. The Statement was drafted in response to repeated requests by many fishermen, marine resource managers, governmental officials, conservation activists, interested citizens and others for a succinct, non-technical but scientifically accurate summary of the current scientific knowledge about marine reserves.

Embargoed until 9AM PST,
17 Feb 2001-AAAS Meetings

Contact: Patty Debenham
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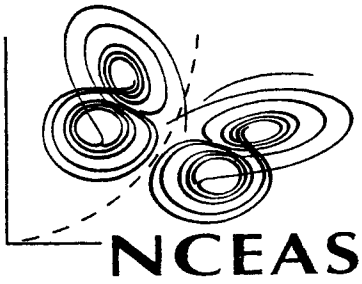

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SCIENTIFIC CONSENSUS STATEMENT ON MARINE RESERVES AND MARINE PROTECTED AREAS

THE CONTEXT

At the 1997 Annual Meeting of the American Association for the Advancement of Science (AAAS), a symposium on marine protected areas reviewed the state of the oceans, raised a number of unresolved critical scientific issues and identified research priorities. In response, an international team of scientists was convened at the National Center for Ecological Analysis and Synthesis (NCEAS) and charged with developing better scientific understanding of marine protected areas and marine reserves. Conclusions from the two-and-a-half-year efforts of this working group are *in press* in a special issue of the journal *Ecological Applications*. This Scientific Consensus Statement is based upon those results and other research already published elsewhere. The Statement is a joint effort of the NCEAS scientists and the academic scientists participating in a meeting on marine reserves convened by COMPASS (Communication Partnership for Science and the Sea). This Statement was drafted in response to repeated requests by many fishermen, marine resource managers, governmental officials, conservation activists, interested citizens and others for a succinct, non-technical but scientifically accurate summary of the current scientific knowledge about marine reserves. Additional information on the history of this Statement, NCEAS and COMPASS appears after the Statement.

New Approaches Are Needed:

The declining state of the oceans and the collapse of many fisheries have created a critical need for new and more effective management of marine biodiversity, populations of exploited species and overall health of the oceans. Marine reserves are a highly effective but under-appreciated and under-utilized tool that can help alleviate many of these problems. At present, less than 1% of United States territorial waters and less than 1% of the world's oceans are protected in reserves.

What are Marine Reserves?

Marine Reserves (**MRVs**) are areas of the sea completely protected from all extractive activities. Within a reserve, all biological resources are protected through prohibitions on fishing and the removal or disturbance of any living or non-living marine resource, except as necessary for monitoring or research to evaluate reserve effectiveness. Marine reserves are sometimes called "ecological reserves," "fully-protected marine reserves," or "no-take areas." **MRVs** are a special category of **Marine Protected Areas** (MPAs). MPAs are areas designated to enhance conservation of marine resources. The actual level of protection within MPAs varies considerably; most allow some extractive activities such as fishing, while prohibiting others such as drilling for oil or gas. **A Network of Marine Reserves** is a set of **MRVs** within a biogeographic region, connected by larval dispersal and juvenile or adult migration.

THE SCIENTIFIC CONSENSUS

The first formal marine reserves were established more than two decades ago. Recent analyses of the changes occurring within these MRVs allow us to make the following conclusions:

Ecological effects *within* reserve boundaries:

1) Reserves result in long-lasting and often rapid increases in the abundance, diversity and productivity of marine organisms.

2) These changes are due to decreased mortality, decreased habitat destruction and to indirect ecosystem effects.

3) Reserves reduce the probability of extinction for marine species resident within them.

4) Increased reserve size results in increased benefits, but even small reserves have positive effects.

5) Full protection (which usually requires adequate enforcement and public involvement) is critical to achieve this full range of benefits. Marine protected areas do not provide the same benefits as marine reserves.

Ecological effects *outside* reserve boundaries:

1) In the few studies that have examined spillover effects, the size and abundance of exploited species increase in areas adjacent to reserves.

2) There is increasing evidence that reserves replenish populations regionally via larval export.

Ecological effects of reserve *networks*:

1) There is increasing evidence that a network of reserves buffers against the vagaries of environmental variability and provides significantly greater protection for marine communities than a single reserve.

2) An effective network needs to span large geographic distances and encompass a substantial area to protect against catastrophes and provide a stable platform for the long-term persistence of marine communities.

ANALYSES OF THE BEST AVAILABLE EVIDENCE LEAD US TO CONCLUDE THAT:

- Reserves conserve both fisheries and biodiversity.
- To meet goals for fisheries and biodiversity conservation, reserves must encompass the diversity of marine habitats.
- Reserves are the best way to protect resident species and provide heritage protection to important habitats.
- Reserves must be established and operated in the context of other management tools.
- Reserves need a dedicated program to monitor and evaluate their impacts both within and outside their boundaries.
- Reserves provide a critical benchmark for the evaluation of threats to ocean communities.
- Networks of reserves will be necessary for long-term fishery and conservation benefits.
- Existing scientific information justifies the immediate application of fully protected marine reserves as a central management tool.

This Scientific Consensus Statement is signed by 161 leading marine scientists and experts on marine reserves. Signatories all hold Ph.D. degrees and are employed by academic institutions. Names and affiliations of signatories appear on pages 5 - 12.

Issue 13: Fishing Activities

Comment

Regulation and Prohibition

Fishing should not be prohibited within the Sanctuary. Instead, fisheries resource regulation should remain under the jurisdiction of the state of California, the National Marine Fisheries Service, (NMFS) and the Pacific Fisheries Management Council (PFMC). This should be clarified in the FEIS/MP.

NOAA Response

Regulation and Prohibition

Existing fisheries are not being regulated as part of the Sanctuary regime and fishing is not included in the Designation Document as an activity subject to future regulation. Fisheries management will remain under the existing jurisdiction of the state of California, NMFS and PFMC. Sanctuary prohibitions that may indirectly affect fishing activities (Depositing and Discharging Activities, Alteration of or Construction on the Seabed, Historic Resource Protection, and Taking of Marine Mammals and Seabirds) have been written to explicitly exempt aquaculture, kelp harvesting, and traditional fishing activities. However, if in the future NOAA determines that these exemptions are resulting in injury to Sanctuary resources or qualities from aquaculture, kelp harvesting, or traditional fishing activities, changes to the Sanctuary regulations would be undertaken pursuant to the APA's notice-and-comment rulemaking process and the requirements of NEPA.

Existing fishery management agencies are primarily concerned with the regulation and management of fish stocks for a healthy fishery. In contrast, the National Marine Sanctuary Program has a different and broader mandate under the MPRSA to protect all Sanctuary resources on an ecosystem-wide basis. Thus, while fishery agencies may be concerned about certain fishing efforts and techniques in relation to fish stock abundance and distribution, the SRD is also concerned about the potential incidental impacts of specific fishery techniques on all Sanctuary resources including benthic habitats or marine mammals as well as the role the target species plays in the health of the ecosystem. In the case of Monterey Bay, fish resources are already extensively managed by existing authorities and NOAA does not envision a fishery management role for the Sanctuary at this time. SRD will provide research results and recommendations to existing fishery management agencies in order to enhance the protection of fishery and other resources within the Sanctuary.

Due to the different mandate of the Sanctuary and the need to address this critical component of the Monterey Bay ecosystem should problems arise in the future, NOAA would consult with the state, PFMC and NMFS, as well as the industry to

Comment	NOAA Response
	determine an appropriate course of action. As required by Section 304 (a) (5) of the MPRSA, the PFMC would be provided with the opportunity to prepare draft regulations for fishing in the Sanctuary. In addition, a NOAA intraagency Memorandum of Understanding would ensure that NMFS would have a major role in the development of Sanctuary fishery regulations. Finally, the MPRSA also requires that the inclusion of fishing, or any other activity not currently listed in the Designation Document as an activity subject to regulation not be made without the preparation of environmental impact statements, solicitation of public comments, and conduction of a public hearing.
Certain fish species in Monterey Bay should be regulated due to continuing declines.	NOAA agrees that certain fish species in the Sanctuary may eventually need to be regulated. See above response for how NOAA would proceed if problems related to fishing should arise.
Gill Net, Trammel Net, and Other Fishing Methods	**Gill Net, Trammel Net, and Other Fishing Methods**
Gill net fishing and the number of non-targeted species that perish in the gill net industry are a concern. Gill nets and trammel nets should be prohibited throughout the Sanctuary. Bottom dredge, trawl, and drag-net fishing methods should also be prohibited because of the damage to benthic natural resources.	NOAA believes that existing authorities, as described below, are adequately managing these activities and further regulation is unnecessary. NOAA has the ability to seek additional protection in the future (see response to first *Fishing Activity* comment above.) The gill net fishery has been regulated since 1984 by the state and Federal governments because of the mortality of marine mammals and birds. Currently, gill netting is restricted to waters deeper than 20 fathoms. In 1989, the halibut gill net fishing was closed inside 40 fathoms. Future regulations on this fishery are pending which would prevent gill net fishing from occurring within 30 fathoms. This would effectively move the current gill net inshore fishery beyond the zone of distribution of shore birds and coastal mammals. The trawl fishery has also been extensively regulated and no trawlers are currently allowed within three miles of the coast. Unfortunately, there is almost no data regarding the effects of roller trawling on benthic organisms and habitats. NOAA may consider studying the effects of bottom trawling to determine if there are negative impacts on benthic organisms and the surrounding environment.

Comment	NOAA Response
Shark Fishing	**Shark Fishing**
Commercial shark fishing should be strongly limited until enough research has been done to establish sustainable yields for specific species. Direct quotas should be established for shark species within the Sanctuary.	NOAA will work with fishermen and local management agencies as well as the CDF&G, NMFS, and the PFMC to determine if additional management measures are necessary to protect shark species. NMFS wrote and released a draft shark fishery management plan for public comment this year for the East Coast and Gulf of Mexico. If a shark management plan is developed for West Coast species, SRD will be involved in its formulation and evaluation, and will provide recommended courses of action. NOAA may consider focusing research funds on the study of shark ecology for those species that exist within the Sanctuary.
The practice of cutting off shark fins (finning) and discarding the carcasses should be banned within the Sanctuary. Recreational sport fishing for sharks should be severely limited, and selling shark catch should be prohibited.	All fishing activities in Federal waters are under the control of the PFMC and NMFS. Fishermen in state waters are managed by the CDF&G. SRD will work with these agencies to determine if any shark plans or regulations are necessary to protect these species from this activity.
Comments on the DEIS/MP	**Comments on the DEIS/MP**
The DEIS/MP did not demonstrate that additional fishing regulations in the Sanctuary were necessary to protect fish populations.	NOAA agrees that there is little evidence that current fisheries management initiatives are inadequate. Therefore, fishing is not being regulated as part of the Sanctuary regime and is not included in the Designation Document as an activity subject to future regulation. However, if data does become available demonstrating that additional fishing regulations are necessary, NOAA can provide the PFMC with appropriate recommendations for PFMC action, or take appropriate direct action (see response to first *Fishing Activity* comment above).
What structures or materials on the seabed in connection with fishing will be allowed?	Constructing, placing, or abandoning any structure, material, or other matter on the seabed of the Sanctuary is prohibited; except when resulting incidentally from traditional fishing operations, such as the use of traps and bottom trawls; aquaculture; or kelp harvesting (see also response to first *Fishing Activity* comment above).

July 30, 2003 Testimony of Kathy Fosmark before the Monterey Bay National Marine Sanctuary Advisory Council

My name is Kathy Fosmark and I am the co-chair of the Alliance of Communities for Sustainable Fisheries. As our name implies we are an organization of people who fish and other community representatives, who are committed to having well-managed and sustainable fisheries. To that end, we accept and participate in the regulatory authority of the California Department of Fish and Game, NOAA Fisheries, and its Pacific Fishery Management Council. These are the agencies that have the authority, expertise, and public processes in place to manage issues that affect fishing.

There are several issues in the Management Plan that relate directly or indirectly to fishing. I am here to say that people who fish expect the Sanctuary Program to keep the promise made to us in the early 1990's. This promise is represented in numerous sections of the original designation document. To quote two sections "Fishing is not being regulated as part of the Sanctuary regime and is not included in the designation document as an activity subject to future regulation. Fisheries management will remain under the existing jurisdiction of the State of California, the National Marine Fisheries Service, and the Pacific Fishery Management Council. Sanctuary prohibitions that may indirectly affect fishing activities have been written to explicitly exempt traditional fishing activities." This section concludes with the following, "Should problems arise in the future (and by this we understand this to mean fisheries problems) NOAA would consult with the State, PFMC, and National Marine Fisheries Service, as well as the industry, to find a proper course of action."

Therefore, with regard to any fishing or extractive concerns that the Sanctuary may have regarding the Davidson-Seamount, Krill harvesting, bottom trawling or the use of marine protected areas; these issues should be referred to the proper fishery management agencies. The Sanctuary should collect all of the public comments on these fishery issues and package them up and send them to the proper fishery management agencies. That is the action that is consistent with the designation document.

I might add that regarding MPA's, this does not mean that the fishing community is against MPA's, it is just a matter of letting the appropriate agency do its job. Your vote on the MPA issue is not a vote for, or against, having MPA's in Federal waters. Let the Pacific Fishery Management Council do its job!

I also want to say that I was part of the group that identified ways in which fishermen could work constructively with the Sanctuary Program in education and science research projects. I am heartened by this effort, and will be delighted to see this relationship flourish.

Quotations taken from:
Federal Register / Vol. 57, No. 182 / Friday, September 18, 1992 / Rules and Regulations, Page 43314

Exhibit E.1
Attachment 4
September 2003

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

Monterey Bay National Marine Sanctuary
299 Foam Street
Monterey, California 93940

June 25, 2003

Tom Canale
120 Allegro Dr.
Santa Cruz, 95060

SUBJECT: Special Marine Protected Area Workgroup

Dear Mr. Canale: TOM

This letter responds to your May 29, 2003 letter regarding the initial planning conducted by the Special Marine Protected Area[1] Workgroup (Workgroup) of the Sanctuary Advisory Council (SAC) for the Monterey Bay National Marine Sanctuary (MBNMS or Sanctuary). This multi-stakeholder workgroup, formed as part of the Joint Management Plan Review process, completed its recommendations for the SAC last month, following four meetings. The recommendations in this initial effort outline a proposed action plan for continued evaluation of the issue of marine protected areas. This evaluation is to be conducted with ongoing involvement from Workgroup members, including the multiple participants from the fishing community, harbors, environmental organizations, scientists, agencies, and various user groups. The National Oceanic and Atmospheric Administration places great value in community-based processes that involve diverse interests on important resource management issues.

As you know, the National Marine Sanctuary Program (NMSP) has several areas of focus including: protecting and where appropriate restoring and enhancing biological communities and habitats; enhancing public awareness, understanding and wise and sustainable use of the marine environment and the historical resources of the Sanctuary System; and supporting and coordinating scientific research on, and long-term monitoring of, the resources of the Sanctuaries. Fish are an integral part of the ecosystem, and play important roles as predator and prey for a wide range of species. The NMSP does not focus on management of fish stocks either individually or as a whole, but rather considers the health of the ecosystem, and thus may, in that context, consider addressing fishing activities that may have an adverse impact on Sanctuary resources and ecosystems. We acknowledge that addressing these activities could have an impact on fishing activities. However, NOAA is focused on making this a process that is complementary to fisheries management. To this end, we coordinate our planning and decision-making with the state, NOAA's National Marine Fisheries Service and the appropriate Regional Fishery Management Council. We also recognize that fishing is an integral part of the economic

[1] For the purposes of this workgroup, "special marine protected area" means an area or zone of the MBNMS whereby fishing and other extractive activities would not be allowed for purposes of ecosystem protection. This working term includes varying levels of closure, from full "no harvest", to allowing take of selected species.

and cultural history of a region, and work with local communities also to strive to find solutions that can protect a sanctuary's ecosystem while sustaining a region's critical recreational and commercial fisheries. This general approach to fishing related issues applies to the MBNMS's assessment of special MPAs.

Your letter raises a concern that the Special MPA Workgroup did not develop a problem statement establishing a need for MPAs that would justify NMSP action. As you know, the proposed action plan does not recommend that the Sanctuary take action to establish special MPAs at this time, nor does it outline any potential sites. It does recommend ongoing collaboration with the California Department of Fish and Game in their development of MPAs in State waters, and outlines a complementary process to evaluate the need for and potential development of MPAs in the MBNMS in Federal waters, in collaboration with the Pacific Fishery Management Council and NOAA Fisheries.

The original charge to the Workgroup from the SAC and MBNMS staff was to develop a framework for how best to evaluate special MPAs within the MBNMS in the context of ecosystem protection. Its charge did not include resolving whether there should be MPAs in Federal waters of the MBNMS and if so, where they should be located. Thus, the Workgroup's initial efforts were focused on developing an outline of future work necessary before such a decision would be made. This proposed action plan includes specific future steps that address many of the concerns listed in your letter, including an evaluation of a range of habitats and ecosystem functions in the Sanctuary and identification of the existing and potential threats they face. Also included are several steps to refine the objectives of special MPAs for particular habitats and ecosystem functions. At the Workgroup's request, this evaluation is to be conducted with an array of scientific partners and with ongoing involvement of the Workgroup, as described in the plan. Furthermore, this evaluation will also be coordinated with the Pacific Fishery Management Council and staff from NOAA Fisheries. As you know, both Council staff and NOAA Fisheries staff participated on the Workgroup.

In response to your group's previous request, MBNMS presented at a Workgroup meeting a list of problems occurring in the Sanctuary region that we believe warrant an evaluation and consideration of the utility of special MPAs within the Sanctuary. These include:

- declining biodiversity
- disruption of predator-prey relationships
- habitat damage
- lack of adequate buffers for ecological catastrophes
- lack of locations where scientists can study fully intact ecosystems.

The Workgroup did not attempt to evaluate or reach agreement on these problems in the limited time available. Rather, as noted above, future steps were identified to conduct this evaluation, in collaboration with the broader scientific community and workgroup members.

As regards your request that the MBNMS develop a detailed "problem statement" as to why we need special MPAs, you have in the past asked that we not take a unilateral position on the matter, and instead work with affected parties such as fishermen and harbormasters to conduct an evaluation of ecosystem problems. The path we have taken to date on this issue, and prefer to take in the future, honors that request and capitalizes on collaborations with you and many other stakeholders and scientists in defining the problem and working through solutions.

The proposed action plan also includes recommendations regarding future evaluation of many other issues raised in your letter, including consideration of special MPAs vis a vis other types of management measures, consideration of phasing of the introduction of MPAs should they be warranted, and the development of adequate monitoring and evaluation tools if special MPAs are implemented. As indicated in the proposed action plan, much future work remains to be done to address these and other issues before any decision about special MPAs will be made. This work is to be conducted with ongoing involvement of the fishing community and the many other stakeholders represented on the Workgroup.

I appreciate your detailed review of certain subsections of the 1992 Environmental Impact Statement (EIS) for MBNMS designation related to fishing activities. As we have previously discussed, the response to comments in the appendices to the EIS contains more extensive language on the question of MBNMS's role in fishing issues, including how it may move forward in the future, if necessary, to protect the ecosystem with regulations affecting fishing. Be assured that we would not take such action without extensive collaboration and discussions with fisheries agencies and representatives of the fishing community such as yourselves.

I would like to address the concerns raised in your letter about use of the term consensus in our decision-making process. The NMSP does typically ask workgroups around the country to strive to reach consensus on the recommendations the workgroups make to individual sanctuary advisory councils. However, in asking these diverse interests to seek consensus, we also realize that divergent views may preclude the groups' members from totally agreeing on a particular matter. Thus, our decision-making process focuses on consensus first, yet does not allow an issue to be vetoed by a minority or single individual. It seems we share with you a strong interest in making group decisions by consensus, but diverge in what to do when consensus cannot be reached. In the case of the MBNMS management plan review workgroups, the SAC will be the body to evaluate the different positions and make recommendations to the Sanctuary Superintendent. This description of the decision-making process, relying heavily and foremost on consensus, was clearly explained to and accepted by the SAC and each workgroup early in the JMPR process. Throughout the Special MPA Workgroup meetings, members were asked to develop and agree on language in the proposed action plan that all members could accept, and this occurred as numerous modifications were made to the evolving draft. At the final meeting, complete agreement (i.e., consensus) was reached on language outlining future work in each of the sections of the proposed action plan before moving on to the next section. Your letter also raises a concern that if agreement is not reached in a workgroup, then decision-making may be elevated to a higher level. This is exactly what we intend. As these workgroups were convened to make

recommendations to the SAC, who would in turn make recommendations to Sanctuary Superintendent, the next level of decision-making lies with the SAC.

I appreciate the positive direction of your letter regarding solutions, in particular the acknowledgement that MPAs can help the Sanctuary meet conservation goals. Given that the goal of this Workgroup is, ultimately, to help determine if special MPAs are an effective and preferred tool to enhance and ensure ecosystem protection within the MBNMS, your interest in continuing our collaborative partnership is important. Most of the eleven points you identify at the end of your letter mirror the strategies and activities identified by the Workgroup in the proposed action plan. There may be disagreement on the emphasis and order of some of the mutual points, but we are very close in our shared recognition of necessary steps to move forward. As we have committed in the past, the MBNMS is considering the need for this tool in collaboration with the fishing community and federal and state fishery managers, as well as the other stakeholders who have an interest in this matter. This was our commitment in 1992, and we appreciate your willingness to shoulder some of the load in this community-based partnership.

Regarding your request that we distribute your May 29, 2003 letter to those in a decision-making role on the proposed action plan, as a matter of course we will be sending that letter and this response to the Sanctuary Advisory Council, and to those copied on your original letter. Because the March 6, 2003[2] letter was internal workgroup correspondence (like many other correspondences in many other workgroups) and contains very similar issues as your May 29, 2003 letter, we are not copying that to SAC members.

Thank you for your comments and taking the time to share your concerns on this issue. We greatly appreciate the constructive time all of you spent as Workgroup members to develop the proposed action plan, and we look forward to your continued involvement in the process.

Sincerely,

Bill Douros

William J. Douros
Sanctuary Superintendent

This same letter was addressed individually to all of those who signed the May 29, 2003 letter:

Tom Canale
David Crabbe
Don Dodson
Howard Egan
Peter Grenell
Mike Ricketts
Steve Scheiblauer

[2] Your May 29th letter referred to a February 27, 2003 letter. We do not have a copy of a letter from you dated February 27th, rather we assume you meant your March 6, 2003 letter on similar topics.

cc:
The Honorable Sam Farr, US Representative, 17th District
Members of the MBNMS SAC
Robert Hight, Director, CA Dept. of Fish and Game
Dr. Donald McIsaac, Ex. Director, Pacific Fisheries Management Council
Admiral Conrad Lautenbacher, Undersecretary for Oceans and Commerce
Dr. Richard Spinrad, Assistant Administrator, National Ocean Service
William Hogarth, Asst. Administrator, National Marine Fisheries Service
Dan Basta, Director, National Marine Sanctuary Program

UPDATE ON MARINE RESERVES ISSUES

Situation:

Marine Protected Area (MPA) Demonstration Project. The Council received funding to coordinate with the National MPA Center and the National Marine Fisheries Service (NMFS) on matters associated with MPAs on the West Coast. Exhibit E.1, Attachment 1 is a fact sheet on the West Coast MPA Demonstration Project, including a NMFS-sponsored workshop proposed to integrate MPAs with fishery science and management. The bulk of the funding for Council use is scheduled for 2004.

Scientific and Statistical Committee (SSC) Marine Reserves Subcommittee White Paper. On August 18-20, 2003 the SSC Marine Reserves Subcommittee met to develop a white paper evaluating the implications of marine reserves for contemporary fishery management on the West Coast, taking into consideration reserve objectives and uncertainties associated with both reserves and traditional fishery management. The preliminary recommendations of the subcommittee will be reviewed by the SSC at this Council meeting, and it is expected that the white paper will be presented to the Council at the November meeting. A representative of the SSC is expected to brief the Council on the meeting during this agenda item.

Joint Management Plan Review. The three central California National Marine Sanctuaries – Monterey Bay, Cordell Bank, and Gulf of the Farallones – are undergoing a joint management plan review process. This June and July, the Sanctuaries' working groups submitted recommendations to their respective Sanctuary Advisory Councils (SACs). The Monterey Bay SAC met in August, and the Gulf of the Farallones and Cordell Bank SACs will meet in September to review the working group recommendations. The Council received two pieces of public comment and one letter from Monterey Bay National Marine Sanctuary related to the development of the Action Plans and draft management plan for the Monterey Bay Sanctuary (Exhibit E.1, Attachments 2, 3, and 4). A draft management plan based on these Action Plans is expected to be completed in Fall 2003.

Terminology. There has been some confusion about the types of management measures that fall under the "marine reserves" agenda item. Some of this confusion is due to terminology. The Council uses the term "marine reserve" to mean an area where some or all fishing is prohibited. This is similar to the definition of a "fishery reserve" created by the Ocean Studies Board of the National Research Council:

> *"Zoning that precludes fishing activity on some or all species to protect critical habitat, rebuild stocks (long term, but not necessarily permanent closure), provide insurance against overfishing, or enhance fishery yield." (Ocean Studies Board, 2001)*

A "marine protected area" is a "geographic area with discrete boundaries [like the boundaries of a piece of real estate or a park] that has been designated to enhance the conservation of marine resources" (Ocean Studies Board). As such, marine reserves are types of "marine protected areas;"

however, marine protected areas include more than just marine reserves. For example, a marine protected area might prohibit activities like oil and gas drilling, while allowing fishing.

Issues that the Council deals with, such as modifying National Marine Sanctuary management plans, include MPA provisions that go beyond marine reserves. Therefore, Council staff feels it more appropriate to change the name of this agenda category from "marine reserves" to "marine protected areas" in future Council agendas.

Council Task:

1. **Council discussion (no action required).**

Reference Materials:

1. West Coast Demonstration Project Fact Sheet (Exhibit E.1, Attachment 1).
2. Letter from the Ocean Conservancy, World Wildlife Fund, and Save Our Shores to the Monterey Bay National Marine Sanctuary Advisory Council (Exhibit E.1, Attachment 2).
3. Testimony of Ms. Kathy Fosmark before the Sanctuary Advisory Council (Exhibit E.1, Attachment 3).
4. Letter from Mr. William Douros to Mr. Tom Canale regarding the Special Marine Protected Areas Workgroup of the Monterey Bay National Marine Sanctuary Advisory Council (Exhibit E.1, Attachment 4).

Agenda Order:

1. Update on Marine Reserves Issues — Jennifer Gilden / Tom Jagielo
   a. Agendum Overview
   b. Scientific and Statistical Committee (SSC) Report
   c. Reports and Comments of Advisory Bodies
   d. Public Comment
   e. Council Discussion

PFMC
08/20/03

INTERNAL USE ONLY

NOAA Channel Islands National Marine Sanctuary
Environmental Review Process to Consider Marine Reserves

Proposed Activities and Timeline

March 2003

- Sanctuary prepares Notice of Intent to Prepare a Draft Environmental Impact Statement (DEIS)
- Brief Pacific Fishery Management Council (PFMC) on Sanctuary initiation of Environmental Review Process (completed)
- Brief Sanctuary Advisory Council (SAC) on Sanctuary initiation of Environmental Review Process (completed)

April 2003

- Sanctuary releases Notice of Intent to prepare DEIS in Federal Register
- Sanctuary submits letter to PFMC describing Environmental Review Process for discussion at April PFMC meeting

May/June 2003

- Sanctuary hosts Scoping Meetings - contemporaneously at SAC May meeting and PFMC June meeting, additional scoping likely in Ventura County
- Sanctuary sends consultation letters to PFMC, NOAA Fisheries, State of Calif. and other entities regarding appropriate proposed change to the terms of designation[1] of the Sanctuary (*60 day response period*)
- Sanctuary notifies PFMC of opportunity to prepare draft National Marine Sanctuaries Act (NMSA) fishing regulations – (*NMSA regulations allow for 120 days for PFMC response; seek PFMC resolution by the Nov. Council meeting (approx. five months)*

June – November 2003

- Sanctuary, in cooperation with PFMC, State of Calif. and SAC, develops DEIS, appropriate proposed regulatory changes and related proposed change to the terms of designation
- PFMC considers preparing draft NMSA fishing regulations and if it chooses prepares draft regulations

December 2003 / Early 2004

- Sanctuary releases DEIS, proposed regulations and related proposed changes to the terms of designation
- Conduct public review of the DEIS, and proposed regulations and related proposed changes to the terms of designation. This will include an opportunity for public comment of at least 45 days and must include at least one public hearing if the rulemaking necessitates a change in a term of designation

[1] The terms of designation of a Sanctuary include its geographic area, the characteristics of the area that give it conservation, recreational, ecological, historical, research, educational, or esthetic value, and the types of activities that are subject to regulation to protect those characteristics.

NOAA Channel Islands National Marine Sanctuary
Environmental Review Process to Consider Marine Reserves

Proposed Activities and Timeline (cont'd)

Spring/Summer 2004

- Sanctuary prepares responses to comments

Summer 2004

- Sanctuary drafts Final EIS, and if necessary for chosen action, drafts final regulations and revises Designation Document

Fall/Winter 2004

- Sanctuary releases the Final EIS by publishing a notice of availability in the Federal Register and by providing copies to interested parties. After a 30-day "cooling off" period, the final regulations appear in the Federal Register and the Sanctuary sends the final regulations to Congress and to the governor's office, if State waters are involved. The final regulations will take effect after the close of a review period of 45 days of continuous session of Congress. If State waters are involved, and the governor certifies that the change in terms of designation (and therefore the final regulations or portions thereof) is unacceptable, the affected final regulations will not take effect in State waters.

PACIFIC FISHERY MANAGEMENT COUNCIL

7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384

CHAIRMAN
Hans Radtke

EXECUTIVE DIRECTOR
Donald O. McIsaac

Telephone: 503-820-2280
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Fax: 503-820-2299
www.pcouncil.org

July 14, 2003

Mr. Chris Mobley, Manager
Channel Islands National Marine Sanctuary
113 Harbor Way
Santa Barbara, CA 93109

Subject: NOAA's Channel Islands National Marine Sanctuary Environmental Review Process to Consider Marine Reserves

Dear Mr. Mobley:

Thank you for your presentation to the Pacific Fishery Management Council (Council) in June. We appreciate the time you took to work with Council staff, advisory bodies, and the Council itself to explain the process of considering marine reserves.

We are sending the following documents as our scoping comments for this public review process:

- Comments made by the Council's Habitat Committee, Groundfish Advisory Subpanel, Enforcement Consultants, and Scientific and Statistical Committee (SSC) at the June 2003 Council meeting.
- April 24, 2003 letter from the Council to the Channel Islands National Marine Sanctuary (CINMS).
- October 2002 letter to Mr. Robert Treanor, California Fish and Game Commission, regarding alternatives for marine reserves in state waters of CINMS, and attachments. The attachments include comments made in November 2001 by the SSC on the early process for considering marine reserves, June 2002 and September 2002 comments by the SSC on the draft environmental document prepared by the California Department of Fish and Game, a letter from Dr. Vernon (Bob) Leeworthy and Dr. Peter Wiley responding to SSC comments, and comments prepared by advisory bodies at the June and September 2002 Council meetings.

We look forward to working with you on these issues in the future.

Sincerely,

D. O. McIsaac, Ph.D.
Executive Director

JDG:rdd
c: Ms. Jennifer Gilden

Exhibit E.2
Attachment 3
September 2003

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Channel Islands National Marine Sanctuary
113 Harbor Way
Santa Barbara, CA 93109

August 20, 2003

Jennifer Gilden
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, OR 97220-1384

RECEIVED
AUG 2 5 2003
PFMC

Dear Ms. Gilden,

Please provide the attached briefing materials to the PFMC as an update to the Channel Islands National Marine Sanctuary (Sanctuary) Environmental Review Process to consider marine reserves.

We received the PFMC scoping comments including the comments made by several of the Council's committees and panels and the PFMC comments submitted to the State of California during their environmental review process. Please see the attached *Summary of Public Scoping Comments* that incorporates the PFMC input and comments received during several public scoping meetings. We have attached the scoping letter provided by our Sanctuary Advisory Council.

Based on these scoping comments, the Fish and Game Commission's decision and the Channel Islands Marine Reserves Process, Sanctuary staff is developing a preliminary range of alternatives. We are also preparing preliminary draft environmental review documents that will accompany the preliminary range of alternatives. We understand that the PFMC Ad-hoc Marine Reserves Committee will review these preliminary documents and provide comments to the PFMC. We anticipate providing these documents in October 2003 so that the Ad-hoc Committee has time to meet and review the material and respond during the November PFMC meeting. We would like to emphasize that the range of alternatives and the accompanying environmental review documents will be preliminary drafts and we welcome PFMC and PFMC staff input at these early stages.

We are also planning on formally consulting the Fish and Game Commission, Department of Fish and Game, PFMC, NOAA Fisheries and other partner agencies this fall on potential draft amendments to the Sanctuary designation document. We appreciate and will take into consideration the suggested amendment language the PFMC provided in its April 2003 letter to us.

Please call if you need additional information or clarification of the enclosed materials.

Sincerely,

Sean Hastings
Resource Protection Coordinator

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Channel Islands National Marine Sanctuary
113 Harbor Way
Santa Barbara, CA 93109

Summary of Public Scoping Comments
Channel Islands National Marine Sanctuary
Environmental Review Process to Consider Marine Reserves

The Sanctuary received both written and verbal comments during the public scoping period from May 22 – July 23, 2003. Comments were solicited at the following public meetings -

June 5 in Pt. Hueneme
June 12 in Santa Barbara
June 16-20 in Foster City, Pacific Fishery Management Council
June 26 in Santa Barbara, Conservation Working Group, SAC
July 15 in Carpinteria, Business Working Group, SAC
July 18 in Ventura, Sanctuary Advisory Council (SAC)

Major constituencies represented and providing comments -

Sanctuary Advisory Council members, alternates and working group members
Pacific Fishery Management Council subpanel and committee members
Recreational fishing organizations and individuals
Commercial Fishing organizations and individuals
Environmental organizations and individuals
Congresswoman Capps' office
State and Federal Agencies
General Public

The following summary illustrates the range of public comment received -

- Expand marine reserve areas to complete a scientifically based network to include the variety of habitats, depth ranges and species with connectivity between reserves
- Existing fisheries management is working, do not expand State Marine Protected Areas
- Consider impacts of pollution, oil slicks, sewage, nuclear/toxic waste
- Allow pelagics to be harvested recreationally from zoned areas
- Protect pelagics in zoned areas
- Reserves provide heritage and intrinsic values, consider value to general public
- Demonstrate administrative and monitoring capabilities before considering expansion
- Consider marine parks that allow recreational fishing to test impacts of recreational fishing
- Consider broad range of alternatives and management tools, not just reserves
- Ensure management actions are enforceable/provide adequate enforcement
- Need to fund socioeconomic effects to understand fishery impacts
- Support experimental/adaptive approach
- Consider birds and marine mammals

Sanctuary Advisory Council (SAC) Comments (please see the attached scoping letter)

The following is a subset of SAC comments.

- Utilize the Marine Reserves Working Group work and address areas of consensus and non-consensus. Build on the existing State environmental process documents and information
- Clearly define the purpose and need for considering additional marine reserves
- Keep the marine reserves and management plan NEPA processes separate. Time is of the essence; given four years of community process it is critical to move forward
- Reserve size will determine the scale and timing of effects, i.e. small reserves will have a smaller effect and take longer to realize versus larger reserves
- Consider the costs and benefits of phasing to the resources and economy over time.
- Describe the agency's commitment and processes toward long-term management.
- Consider the socioeconomic effects of the groundfish closures
- Recreational fishing impacts on resources need to be considered
- Analyze positive and negative impacts to consumptive and non-consumptive users
- Establish socioeconomic impact thresholds of significance (as required by NEPA).
- The Sanctuary is encouraged to work with agency partners and the PFMC
- The recommendation chosen by the State was developed jointly by the California DFG and the Sanctuary and should be one of the alternatives considered

Pacific Fishery Management Council (PFMC) comments

Sanctuary staff met with the PFMC, Habitat Advisory Panel, California Delegation, Science and Statistical Committee (SSC), Enforcement Advisory Group and the Groundfish Advisory Panel (GAP). The Habitat, SSC, GAP and Enforcement groups submitted written statements that have been forwarded with the PFMC Statement.

Planning for Federal Waters Portion of the Channel Islands National Marine Sanctuary

"The Council directed staff to forward all prepared statements of its advisory bodies on the topic of marine reserves in the CINMS, as well as the April 24 letter from the Council to CINMS, as formal scoping comments to the CINMS. In addition, the Council directed that its Ad Hoc Marine Reserves Committee meet to review the CINMS preliminary draft environmental document, the draft CINMS management plan, and a summary of scoping comments provided by CINMS, and to provide recommendations to the Council as appropriate. Finally, the Council directed the chair of the SSC Marine Reserves Subcommittee to work with CINMS staff on providing clarification of earlier SSC comments on CINMS environmental documents. " (PFMC Website)

General comments from the sub-panels -

- The State Environmental Documents are inadequate
- Clarify the CINMS Management Plan, Designation Document and Reserve processes and amendments
- Concern over CINMS managing fisheries
- The CINMS public process and SAC representation is unfair (i.e. no recreational fishing rep)

Sanctuary Advisory Council

CHANNEL ISLANDS NATIONAL MARINE SANCTUARY

July 23, 2003

Chris Mobley, Manager
Channel Islands National Marine Sanctuary
113 Harbor Way, Suite 150
Santa Barbara, CA 93109

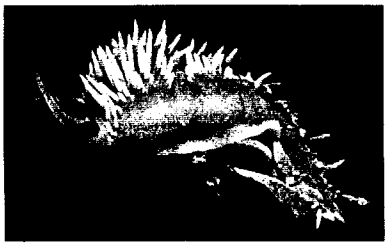
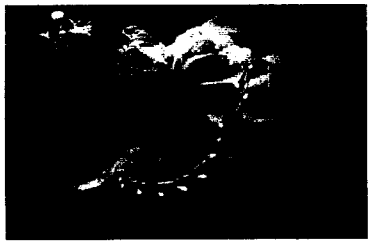
RE: Sanctuary Advisory Council Scoping Comments for the Channel Islands National Marine Sanctuary Marine Reserves Environmental Review Process

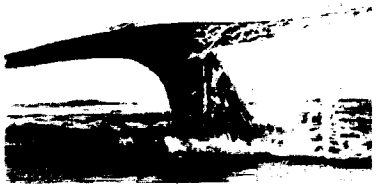
Dear Mr. Mobley,

Thank you for the opportunity to provide scoping comments for the Channel Islands National Marine Sanctuary marine reserves environmental review process. As you know, the Channel Islands National Marine Sanctuary Advisory Council (SAC or Council) has been closely involved with the consideration of marine reserves in the Sanctuary since 1999 and will continue to bring you input and advice on this issue.

At the July 18, 2003 SAC meeting in Ventura, California, Sanctuary staff provided the Council with a presentation on the environmental review process. The general public and individual SAC members provided comments on this process. The list below details specific issues and comments that the SAC agreed to by a consensus of voting representatives present on July 18, and which the Council would like considered in the environmental review process. Attachment 1 lists the Council seats that participated in the scoping comment session. Additionally, Attachments 2 through 5 provide individual SAC member comments and SAC Working Group comments for your consideration.

- Utilize work from the Marine Reserves Working Group, addressing both areas of consensus and non-consensus. Build on the existing State environmental process documents and information.
- Describe the State marine reserves network and what is missing for ecosystem/species protection.



- Include an alternative that considers all representative species, features and habitats around the Channel Islands, with varying degrees of connectivity.
- Maintain an open public process.
- Clarify the decision-making process in the environmental documentation.
- Beyond what is provided in the State's final environmental document on Channel Islands MPAs, more clearly define the purpose and need for considering additional marine reserves.
- National Environmental Policy Act (NEPA) documents need to address public input and be unbiased.
- Keep the marine reserves and management plan NEPA processes separate. Time is of the essence; there has already been four years of community process and it is critical to move forward.
- Note that obtaining before and after biological data from potential reserve areas is ideal, but inferences can be made using response trajectories to evaluate the effectiveness of reserves.
- Note that reserve size will determine the scale and timing of effects, i.e. small reserves will have a smaller effect and take longer to realize versus larger reserves. Use a statistical power analysis to analyze different reserve sizes.
- Look at how phasing will provide costs and benefits to the resources and to the economies over time.
- The set-up of monitoring sites and a monitoring program should begin now.
- Identify State and federal connectivity for a network approach.
- Consider the insurance factor and catastrophic events.
- Describe the agency's commitment and processes to demonstrate long-term management.
- Consider the socioeconomic effects of the groundfish closures.
- Consider multiple use or limited fishing area alternatives.
- Recreational fishing impacts on resources need to be considered.
- In the environmental setting and management sections of the EIS, consider impacts from land-based and other sources, such as water quality, fiber optic cables, seismic surveys and military noise.
- Analyze positive and negative impacts to consumptive and non-consumptive users over time.
- Describe the baseline information on the socioeconomics and biology of the area, especially for monitoring and assessment.
- Utilize baseline data from PISCO, the UCSB Love Lab, the Channel Islands National Park and a wealth of other existing data sources.
- Establish socioeconomic impact thresholds of significance (as required by NEPA).
- Acknowledge and thank the public for providing input at the scoping meetings.

- The Sanctuary is encouraged to continue working with its agency partners. There needs to be strong coordination and interaction between the Pacific Fishery Management Council (PFMC) and Sanctuary.
- The Channel Islands MPA recommendation chosen by the State was developed jointly by the California Department of Fish and Game and the Sanctuary. This recommendation should be one of the alternatives considered in the federal marine reserves process.
- Make the process as clear as possible to the public. Also, the existing reserves need to be clearly explained and depicted to Sanctuary visitors.

Thank you for continuing to engage the Sanctuary Advisory Council and local community. Please consider our thoughts above and in the attached enclosures as your staff proceeds with the environmental review process for marine reserves. We stand ready to provide additional community advice on this very important issue.

Sincerely,

Jon Clark, Vice-Chair, Sanctuary Advisory Council

cc: Daniel Basta, Director, National Marine Sanctuary Program
Michael Flores, President, California Fish and Game Commission
Robert Treanor, Executive Director, California Fish and Game Commission
Robert Hight, Director, California Department of Fish and Game
Donald McIsaac, Executive Director, Pacific Fishery Management Council

Attachments:
1. Voting seats participating at the July 18th SAC meeting
2. Individual SAC member comments
3. SAC Conservation Working Group statement
4. SAC Research seat comments
5. SAC Business Working Group comments

ATTACHMENT 1

Voting Seats Participating at the July 18, 2003 Channel Islands National Marine Sanctuary Advisory Council Meeting during the Marine Reserves Scoping Comment Session

Voting Seats Present during Scoping Session:

- Tourism – member and alternate
- Recreation – member and alternate
- Conservation – member and alternate
- Fishing member
- Research alternate
- Public At-Large #1 member
- Public At-Large #2 member
- National Marine Fisheries Service member and alternate
- National Park Service member and alternate
- Department of Defense alternate
- California Department of Fish and Game alternate
- California Resources Agency alternate
- California Coastal Commission alternate
- Santa Barbara County – member and alternate

Voting Seats Absent for Scoping Session:

- Business – member and alternate
- Education – member and alternate
- Public At-Large #3 – member and alternate
- Minerals Management Service – member and alternate
- U.S. Coast Guard – member and alternate
- Ventura County – member and alternate

ATTACHMENT 2

Additional Scoping Comments offered by SAC Members on July 18, 2003

The following comments were provided by representatives of the Sanctuary Advisory Council but not agreed to by full consensus:

National Park Service
Additional processes and new studies are not necessary. There is plenty of work to date on which to base a decision.

Conservation - Alternate
The Marine Reserves Working Group debated a complete network in Sanctuary waters, but the State action has only implemented 40% of the network. The reserve network is incomplete.

Fishery management authority should not be transferred to the Sanctuary, but authority for marine reserves/zoning should be because it is not fishery management, it is ecosystem management.

Consider marine reserves, fully protected areas, as the principal tool because: 1) reserves provide equity between recreational and commercial fishermen; 2) reserves are easier to enforce (consider what is required from and the inefficiencies associated with enforcement of limited take areas); 3) reserves can also help pelagic species. Movement of pelagic species are not random, but based on specific habitat, feeding and breeding areas, that can and should be established as marine reserves.

Recreation - Member
The Sanctuary taking on a fishery management role is a major departure from the Sanctuary serving as a community catalyst and coordinator. Uncertain the Sanctuary is ready for fishery management responsibilities.

Recreation - Alternate
Baseline data to determine the effectiveness of marine reserves is extremely important but doesn't exist. Note that only 2 of 160 studies on marine reserves around the world had baseline data.

Although shallow sub-tidal habitat was ranked most important for monitoring at a recent workshop on the Channel Islands MPAs, there are no monitoring sites at two of the islands. Effectiveness cannot be determined without pre-marine reserve monitoring.

Independent data sites are needed in and out of reserves. Consider monitoring sites that scientists select for a number of years before starting to enforce reserves.

Fishing - Member
Look at the authority of the Pacific Fishery Management Council (PFMC) and consider an alternative with the PFMC as the lead agency instead of the Sanctuary. One rationale for this approach is that outside of the Sanctuary the PFMC is more appropriate for designating complimentary federal reserves adjacent to state waters (complimenting Marine Life Protection Act actions).

ATTACHMENT 3

SAC Conservation Working Group
Marine Reserves Scoping Comments

6/26/03

To: **CINMS Advisory Council**

From: **Conservation Working Group**

Re: **Scoping Comments re: Marine Reserves (Federal Portion)**

The following recommendations from the Conservation Working Group to the Sanctuary Advisory Council regarding the "Announcement of Intent to Initiate the Process to Consider Marine Reserves in the Channel Islands National Marine Sanctuary; Intent to Prepare a Draft Environmental Impact Statement" were adopted on June 26, 2003.

The Conservation Working Group ("CWG") has reviewed the Announcement and offers the following recommendations for the consideration of marine reserves in the Channel Islands National Marine Sanctuary ("CINMS") and preparation of the Draft Environmental Impact Statement ("DEIS").

I. Consideration of Marine Reserves in the CINMS

- Acknowledge the overwhelming public support for marine reserves within the CINMS.
- Consider that only 1% of U.S. waters are set aside from fishing (including all Sanctuary waters). Only 3.5% of State waters are set aside (including in the CINMS).
- Recognize that the CINMS is the only federal agency with a mandate to manage resources on an ecosystem basis. Reserves are an effective way to protect all wildlife (e.g., seabirds, sea turtles, marine mammals) that rely on a healthy fishery and ecosystem.
- Support a scientifically-based network of marine reserves, consistent with the recommendations of the Science Advisory Panel.
- Consider full no-take zones only, to complement the State reserve system.
- Include all representative species, features and habitats within the CINMS.
- Include areas both north and south of each of the islands, extending to the current boundary of the CINMS.
- Consider the need to protect CINMS resources not only from over-fishing, but also from water pollution and other natural and human-induced damaging and catastrophic events, when addressing size and location of reserves.
- In the face of uncertainty, the CINMS should adopt the precautionary principle approach to resource protection and management.
- Incorporate adequate monitoring, evaluation, adaptive management and enforcement.

II. Preparation of the DEIS

- The CINMS should build on the State's Environmental Document, which included an analysis of a network of marine reserves throughout the CINMS, including both State and Federal waters. The State's environmental document includes relevant information regarding the purpose and

objectives of marine reserves, baseline setting, effects, alternatives, and implementation measures.

- The CINMS should move forward expeditiously to ensure timely completion of the full Sanctuary marine reserves process and realization of the benefits of a complete marine reserve network.
- In describing the environmental setting, consider the uniqueness of the CINMS (e.g., extensive whale migration, spawning of blue whales, permanent aggregation of humpbacks, rare biogeographic features, and mixing of northern and southern Pacific waters) and its related ecosystem.
- Describe the State network and identify which species and habitats are not protected within the existing system of reserves.
- Describe the conservation, research, cultural, and educational values of the CINMS.
- Include information about other marine reserves and their effectiveness in protecting marine species and ecosystems. Describe the benefits of an ecosystem approach to marine resource management.
- Incorporate and analyze the information from the Science Advisory Panel and Socioeconomic Panel.
- When considering socioeconomic impacts, the DEIS should analyze benefits to non-consumptive users and industries, as well as long-term socioeconomic benefits to fishing interests.
- The preferred alternative should be comprised of a network of reserves contiguous with the existing State reserves to ensure effective ecosystem protection and enforcement (with the exception of Footprint and Piggy Bank, which are located in federal waters southeast of Santa Cruz Island).
- The DEIS should analyze a full range of alternatives, especially alternatives that increase environmental protection and benefits.
- The DEIS should analyze alternatives that are consistent with the Science Advisory Panel's responses to Maps B and C prepared by the Marine Reserves Working Group (March 21, 2001, see attached).
- The DEIS should analyze alternatives that include important features and habitat areas, including: marine mammal feeding grounds in Santa Cruz Canyon, Carrington Point ("Potato Patch"), east of San Miguel Island and Wilson Rock; pinniped breeding area near Judith Rock; seabird feeding grounds near Prince Island, Scorpion Rock, and west of Sutil Island; white abalone and cowcod area east of Sutil Island; rockfish spawning areas at Footprint, Piggy Bank, the Elbow, Wilson Rock, Osbourne Bank and the pinnacle located 6 miles due west of Santa Barbara Island. In analyzing these alternatives, the DEIS should identify the threats to these areas (e.g., from trawling and drift netting), and how such impacts will be reduced or avoided by protecting these areas.
- Describe the scientific and socioeconomic baseline for assessment and monitoring.

III. Additional Information

- Consider new information that was not addressed in the state environmental document, including: the 2003 Pew Commission Ocean report and the recent Libe Washburn study regarding rockfish in the Santa Barbara Channel gyre.

ATTACHMENT 4

SAC Research Seat
Marine Reserves Scoping Comments

Comments from the CINMS Advisory Council Research seats regarding the "Announcement of Intent To Initiate the Process To Consider Marine Reserves in the Channel Islands National Marine Sanctuary; Intent to Prepare a Draft Environmental Impact Statement"

Submitted to the SAC by Drs. Robert Warner and Dan Brumbaugh on 18 July 2003

The effects of marine reserves are increasingly well documented in the scientific literature. To operate at full effectiveness, however, two criteria should be met:

1. Reserves should be designed and implemented in ecologically connected networks, encompassing a variety of habitats within each protected area, and spanning the biogeographic regions within the area of consideration. The final recommendations made by the CINMS and California Department of Fish and Game were the result of a long process involving a stakeholder working group, an advisory panel of marine scientists, and a socioeconomic advisory group, as well as many meetings where public input was welcomed. An important part of the final recommendations were maps proposing specific areas for protection, designed as a network to cover the many habitats and three biogeographical regions within the CINMS. These proposed areas extended in many cases out to the boundaries of the CINMS. However, because the CINMS boundary extends beyond the 3-mile boundary for California State waters, consideration and approval of the proposed reserves must be a two-step process. Our opinion is that the best option for location of reserves in federal waters is one that completes the originally proposed network design, extending the state reserves into habitats further offshore.

2. All extractive activity should be prohibited, including recreational fishing. Maintaining intact ecosystems requires the preservation of species at all trophic levels at natural abundances. Recreational fishing is the principal source of fishing mortality for many inshore species. Based on an intensive study of recreational fisheries in California, Schroeder and Love recommended "that legislators and natural resource managers reject the assumption of recreational fishing to be a low or no impact activity until specific studies can demonstrate otherwise" (California Cooperative Oceanic Fisheries Investigation Reports, in press).

ATTACHMENT 5

SAC Business Working Group
Marine Reserves Scoping Comments

SAC Business Working Group Meeting, July 15, 2003
Scoping Comment Session on Consideration of Marine Reserves

Attendance:

- Robert Valney, Seabiscuit Sportfishing
- Howard Beyers, Seabiscuit Sportfishing
- Monica Baker, Island Packers (SAC tourism seat alternate)
- Sandy Delano, Ventura Harbor Village
- Michael Hanrahan, The Ocean Channel (SAC Business Member and Chair, Business Working Group)
- Darren Caesar, (SAC Business seat alternate)
- Cameron Benson, Environmental Defense (observing)
- Sanctuary management and staff (as support, not commenters): Chris Mobley, Sean Hastings, Bradford Duttera, Mike Murray)

Marine Reserve Scoping Comments from Business Community Members:

- Outreach is not successful; there is not enough lead time.
- Fishermen are filing for bankruptcy and laying off crew members.
- Fishermen are disgusted with the process; sour on the whole thing.
- The frustration is high in all harbors.
- Quotes:
  "Not another inch of reserves"
  "Damage is done!"
  "We're getting hit from all sides by Federal and State agencies."
  "Trickle down of reserves impacts on restaurants and hotels."
  Sandy Delano, Ventura Port District: "It's very confusing as to what is closed and what is not."
  "This causes fishermen to refrain from making reservations on Charter Boats."
  "Prime fishing areas are closed. This has impacted 40% of my business"
  "Have not given the existing reserves a chance to prove their effectiveness."
  "There would be a lot more fishing going on in deeper waters if the Dept. of Fish and Game allowed us to."
  "Take a hard look at existing regulations from all regulatory agencies and determine whether Federal Reserves are needed."
  "More reserves will not work as illustrated by areas with 20 years of protection"
  "Marketing outreach is not getting the word out about the success of reserves"
- Fishermen are reluctant to continue to be involved because they feel that their voice is lost.
- Where does commercial fishing fit in to the CINMS equation?
- Budget cuts at a Federal level: How will CINMS pay for expanding the reserves?
- There are areas 6 miles out that are shallower than 300' and good fishing grounds.
- Congestion in open areas and increased pressure may impact other species.
- On the water businesses (Captains) perspective is important.

- Consider that industry from northern waters (WA, OR) are operating within the CINMS.
- Account for economic cycles considering the discretionary income trends in the past (i.e. 1992) and present.
- Analyze the general economic climate relative to the economy of fishing industries (especially sport fishing).
- Consider the economic/environmental impacts of fishing boats shifting to wildlife/tourism business.
- Determine the extent of economic hardship caused by MPAs. Compare revenue prior to and subsequent to April 2003 MPA closures.
- Maritime insurance example: In 4 years the number of boats insured dropped from 670 to less than 100.
- As license sales decrease (purchase date in June) is this related to rockfish closures?
- Public perception is that all of the Sanctuary is closed.
- CDFG is operating like the secret service.
- Private boaters are uninformed and fish in closed areas unknowingly.
- Concern over wardens' power.
- There are gaps in the organizations that are implementing resource protection. Consider that there are lots of "small" regulations, cutting things up into bits and pieces (i.e., depth, gear, and area restrictions).
- Can there be some "give" and not just "take?"
- Commercial fishermen are in search of cooperation.
- Work with other agencies to reduce the impact of fishermen.
- Simplify and condense regulations and information.
- Island Packers Co. is not feeling negative impacts from marine reserves.
- Tourists are confused about the Scorpion Anchorage reserve.
- Consider the importance of seasonality (2-3 week periods) with respect to fishing areas (e.g., Gull Island, Carrington Point, Anacapa Island, Santa Barbara Island, and Scorpion Anchorage).
- Who owns Sanctuary waters?
- Should there be a polling of the general public interests?

MARINE RESERVES IN THE FEDERAL WATERS PORTION OF THE CHANNEL ISLANDS NATIONAL MARINE SANCTUARY

Situation: At the June 2003 Council meeting, staff from the Channel Islands National Marine Sanctuary (CINMS) briefed the Council on the timeline for the environmental review process for (1) considering marine reserves in federal waters of CINMS, and (2) the process for changing the Sanctuary designation document (Exhibit E.2 Attachment 1). On July 14, the Council forwarded advisory body statements and an April 24 letter from the Council as formal scoping comments to CINMS (Exhibit E.2, Attachment 2). In addition, the Council directed that its Ad Hoc Channel Islands Marine Reserve Committee meet to review the CINMS preliminary draft environmental document, the draft CINMS management plan, and a summary of scoping comments to be provided by CINMS, and to provide recommendations to the Council as appropriate.

The Council has not yet received the documents referred to above, so the Ad Hoc Channel Islands Marine Reserve Committee has not met. It was originally expected that the Council would hear from the Ad Hoc Channel Islands Marine Reserve Committee at the September Council meeting and provide comments to the Sanctuary on the preliminary range of alternatives . The Council would then consider a preferred alternative at the November Council meeting, and also consider preparing draft fishing regulations, as indicated in the National Marine Sanctuaries Act.

At this meeting, CINMS staff will update the Council on the progress of developing the preliminary draft environmental document and will provide a summary of scoping comments received during the environmental review process (Exhibit E.2, Supplemental Attachment 3). They will also respond to the scoping comments provided by the Council and will discuss how the Council can best participate in developing alternatives for the environmental impact statement.

Council Task:

1. Receive an update on the CINMS environmental review process.

Reference Materials:

2. Proposed Activities and Timeline (Exhibit E.2, Attachment 1).
3. Letter from the Council to CINMS dated July 14, 2003 (Exhibit E.2, Attachment 2).
4. Summary of CINMS Scoping Comments (Exhibit E.2, Attachment 3).

Agenda Order:

a. Agendum Overview — Jennifer Gilden
b. Presentation by CINMS Staff
c. Reports and Comments of Advisory Bodies
d. Public Comment
e. Council Discussion

PFMC
08/25/03

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON UPDATE ON MARINE RESERVES ISSUES

The Scientific and Statistical Committee discussed the proposed West Coast Marine Protected Area (MPA) Demonstration Project and the proposal titled "Integration of marine protected areas and fishery science management." These proposals both address important aspects of marine reserve management and, to a large degree, complement each other.

The integration proposal would bring together many of the major parties (National Ocean Service MPA Science Center, NMFS Southwest Fisheries Science Center, Pacific Fishery Management Council, National Center for Ecological Analysis and Synthesis) involved in design, evaluation, and implementation of marine reserves for the West Coast to integrate traditional fishery stock dynamics and management with the science of marine reserves. In the past, a lack of communication and common terminology have hindered progress in coordinating marine reserve plans. Getting the appropriate parties together to develop a scientific basis for reserves in marine management would be a major step forward.

The SSC encourages the Council to participate in the integration proposal. The stock assessment and fisheries expertise possessed by the Council family would contribute significantly to the integration project. Council participation would also help direct the products of the integration project toward management applications useful to the Council.

The demonstration project would have the goal of integrating MPA considerations in groundfish fishery management specifications. Like the integration proposal, it would involve a coordinated interagency effort, but would be directed to implementation. Furthermore, the integration proposal fits in well with the types of products specified in the demonstration project.

One of the objectives of the demonstration project is "full coordination of MPA considerations in the 2005-2006 Annual Groundfish Fishery Specifications." Given the complexity of marine reserve issues and the developmental nature of the science it may be difficult to meet this time frame. However, significant progress in that direction could be achieved.

Marine reserve issues will demand an increasing share of the Council's time in the next several years. Communication among the various parties involved and participation in the two proposed projects will be central to successful development of fishery regulations in marine reserves. This would require substantial commitment of staff time to this process, especially if rapid progress is expected. This could require reallocation of staff priorities. In addition, Council and advisory body meeting time will be needed.

The SSC discussed their draft white paper. It will be ready for the November 2003 Council meeting.

PFMC
09/10/09

Exhibit E.2.d
Supplemental Public Comment
September 2003

CALIFORNIA WETFISH PRODUCERS ASSOCIATION

2194 SIGNAL PLACE
SAN PEDRO, CA 90731

AUGUST 22, 2003

RECEIVED

PFMC

DR. DON MCISAAC, EXECUTIVE DIRECTOR
MEMBERS OF THE PACIFIC FISHERY MANAGEMENT COUNCIL
MEMBERS OF THE SCIENCE & STATISTICAL COMMITTEE

FAX: 503 820 2299

RE: CONSIDERATION OF MARINE RESERVES IN FEDERAL WATERS OF CINMS

THESE CONCERNS ARE SUBMITTED ON BEHALF OF THE CALIFORNIA WETFISH PRODUCERS ASSOCIATION, REPRESENTING A MAJORITY OF SOUTHERN CALIFORNIA'S WETFISH INDUSTRY, INCLUDING 29 PURSE SEINE VESSEL OWNERS WHO EMPLOY 232 FISHERMEN AND 8 COMPANIES WITH 1,370 EMPLOYEES. IN ADDITION, THESE COMMENTS ADDRESS THE CONCERNS OF WETFISH FISHERMEN AND PROCESSORS IN MONTEREY WHO HARVEST WETFISH AROUND THE CHANNEL ISLANDS.

BACKGROUND: THE CALIFORNIA WETFISH PRODUCERS ASSOCIATION (CWPA) REPRESENTS THE MAJORITY OF "WETFISH" PROCESSORS IN SOUTHERN CALIFORNIA. "WETFISH," CONSISTING OF COASTAL PELAGIC SPECIES INCLUDING SARDINES, MACKERELS AND SQUID, AS WELL AS COASTAL TUNAS, HAVE REPRESENTED THE LION'S SHARE OF COMMERCIAL FISHERY LANDINGS THROUGHOUT THE HISTORY OF CALIFORNIA'S FISHING INDUSTRY. IN THE YEAR 2000, THIS WETFISH FISHERY COMPLEX PRODUCED 83.6 PERCENT OF ALL CALIFORNIA FISHERY LANDINGS BY VOLUME, EQUAL TO 29.3 PERCENT OF EX-VESSEL VALUE OF ALL FISHERIES IN CALIFORNIA. IN THE YEARS 1998–2002, THE FISH LANDING TAX REVENUES GENERATED BY PACIFIC MACKEREL, SARDINES AND SQUID PAID TO THE DEPARTMENT OF FISH AND GAME, TOTALED MORE THAN $5.5 MILLION.

OF THE TOTAL WETFISH HARVEST, SOUTHERN CALIFORNIA PORTS, INCLUDING THE SANTA BARBARA, LOS ANGELES AND SAN DIEGO AREAS, LANDED 94 PERCENT OF THE STATEWIDE SQUID HARVEST, 80 PERCENT OF THE PACIFIC SARDINES HARVESTED STATEWIDE, AND 99.8 PERCENT OF THE STATEWIDE HARVEST OF PACIFIC MACKEREL, ACCORDING TO TABLE 15, POUNDAGE AND VALUE OF COMMERCIAL LANDINGS COMPILED BY THE DEPARTMENT OF FISH AND GAME.

A SIGNIFICANT PORTION OF THE WETFISH CATCH IS HARVESTED IN WATERS SURROUNDING THE CHANNEL ISLANDS. THEREFORE, ANY PROPOSAL TO RESTRICT ACCESS TO WETFISH RESOURCES IS OF CONCERN TO OUR MEMBERSHIP.

WE APPRECIATE THIS OPPORTUNITY TO ADDRESS THE PFMC REGARDING THE SANCTUARY'S PROPOSAL TO EXPAND RESERVES INTO FEDERAL WATERS OF THE CINMS. THESE COMMENTS MIRROR OUR SCOPING COMMENTS PRESENTED RECENTLY TO CINMS SANCTUARY STAFF FOR INCLUSION IN THE DRAFT ENVIRONMENTAL IMPACT STATEMENT.

WE HAD SERIOUS CONCERNS WITH THE BASIC ASSUMPTIONS UNDERLYING THE PLAN PROPOSED FOR, AND LATER IMPLEMENTED IN, STATE WATERS, AS EXPRESSED IN THE CEQA DOCUMENT AND ENVIRONMENTAL ANALYSIS. THESE CONCERNS INCLUDED A LACK OF CONSIDERATION OR ANALYSIS OF ENVIRONMENTAL CONSEQUENCES, AND THE ECONOMIC IMPACT RESERVES WOULD INFLICT ON FISHERIES, PARTICULARLY FISHERIES FOR COASTAL PELAGIC SPECIES (CPS), WITHOUT A CLEARLY DEMONSTRATED BIOLOGICAL BENEFIT.

REPRESENTING
29 PURSE SEINE VESSEL OWNERS WHO EMPLOY
232 FISHERMEN
AND
8 COMPANIES WITH 1,370 EMPLOYEES

WE REITERATE THESE CONCERNS AS THEY RELATE TO THE FEDERAL-WATERS PORTION OF THE SANCTUARY'S RESERVE PROPOSAL. WE RECOMMENDED THAT THESE CONCERNS BE FULLY ADDRESSED IN THE DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS) PREPARED BY SANCTUARY STAFF. WE ALSO REQUEST THE COUNCIL TO ADDRESS THESE POINTS. FURTHER, WE URGE THE COUNCIL TO WITHHOLD APPROVING ANY EXTENSION OF MARINE RESERVES IN THE CINMS, AT LEAST FOR CPS SPECIES, UNTIL FISHERY SCIENTISTS DEMONSTRATE THAT THE BIOLOGICAL BENEFIT TO THE SPECIES WOULD EXCEED THE SIGNIFICANT ECONOMIC IMPACT OF FURTHER RESTRICTING CPS FISHERIES. [1]

FOLLOWING ARE CWPA'S SCOPING COMMENTS SUBMITTED TO CINMS SANCTUARY STAFF, WHICH WE PROVIDE TO THE PFMC AND SSC FOR CONSIDERATION DURING DISCUSSION RE: EXTENDING RESERVES INTO FEDERAL WATERS OF THE CINMS:

IN SUMMARY:
--THE DEIS, AND THE COUNCIL, SHOULD INCLUDE FULL DISCUSSION / PEER REVIEW BY ACCREDITED FISHERIES SCIENTISTS OF THE UNDERLYING SCIENCE FORMING THE BASIS FOR THE PROPOSAL TO ESTABLISH RESERVES (INCLUDING CAVEATS PUBLISHED BY FISHERY SCIENTISTS), IN LIGHT OF EMERGING DIFFERENCES OF OPINION IN THE SCIENTIFIC COMMUNITY RE: BENEFITS OF RESERVES VS. SOCIO-ECONOMIC COSTS TO DEPENDENT FISHING COMMUNITIES.

> "CLARITY OF DEFINITION, SYSTEMATIC TESTING OF ASSUMPTIONS, AND ADAPTIVE APPLICATION OF DIVERSE MPA MANAGEMENT APPROACHES ARE NEEDED SO THAT THE APPROPRIATE MIX OF VARIOUS MANAGEMENT TOOLS CAN BE UTILIZED, DEPENDING UPON SPECIFIC GOALS AND CONDITIONS..." *(AGARDY ET AL. IN AQUATIC CONSERV: MARINE AND FRESHWATER ECOSYSTEMS. IN PRESS)*

SPECIFICALLY, THE DEIS AND COUNCIL SHOULD CLEARLY DEFINE GOALS AND OBJECTIVES FOR PROPOSED FEDERAL-WATERS RESERVES, ALONG WITH A DETAILED ANALYSIS EXPLAINING WHY THESE AREAS ARE NEEDED, IN ADDITION TO THE SIGNIFICANT CLOSED AREAS (DE-FACTO RESERVES) ALREADY IMPLEMENTED BY THE PACIFIC FISHERY MANAGEMENT COUNCIL, (E.G. COWCOD CLOSURE AND SHELF CLOSURE TO PROTECT OVERFISHED ROCKFISH STOCKS).

--BASELINE BIOLOGICAL DATA FOR FEDERAL WATERS AREAS PROPOSED FOR RESERVES ARE VIRTUALLY NON-EXISTENT, BUT SUCH DATA ARE ESSENTIAL BEFORE ESTABLISHING ADDITIONAL "NO-TAKE" RESERVES. THE DEIS SHOULD PROVIDE DETAILED ANALYSIS OF HOW BASELINE DATA WILL BE ACQUIRED AND FUTURE RESERVES MONITORED, IF IMPLEMENTED, PRIOR TO ESTABLISHING ADDITIONAL CLOSURES. THE COUNCIL SHOULD REQUIRE COMPLETE ANALYSIS PRIOR TO ANY ACTION TO APPROVE RESERVES IN FEDERAL WATERS OF THE CINMS.

--SOCIO-ECONOMIC DATA FOR PROPOSED CLOSURES ALSO MUST BE DEVELOPED, INCLUDING ANALYSIS OF ECONOMIC IMPACTS TO FISHERIES, PARTICULARLY CPS FISHERIES, WHICH WILL SUFFER ADDITIONAL ECONOMIC HARDSHIP BY LOSING ACCESS TO MORE FISHING GROUND WITHOUT A CLEARLY DEMONSTRATED BIOLOGICAL BENEFIT TO SUBJECT RESOURCES.

--WE ACKNOWLEDGE AND FULLY SUPPORT THE STATEMENT MADE BY THE PACIFIC FISHERY MANAGEMENT COUNCIL'S GROUNDFISH ADVISORY PANEL (GAP), *EXHIBIT G.1.C, SUPPLEMENTAL GAP REPORT, JUNE 2003*, SUBMITTED TO CINMS STAFF AS PART OF THE PFMC'S SCOPING COMMENTS: **"...THE GAP DOES NOT...SUPPORT THE SANCTUARY REQUEST FOR A CHANGE IN THE SANCTUARY DESIGNATION DOCUMENTS. THE AUTHORITY TO REGULATE FISHING WITHIN SANCTUARIES SHOULD REMAIN ENTIRELY WITH STATE AGENCIES AND THE PACIFIC FISHERY MANAGEMENT COUNCIL THROUGH THE NATIONAL MARINE FISHERIES SERVICE. FURTHER, WHILE MARINE RESERVES SHOULD CONTINUE TO BE A TOOL WHICH CAN BE USED APPROPRIATELY, THE DECISION TO ESTABLISH A MARINE RESERVE SHOULD REMAIN WITH STATES AND FISHERY MANAGEMENT COUNCILS. A DECISION TO ESTABLISH A MARINE RESERVE IS A *DE FACTO* DECISION TO REGULATE FISHING: SUCH REGULATION IS NOT WITHIN THE RANGE OF AUTHORITY OR EXPERTISE OF NATIONAL MARINE SANCTUARIES."** (EMPHASIS ADDED)

CWPA SCOPING COMMENTS SUBMITTED TO CINMS SANCTUARY STAFF ALSO INCLUDED TEXT OF CWPA COMMENTS RE: THE ENVIRONMENTAL DOCUMENT PROPOSING RESERVES IN STATE WATERS. THE SAME COMMENTS APPLY TO THE CINMS PROPOSAL TO ESTABLISH RESERVES IN FEDERAL WATERS AND SHOULD BE ADDRESSED IN THE DEIS AND BY THE COUNCIL.

FOLLOWING ARE CWPA COMMENTS RE: THE ENVIRONMENTAL DOCUMENT, WHICH WERE NOT ADEQUATELY ADDRESSED IN THE FINAL DOCUMENT:

WE AGREE WITH COMMENTS PROVIDED BY THE SCIENTIFIC AND STATISTICAL COMMITTEE OF THE PACIFIC FISHERY MANAGEMENT COUNCIL, WHICH IDENTIFIED A NUMBER OF DEFICIENCIES IN THE INITIAL ENVIRONMENTAL DOCUMENT (ED).

- THE ED PROVIDED VIRTUALLY NO INFORMATION TO DESCRIBE WHAT WOULD HAPPEN IF THE PROJECT DID NOT OCCUR. JUSTIFICATION FOR ESTABLISHMENT OF RESERVES FOCUSED ON DECLINES OF ROCKFISH AND ABALONE, BOTH "COLD-WATER" SPECIES IN A "WARM-WATER" OCEANIC REGIME. THERE WAS NO DISCUSSION OF THE NUMEROUS SPECIES NOW ABUNDANT IN THE WARM-WATER CYCLE OF THE PACIFIC DECADAL OSCILLATION (PDO), INCLUDING, AMONG OTHERS, SARDINES AND SQUID.
- FURTHER, THERE WAS NO DISCUSSION OF GOALS AND OBJECTIVES OF SITES PROPOSED FOR RESERVES. WHY WERE THESE AREAS SELECTED AND/OR ENLARGED FROM THE CORE AREAS IDENTIFIED ON THE "OVERLAP" MAP, WHICH REPRESENTED TWO YEARS OF INTENSE DISCUSSION BY COMMUNITY STAKEHOLDERS?
- THE DRAFT ED REJECTED ALTERNATIVE 6, DEFERRING A DECISION TO THE MARINE LIFE PROTECTION ACT PROCESS, ARGUING THAT SUCH DEFERRAL WOULD NOT ALTER THE PROPOSED PROJECT AND COULD POTENTIALLY UNDERESTIMATE ECONOMIC AND ENVIRONMENTAL IMPACTS BY COMBINING THEM WITH THE ENTIRE STATE.
  THE SSC QUESTIONED THIS RATIONALE, NOTING THAT DEFERRING THE ESTABLISHMENT OF RESERVES AT CINMS TO THE MLPA PROCESS <u>COULD</u> CAUSE THE PROPOSED PROJECT TO CHANGE WHEN VIEWED IN THE CONTEXT OF A STATEWIDE RESERVE NETWORK.
  WE BELIEVE THAT TO EVALUATE FULLY THE COSTS AND BENEFITS OF A STATEWIDE RESERVE NETWORK, ALL PROCESSES TO ESTABLISH SUCH A NETWORK SHOULD PROCEED SIDE-BY-SIDE, TRANSPARENTLY, WITH ISLANDS AND MAINLAND COASTLINE LINKED, AS THE NATURAL ENVIRONMENTS ARE LINKED BY OCEANIC CURRENTS.
- CEQA REQUIRES EVALUATION OF POTENTIAL ADVERSE EFFECTS ON THE ENVIRONMENT FROM A PROPOSED PROJECT. THE DRAFT ED PROVIDED NO DISCUSSION ON THE ADVERSE EFFECTS OF EFFORT DISPLACEMENT, WHICH SURELY WILL OCCUR, IMPACTING FISHERY RESOURCES OUTSIDE THE CLOSED AREAS. LIKEWISE THERE IS NO DISCUSSION OF FEASIBLE MITIGATION MEASURES TO ADDRESS SIGNIFICANT ADVERSE EFFECTS, SUCH AS HOW TO INTEGRATE RESERVES INTO EXISTING FISHERY MANAGEMENT PLANS.

- THE SSC ALSO NOTED A REQUIREMENT FOR ADOPTION OF A "THRESHOLD OF SIGNIFICANCE" WHEN DETERMINING POTENTIAL ADVERSE EFFECTS ON THE ENVIRONMENT AND SURMISED THAT 20% HABITAT REPRESENTATION APPEARED TO BE THE THRESHOLD IN THE DRAFT ED. POINTING OUT THAT THE THRESHOLD WAS LOWER THAN THE SCIENCE ADVISORY PANEL'S (SAP) RECOMMENDATION FOR 30-50% RESERVE SIZE, THE SSC SUGGESTED THAT CRITERIA UNDERLYING THE CHOSEN THRESHOLD BE DOCUMENTED IN THE ED.

INDEED, THE 30-50% RESERVE SIZE ADVOCATED BY THE SAP LIES AT THE ROOT OF CONTROVERSY IN THE MARINE RESERVE MOVEMENT, BOTH IN CALIFORNIA AND ELSEWHERE. THE DRAFT ED PRESENTED THEORETICAL BENEFITS OF RESERVES IN DETAIL, BUT FAILED TO ADDRESS THE COMMENTS AND CONCERNS OF A SIGNIFICANT NUMBER OF FISHERY SCIENTISTS WHO DISAGREE THAT RESERVES, "NO TAKE" ZONES, ARE THE ONLY RECOURSE TO CURE THE PERCEIVED ILLS OF THE OCEAN, PARTICULARLY THOSE RELATED TO FISHERY MANAGEMENT.

IN FACT, PUBLISHED SCIENTISTS NOW CAUTION AGAINST ADOPTING A FIXED PERCENTAGE GOAL, A "ONE SIZE FITS ALL" APPROACH TO ESTABLISHING RESERVES.

> "...NO-TAKE MPA DESIGNATIONS WILL NOT, IN AND OF THEMSELVES, DELIVER LONG-TERM CONSERVATION IN MOST CASES. THIS IS BECAUSE A] FISHING AND OTHER EXTRACTIVE USES OF THE MARINE ENVIRONMENT ARE NOT THE ONLY ACTIVITIES THAT NEGATIVE(LY) IMPACT THE MARINE ENVIRONMENT, AND B] NOT ALL EXTRACTIVE USES ARE UNSUSTAINABLE OR DISRUPTIVE TO MARINE ECOLOGY. MULTIPLE USE MPAS DEMONSTRATE HOW SUSTAINABLE USE ON THE ONE HAND AND PROTECTIONIST APPROACHES EMBODIED IN THE NO-TAKE PROVISIONS ON THE OTHER CAN COMPLEMENT EACH OTHER FOR SUCCESSFUL MANAGEMENT, AND REFLECTS THE CONCEPT LONG ARTICULATED BY THE UNESCO BIOSPHERE RESERVES (BATISSE, 1990; UNESCO, 1996; BRIDGEWATER, 1999). *(AGARDY ET AL. IN AQUATIC CONSERV: MARINE AND FRESHWATER ECOSYSTEMS. IN PRESS)*

CLEARLY, THE PUBLIC "MARINE RESERVE WORKING GROUP (MRWG) PROCESS, INITIATED BY THE FISH AND GAME COMMISSION, MADE STRIDES TOWARD CONSENSUS IN DESIGNING A RESERVE NETWORK FOR THE CINMS THAT MET STAKEHOLDERS' DUAL GOALS OF PROTECTING BIODIVERSITY WHILE MINIMIZING SOCIO-ECONOMIC IMPACT TO FISHERIES AND THE COMMUNITIES THEY SERVE. THAT PROCESS, HOWEVER, WAS SHORT-CIRCUITED BY THE ARTIFICIAL TIME CONSTRAINTS IMPOSED BY THE LEAD AGENCIES, AND IT WAS FURTHER IMPEDED BY THE HIGHLY PUBLICIZED ADVOCACY OF THE SCIENCE PANEL AND NON-GOVERNMENTAL ORGANIZATIONS IN AN ATTEMPT TO MOLD POLICY REGARDING RESERVE SIZE.

"CONSTITUENT INVOLVEMENT" IS MANDATED IN CA STATE LEGISLATION: THE MARINE LIFE MANAGEMENT ACT (MLMA) AND MARINE LIFE PROTECTION ACT (MLPA). **CONSTITUENT INVOLVEMENT SHOULD ALSO BE AN ESSENTIAL INGREDIENT IN THE PROCESS TO CONSIDER WHETHER OR NOT ADDITIONAL RESERVES SHOULD BE IMPLEMENTED IN FEDERAL WATERS OF THE CINMS.**

PERHAPS THE BEST SCIENCE ON RESERVES TO DATE, THE NATIONAL RESEARCH COUNCIL, OCEAN STUDIES BOARD PUBLICATION "MARINE PROTECTED AREAS: TOOLS FOR SUSTAINING OCEAN ECOSYSTEMS," STATES:
"EFFECTIVE IMPLEMENTATION OF MARINE RESERVES...DEPENDS ON PARTICIPATION BY THE COMMUNITY OF STAKEHOLDERS IN DEVELOPING THE MANAGEMENT PLAN....IT IS ESSENTIAL TO INVOLVE ALL POTENTIAL STAKEHOLDERS AT THE OUTSET TO DEVELOP PLANS FOR MPA'S THAT ENLIST THE SUPPORT OF THE COMMUNITY..."

THE ONGOING CONTROVERSY OVER ESTABLISHMENT OF RESERVES IN THE CINMS, WHETHER DISTINCT FROM OR PART OF A STATEWIDE NETWORK OF RESERVES, HAS ESCALATED IN LARGE PART BY LACK OF FULL AND OPEN COMMUNICATION BETWEEN STAKEHOLDERS, THE SCIENCE PANEL AND THE AGENCIES, COUPLED WITH THE LACK OF CONSIDERATION OF THE VIEWS OF RESPECTED FISHERY SCIENTISTS.

IN LIGHT OF THE LACK OF DISCUSSION IN THE ED OF THE WIDE RANGE OF SCIENTIFIC THOUGHT REGARDING THE EFFICACY OF RESERVES, FOLLOWING IS A COMPILATION HIGHLIGHTING SOME ALTERNATE VIEWS:

EXCERPTED FROM A POWERPOINT PRESENTATION: "A SCIENTIFIC VIEW OF MPA'S"
BY RAY HILBORN, SCHOOL OF AQUATIC AND FISHERY SCIENCES, UNIVERSITY OF WA
(THE PRESENTATION IS APPENDED IN THE ATTACHMENTS TO THIS LETTER)

- THERE IS GROWING RECOGNITION THAT MPAS ARE A POTENTIALLY VALUABLE TOOL FOR:
  - PROTECTION OF BIODIVERSITY;
  - FISHERIES MANAGEMENT;
  - SCIENTIFIC REFERENCE AREAS
- AT THE SAME TIME AS THE SCIENCE HAS PROGRESSED:
  - ECOLOGISTS AND CONSERVATION GROUPS ARE CALLING FOR 20-30% OF MARINE HABITATS TO BE PROTECTED;
  - AND ARGUE THAT THESE WILL HAVE BOTH BIODIVERSITY AND FISHERIES MANAGEMENT BENEFITS
- **THESE CLAIMS ARE STRONGLY DISPUTED BY MOST FISHERIES SCIENTISTS**
  - **BECAUSE BLANKET MPA PROGRAMS MAY HAVE SIGNIFICANT ADVERSE BIODIVERSITY AND FISHERY MANAGEMENT CONSEQUENCES;**
  - **BECAUSE THE BASIC NUMBERS OF 20-30% (OR 30-50%) ARE DERIVED FROM <u>THEORY THAT ASSUMES THERE ARE NO OTHER FORMS OF FISHERY MANAGEMENT</u>** (EMPHASIS ADDED)

  NOTE THAT AN UNDERLYING ASSUMPTION OF THE SAP RECOMMENDATION FOR 30-50% RESERVE SIZE IS THE ABSENCE OF FISHERY MANAGEMENT, WHICH IS CLEARLY <u>NOT</u> THE CASE IN CALIFORNIA.

FROM "MARINE RESERVES FOR FISHERIES MANAGEMENT: WHY NOT"
RICHARD PARRISH, NMFS IN CALCOFI REP. V. 40, 1999
(THE PAPER IS APPENDED IN ATTACHMENTS SECTION)

- "...BUT THE CASE FOR LARGE MARINE RESERVES FOR FISHERIES MANAGEMENT PURPOSES HAS NOT YET BEEN ADEQUATELY MADE."
- **"MARINE RESERVES WILL DO LITTLE TOWARD ACHIEVING OPTIMUM YIELD FOR THESE SPECIES** (EPIPELAGIC AND MIGRATORY SPECIES, INCLUDING HAKE, HERRING, **<u>SARDINE</u>**, SALMON **<u>SQUID</u>**, **<u>ANCHOVY</u>**, ALBACORE, **<u>MACKERELS</u>**, WHITE SEABASS).

- ..."CONSIDERABLE RESEARCH SHOULD BE CARRIED OUT BEFORE VERY LARGE RESERVES ARE CONSIDERED AS A VIABLE ALTERNATIVE FOR MANAGING THE MAJOR FISHERY STOCKS OF THE CALIFORNIA CURRENT REGION."

FROM MPA NEWS, EXCERPTED FROM "AQUATIC CONSERVATION: FRESHWATER AND MARINE ECOSYSTEMS"
MPA PERSPECTIVE: "DANGEROUS TARGETS AND INFLEXIBLE STANCES THREATEN MARINE CONSERVATION EFFORTS" BY DR. TUNDY AGARDY

- ..."THE 20% FIGURE HAS NOW BECOME DOGMA. THE ORIGIN OF THIS FIGURE IS DEBATED, YET IT WAS CERTAINLY EXTRAPOLATED FROM VERY LOCALIZED STUDIES OF PARTICULAR FISHERIES WITHIN PARTICULAR HABITATS – NOT FROM REPRESENTATIVE COMMUNITY ECOLOGY FROM A WIDE RANGE OF HABITAT TYPES... HOWEVER, IT IS MOST CERTAINLY NOT A MAGIC NUMBER FOR MANY BIOMES... **THE ONE-SIZE-FITS-ALL APPROACH CANNOT BE EXPECTED TO WORK IN ALL ENVIRONMENTS TO COMBAT ALL THREATS."**
- "...INFLEXIBILITY AND RIGID DOGMA THREATEN THE PROGRESS MADE TO DATE. NARROW INTERPRETATIONS OF WHAT CONSTITUTES AN MPA; OBJECTIVE-SETTING DONE BY A SINGLE INTEREST GROUP (OFTEN SCIENTISTS); ADHERENCE TO SCIENTIFICALLY QUESTIONABLE TARGETS; AND THE DISINGENUOUS LABELING OF SCIENTIFIC OPINION AS TRUTH ARE ALL EXTREMELY DANGEROUS TACTICS... SCIENCE CAN AND SHOULD BE HARNESSED TO GUIDE MPA PLANNING, YET IT SHOULD NOT DRIVE THE PROCESS UNILATERALLY... WE MUST RECOGNIZE THE LIMITS OF SCIENCE..."

EXCERPTS FROM "HARVEST REFUGIA: FACT AND FANTASY", COMPILED BY THE CALIFORNIA SEAFOOD COUNCIL.
SOURCES:
R.J. ROWLEY, CASE STUDIES AND REVIEW, MARINE RESERVES IN FISHERY MANAGEMENT, IN AQUATIC CONSERVATION: MARINE AND FRESHWATER ECOSYSTEMS, VOL. 4 233-254 (1994)
MARK CARR & DANIEL REED, CONCEPTUAL ISSUES RELEVANT TO MARINE HARVEST REFUGES, IN CAN.J.FISH.AQUAT.SCI., VOL. 50 (1993)
(THIS PAPER IS APPENDED IN THE ATTACHMENTS TO THIS LETTER.)

- FOR HEAVILY FISHED RESIDENT SPECIES (AS OPPOSED TO WIDE RANGING SPECIES), MARINE RESERVES TEND TO SUPPORT DENSER POPULATIONS OF LARGER INDIVIDUALS THAN ARE FOUND OUTSIDE RESERVES. **BUT DENSE POPULATIONS WITHIN RESERVES DO NOT NECESSARILY LEAD TO INCREASED CATCHES IN SURROUNDING WATERS.**
- THE EXPORT OF LARVAE FROM RESERVES TO AUGMENT REGIONAL FISHERIES HAS THEORETICAL POTENTIAL BUT IS ALMOST ENTIRELY UNPROVEN. ITS ONLY GREAT BENEFITS WILL BE TO FISHERIES THAT ARE LIMITED BY THE NUMBER OF LARVAE THAT SETTLE, AND ITS SUCCESS WILL DEPEND ON MANY DIFFICULT-TO-PREDICT FACTORS.
- TO DESIGN EFFECTIVE MARINE RESERVES, STUDIES ARE NEEDED OF THE MOVEMENT PATTERNS AND HABITAT REQUIREMENTS OF ALL LIFE STAGES (LARVAL, SETTLEMENT, JUVENILE, ADULT, FEEDING AND BREEDING) OF ALL TARGETED SPECIES.... **EXISTING RESERVES (AND THOSE PROPOSED FOR CINMS) HAVE BEEN ESTABLISHED WITHOUT BASELINE STUDIES.**
- THERE IS A PERCEPTION THAT MARINE RESERVES WILL PROVIDE EFFECTIVE PROTECTION TO ALL RESIDENT SPECIES WITH LITTLE NEED FOR DETAILED KNOWLEDGE...AND WITHOUT DIRECT MANAGEMENT OF POPULATIONS WITHIN THE RESERVE. THIS IS ... WISHFUL THINKING. **MANAGEMENT MAY NEED TO INCLUDE A VARIETY OF OPTIONS – INCLUDING ALLOWING SELECTIVE FISHING.**

CONCLUSIONS AND RECOMMENDATIONS FROM THE NATIONAL RESEARCH COUNCIL, OCEAN STUDIES BOARD, "MARINE PROTECTED AREAS: TOOLS FOR SUSTAINING OCEAN ECOSYSTEMS"

- CHOICE OF SITES FOR MPA'S SHOULD BE INTEGRATED INTO AN OVERALL PLAN FOR MARINE AREA MANAGEMENT ... BECAUSE THE SUCCESS OF MPA'S DEPENDS ON THE QUALITY OF MANAGEMENT IN THE SURROUNDING WATERS.
- IMPLEMENTATION OF RESERVES SHOULD BE INCREMENTAL AND ADAPTIVE...
- BECAUSE OF THE DIVERSITY OF FISH SPECIES AND MANAGEMENT OBJECTIVES, IT IS IMPOSSIBLE TO SET A UNIVERSAL PERCENTAGE FOR AREA CLOSURE.
- AN INCREMENTAL APPROACH TO IMPLEMENTING MPA'S AND RESERVES SHOULD BE ADOPTED TO PROTECT THE AREAS WITH THE HIGHEST CONSERVATION NEEDS AND GREATEST ECOSYSTEM IMPACT FIRST... **THE PRIMARY EMPHASIS SHOULD BE ON PROTECTION OF VALUABLE AND VULNERABLE AREAS, RATHER THAN ON ACHIEVEMENT OF A PERCENTAGE GOAL FOR ANY GIVEN REGION.**

- MARINE RESERVES AND PROTECTED AREAS MUST BE MONITORED AND EVALUATED TO DETERMINE IF GOALS ARE BEING MET AND TO PROVIDE INFORMATION FOR REFINING THE DESIGN OF CURRENT AND FUTURE MPA'S...
- RESERVES SHOULD BE PLANNED SUCH THAT BOUNDARIES AND REGULATIONS CAN BE ADAPTED TO IMPROVE PERFORMANCE AND MEET CHANGES IN MANAGEMENT GOALS.
- **THE POTENTIAL ECONOMIC AND ECOLOGICAL BENEFITS OF MARINE RESERVES ... WILL NOT BE REALIZED WITHOUT A SUFFICIENT COMMITMENT TO ENFORCEMENT AND MONITORING.**

FURTHER, ADDITIONAL EXCERPTS FROM THE SSC REVIEW OF THE CINMS ED BEAR REPEATING:

- ALTHOUGH HABITAT REPRESENTATION IS A FUNDAMENTALLY SOUND APPROACH TO DETERMINING WHICH AREAS TO PLACE IN RESERVES TO PROTECT BIODIVERSITY, **THE SSC CONSIDERS THE CHOICE OF RESERVE SIZE TO BE A POLICY DECISION.**
- THE SSC NOTES THAT, DUE TO THE RELATIVELY SMALL SCALE OF THE CINMS RELATIVE TO THE FULL DISTRIBUTION OF MOST OF THE FISHERY RESOURCES THAT INHABIT THE CINMS, **SUBSTANTIAL FISHERIES BENEFITS ON A STOCK-WIDE SCALE ARE UNLIKELY TO RESULT UNDER ANY OF THE MPA ALTERNATIVES.** MORE SPECIFICALLY, THE SSC NOTES THAT THE ARGUMENTS FOR EXPECTED FISHERIES BENEFITS (PP. 6-66, 6-67 AND FIGURE 6-1) ARE **TECHNICALLY WEAK AND NOT COMPELLING.** (EMPHASIS ADDED)
- THE SSC QUESTIONED CERTAIN SOCIO-ECONOMIC ASSUMPTIONS MADE IN THE DRAFT ED:
  EG. USE OF THE VALUE OF COMMERCIAL FISHERIES IN THE TORTUGAS ECOLOGICAL RESERVE AS A PROXY FOR CINMS FISHERY VALUE – WHY?;
  RE: USE OF QUALITATIVE ESTIMATES OF BENEFITS AND COSTS, INCLUDING NON-USE BENEFITS, THE SSC STATED: "WHILE THESE NON-USE BENEFITS WERE INITIALLY CHARACTERIZED AS A 'QUALITATIVE OVERVIEW,' THEY WERE IN FACT QUANTIFIED AND WERE PIVOTAL TO THE CONCLUSION OF THE ANALYSIS." THE SSC FURTHER STATED: "..THE ESTIMATES IN THE DED ARE AD-HOC AND NOT PROPERLY VALIDATED AND SHOULD NOT BE TREATED AS QUANTITATIVE ESTIMATES."

  "GIVEN EXISTING UNCERTAINTIES REGARDING THE LIKELIHOOD AND TIMING OF POTENTIAL BENEFITS AND COSTS (E.G. BENEFITS TO NON-CONSUMPTIVE USERS WITHIN RESERVES, BENEFITS TO FISHERIES OUTSIDE RESERVES, CHANGES IN NON-USE VALUES OVER TIME) ... STATIC ANALYSIS PROVIDES TOO INCOMPLETE A PICTURE TO BE USEFUL FOR POLICY DECISIONS. **GIVEN ITS RESERVATIONS REGARDING THE DERIVATION OF THE COST AND BENEFIT ESTIMATES, THE SSC CONCLUDES THAT IT IS NOT POSSIBLE TO DRAW ANY CONCLUSIONS REGARDING THE RELATIVE COSTS AND BENEFITS OF MARINE RESERVES AT CINMS.**
- THE ISSUE OF EFFORT DISPLACEMENT IS CRITICAL TO EVALUATING THE EFFECTS OF RESERVE SIZE... **THE TRADE-OFF BETWEEN BENEFITS INSIDE RESERVES AND POTENTIALLY ADVERSE ENVIRONMENTAL AND SOCIOECONOMIC EFFECTS ASSOCIATED WITH EFFORT DISPLACEMENT OUTSIDE RESERVES IS AN IMPORTANT FACTOR TO CONSIDER IN POLICY DELIBERATIONS REGARDING RESERVE SIZE.**

CONCLUSIONS AND RECOMMENDATIONS OF THE CWPA:

BEYOND ADDRESSING DEFICIENCIES IDENTIFIED BY THE SSC AND OTHER COMMENTERS, IT IS IMPORTANT TO CONSIDER THE CHANNEL ISLANDS AS PART OF THE WHOLE OCEAN ENVIRONMENT, NOT AS AN ISLAND UNTO ITSELF.

THE CINMS AND MLPA PROCESSES BOTH CONSTITUTE PARTS OF A LARGER GOAL: TO DEVELOP A STATEWIDE NETWORK OF RESERVES. BECAUSE EACH PART AFFECTS THE OTHER PARTS OF THE WHOLE, RESERVES FOR ISLANDS AND COAST SHOULD BE DEVELOPED TOGETHER, TRANSPARENTLY, WITH CLEAR GOALS AND PERFORMANCE OBJECTIVES IDENTIFIED FOR EACH PROPOSED RESERVE IN THE NETWORK. ONLY THROUGH CONSIDERATION OF THE TOTAL NETWORK WILL THE COMPLETE PICTURE OF SOCIO-ECONOMIC COSTS AND POSSIBLE BENEFITS EMERGE.

CONSIDERING THAT THE DRY TORTUGAS RESERVE PROCESS INVOLVED AT LEAST A DECADE OF NEGOTIATION, AND ULTIMATELY THE PLAN IMPLEMENTED WAS PROPOSED BY THE FISHERMEN, IT IS IMPORTANT TO HEED THE RECOMMENDATIONS IN THE NRC REPORT:
"EFFECTIVE IMPLEMENTATION OF MARINE RESERVES...DEPENDS ON PARTICIPATION BY THE COMMUNITY OF STAKEHOLDERS IN DEVELOPING THE MANAGEMENT PLAN...."

FISHERMEN ACTIVE IN THE PROCESS TO DATE HAVE SUGGESTED KEY CONCEPTS THAT SHOULD BE ENCOMPASSED INTO THE PLANNING AND MANAGEMENT FRAMEWORK OF A RESERVE NETWORK. THESE CONCEPTS INCLUDE:

- PHASING IN RESERVES OVER TIME. IMPLEMENTING RESERVES IN INCREMENTS PROVIDES TIME TO CONSIDER CAPACITY REDUCTION AND SOCIAL PLANNING ISSUES, AS WELL AS TO EVALUATE WHETHER GOALS AND OBJECTIVES FOR RESERVES ARE BEING ACHIEVED.
- REQUIRING FUNDING COMMITMENT FOR LONG-TERM MONITORING. COMMITTING FUNDING FOR MONITORING IS ESSENTIAL TO EVALUATE HOW WELL RESERVES ARE SERVING THEIR OBJECTIVES, AND HOW WELL AGENCIES ARE MANAGING TO MEET THOSE AIMS. ADDING FUTURE RESERVES WOULD DEPEND ON DEMONSTRATED BENEFITS AND ADMINISTRATIVE PERFORMANCE.
- PROVIDING THE FLEXIBILITY TO ALTER, REFINE OR REMOVE RESERVES. AS RECOMMENDED IN THE NRC REPORT, RESERVES SHOULD BE PLANNED SO THAT BOUNDARIES AND REGULATIONS CAN BE ADAPTED TO IMPROVE PERFORMANCE AND MEET CHANGES IN MANAGEMENT GOALS. CONVERSELY, RESERVES THAT DO NOT MEET PERFORMANCE OBJECTIVES OVER TIME SHOULD BE REMOVED.

- ESTABLISHING "CONSERVATION ZONES" ALONGSIDE CORE "NO-TAKE" RESERVES, ALONG WITH COMMUNITY OVERSIGHT COMMITTEES, INCLUDING LOCAL FISHERMEN (COMMERCIAL FISHERMEN AS WELL AS RECREATIONAL), TO HELP DESIGN CONSERVATION ZONE MANAGEMENT PLANS. THE PURPOSE OF CONSERVATION/MANAGEMENT ZONES IS BOTH TO SERVE AS A CONTROL AND TO DEMONSTRATE THAT FISHERMEN CAN DO A BETTER JOB MEETING PERFORMANCE STANDARDS THAN BY SIMPLY CLOSING THE AREA TO FISHING.

  WE NOTE THAT THE STATE-WATERS PLAN IMPLEMENTED TWO CONSERVATION AREAS; HOWEVER THE AREAS RESTRICT TAKING OF PELAGIC FINFISH TO RECREATIONAL FISHERMEN ONLY. IN LIGHT OF THE ECONOMIC IMPORTANCE OF THE "WETFISH" COMPLEX TO THE STATE, AND CONSIDERING THAT **MARINE RESERVES WILL DO LITTLE TOWARD ACHIEVING OPTIMUM YIELD FOR THESE SPECIES,** COMMERCIAL FISHING FOR PELAGIC FINFISH AND SQUID SHOULD ALSO BE AUTHORIZED IN ANY CONSERVATION ZONE ESTABLISHED AS PART OF AN MPA NETWORK.
- INVOLVING FISHERMEN IN FISHERY DATA GATHERING, MONITORING AND MANAGEMENT DECISIONS, BOTH INSIDE AND OUTSIDE RESERVES – AN OPPORTUNITY TO TRANSFORM THE MANDATES FOR "CONSTITUENT INVOLVEMENT" AND "ADAPTIVE MANAGEMENT" INTO PRACTICE.

RETURNING TO OUR INITIAL OBSERVATIONS: THE ED APPEARED TO FOCUS ON DECLINES OF ROCKFISH AND ABALONE IN JUSTIFYING THE NEED FOR RESERVES IN THE CINMS. IT IS IMPORTANT TO CONSIDER HOW THESE PROBLEMS ARE BEING ADDRESSED OUTSIDE THE PROPOSAL FOR RESERVES.

- THE RECENT ACTION BY THE PFMC, ESSENTIALLY CLOSING THE SHELF TO GROUNDFISH FISHING, IS INTENDED SPECIFICALLY TO OFFSET DECLINES OF ROCKFISH SPECIES DESIGNATED AS "OVERFISHED". THIS HUGE NEW DE FACTO "RESERVE" MUST BE CONSIDERED AS PART OF ANY PLAN TO ESTABLISH A RESERVE NETWORK. HOW DOES THIS CLOSURE AFFECT THE ASSUMPTIONS AND ARGUMENTS MADE ... REGARDING THE NEED TO ESTABLISH A RESERVE NETWORK IN THE CINMS OR STATEWIDE?
- THE ABALONE FISHERY IN SOUTHERN CALIFORNIA HAS BEEN CLOSED FOR SEVERAL YEARS TO COMMERCIAL AND RECREATIONAL HARVEST, AND AN ABALONE RESTORATION PLAN IS UNDER CONSIDERATION. HOWEVER, NEITHER THESE EFFORTS, NOR PROPOSALS TO ESTABLISH RESERVES TO PROTECT ABALONE STOCKS, ADDRESS THE PROSPECT OF SEA OTTER EMIGRATION INTO SOUTHERN CALIFORNIA AND THE REFUSAL OF THE FISH AND WILDLIFE SERVICE TO CONTAIN SEA OTTERS UNDER EXISTING LAW, PL 99-625. ABSENT SEA OTTER MANAGEMENT, ABALONE, AS WELL AS SEA URCHIN, CRAB AND LOBSTER RESOURCES, IN SOUTHERN CALIFORNIA WILL BE SHARPLY REDUCED, NOTWITHSTANDING RESERVES. THESE POINTS SHOULD BE ACKNOWLEDGED AS PART OF ANY COST-BENEFIT ANALYSIS.

IN LIGHT OF A LEGISLATIVE AMENDMENT EXTENDING THE TIME LINE FOR DEVELOPMENT OF A STATEWIDE RESERVE NETWORK UNDER THE MLPA TO 2005, WE SUGGEST A CONCURRENT EXTENSION IN THE TIME LINE TO CONSIDER RESERVES FOR THE FEDERAL WATERS OF THE CINMS. IN DEVELOPING A STATEWIDE NETWORK OF RESERVES, WE BELIEVE ISLANDS AND COAST SHOULD BE CONSIDERED AS PART OF THE WHOLE. FURTHER, WE REITERATE OUR EARLIER SUPPORT FOR THE STATEMENT OF THE GAP:

"...FURTHER, WHILE MARINE RESERVES SHOULD CONTINUE TO BE A TOOL WHICH CAN BE USED APPROPRIATELY, THE DECISION TO ESTABLISH A MARINE RESERVE SHOULD REMAIN WITH STATES AND FISHERY MANAGEMENT COUNCILS. A DECISION TO ESTABLISH A MARINE RESERVE IS A *DE FACTO*

DECISION TO REGULATE FISHING: SUCH REGULATION IS NOT WITHIN THE RANGE OF AUTHORITY OR EXPERTISE OF NATIONAL MARINE SANCTUARIES." (EMPHASIS ADDED)

THE PROCESS OF ESTABLISHING A NETWORK OF MARINE RESERVES IN CALIFORNIA CANNOT AND SHOULD NOT BE HURRIED, AS THE EXPERIENCE IN THE DRY TORTUGAS PROCESS ATTESTS. TO BE EFFECTIVE, IT MUST INCLUDE PARTICIPATION BY THE COMMUNITY OF STAKEHOLDERS, INCLUDING LOCAL FISHERMEN, IN DEVELOPING THE MANAGEMENT PLAN, AND IT SHOULD ALSO INCLUDE GUIDANCE BY INDEPENDENT FISHERY SCIENTISTS.

ONCE AGAIN, WE APPRECIATE THIS OPPORTUNITY TO PRESENT THESE COMMENTS AND CONCERNS, BOTH FOR INCLUSION IN THE DEIS AND FOR CONSIDERATION BY THE COUNCIL.. WE LOOK FORWARD TO WORKING COOPERATIVELY WITHIN THE PROCESS TO ASSURE BOTH THE CONSERVATION OF AND REASONABLE ACCESS TO COASTAL PELAGIC SPECIES RESOURCES, INCLUDING SARDINES, MACKEREL AND SQUID, THE FOUNDATION OF THE COMMERCIAL FISHERIES IN CALIFORNIA.

SINCERELY,

Diane Pleschner-Steele

DIANE PLESCHNER-STEELE
FOR CALIFORNIA WETFISH PRODUCERS ASSOCIATION

CC: ROBERT HIGHT, DIRECTOR
DEPARTMENT OF FISH AND GAME

ROBERT TREANOR, EXECUTIVE DIRECTOR
FISH AND GAME COMMISSION

1] ATTACHMENT:

CALCOFI REP., VOL. 40, 1999
PARRISH: MARINE RESERVES FOR FISHERIES MANAGEMENT: WHY NOT

ATTACH: CWPA COMMENTS
E.2.d
PUB. COMMENT
AUG 2003

MARINE RESERVES FOR FISHERIES MANAGEMENT: WHY NOT

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ABSTRACT

Marine reserves have recently become a politically correct way of viewing the management of marine resources. Much of the reason for this is due to the depressed state of many of the populations that have been the mainstay of both commercial and recreational marine fisheries. The apparent failure of past management has led to a headlong rush for a paradigm shift. Marine reserves that occupy no more than about 5% of the productive habitat can provide sites for research, for monitoring natural variability, and for preserving habitat and diversity for heritage purposes.

But the case for large marine reserves for fisheries management purposes has not yet been adequately made. The few available modeling studies suggest that for fisheries management purposes, marine reserves need to be on the order of 50% of the productive habitat. Analyses presented here suggest that, with reserves this large, current yields can be obtained only with a considerable increase in total fishing effort and a very large increase in the mortality rates in areas open to fishing. This implies a large increase in the trawling rate, and probably associated ecological damage, in the exploited area. Even if it were desirable to manage an individual species with large marine reserves, the concept breaks down when applied to the West Coast trawl fishery, which is based on many species, each with a different habitat. A marine reserve established for overexploited groundfish provides little real protection for migratory species such as Pacific hake, but may greatly increase the cost of fishing for these species.

INTRODUCTION

There is a sea change brewing in the way we manage our fishery resources in the California Current region, and it has its origin in the last several decades of decreasing yields and populations of many of the most important West Coast sport and commercial fisheries (Ralston 1998). It is not yet clear what changes will occur, because there are several competing strategies as to how we should alter current management. However, marine reserves are certain to play a much more important role than they have in the past, and a wide range of sizes has been suggested (Yoklavich 1998). Although no-take marine reserves have played a very minor role in the management of marine fisheries of the California Current region, areas have been extensively closed to specific commercial gear types (gill nets, purse seines, and trawl nets). For the purposes of this work I will define *marine reserves* as areas in which fish and shellfish cannot be legally taken by either commercial or recreational fishers, and *closed areas* as areas where specific fishing gear cannot be used.

The specifics of size and siting of marine reserves will be topics for research, confrontation, and political action in the coming years. For the purpose of this paper, I will use the classification developed by a working group at a recent workshop that suggested marine reserves could be classified into three design types based upon the motivations for establishing the reserves (Yoklavich 1998). These types are marine reserves as heritage sites and areas for fishery research, marine reserves as a buffer or insurance against overfishing, and marine reserves as an alternative strategy for sustainable fisheries. The working group suggested that the percentages of the total habitat, or range of an individual species, which was necessary to fulfill the goals of these types were <5%, 5%–20%, and 20%–50%, respectively.

The smallest reserves, those primarily intended for heritage and research purposes, are relatively uncontroversial. It is difficult to imagine that any resource users would be against the concept of reserves of this size, unless of course the reserves were in "their fishing hole." I will simply state that, in my opinion, reserves of this kind are long overdue, and managers should quickly proceed to develop them in all major habitat types.

The middle case, the use of reserves as a buffer or insurance against overfishing, will not be directly addressed in the analyses presented here. Analyses of this case should include multispecies effects and economic effects on fisheries, which are beyond the simple analyses presented here.

The largest reserve class—an alternative strategy for sustainable development—may be viewed as a form of adaptive management; i.e., a major alteration in management strategy followed by an evaluation of this

alteration, rather than a gradual evolution of the management strategy. People favoring this size of reserve range from those who believe that incremental adjustments to the present management system cannot be expected to correct the present downward trends of many of our valuable marine resources, to those with a philosophical opposition to fishing and an acceptance of large reserves as a partial solution.

The purpose of this paper is to assess the population dynamics that would most likely result if adaptive management utilizing harvest refugia in 20%–50% of total habitat were enacted. In particular, I will compare the management potential of large marine reserves with the management strategy that has been followed by the Pacific Fisheries Management Council (PFMC).

BACKGROUND

One of the major difficulties confronting fishery research and management is in separating the effects of fishing from the effects of environmental variation at decadal or longer time scales. It is clear that at least parts of the California Current system have been very unproductive for an extended period, for both zooplankton (Brodeur and Ware 1992; McGowan et al. 1998) and fishes (Hollowed and Wooster 1992; Beamish and Bouillon 1993; Francis and Hare 1994). If marine reserves had been in place over the last several decades, it would be possible to determine whether the density of fishes within the reserves had declined, and, if so, how much in comparison to areas where exploitation has occurred. The use of marine reserves as controls to evaluate the effects of extensive and varied exploitation of living marine resources appears to be an essential tool in the research that will be necessary to tease out the complicated interactions between natural and human-induced alterations of these resources.

It should be noted that the analyses presented here are based on quite simple population dynamics; I have largely ignored multiyear to regime-scale environmental variation, which I believe is one of the most important factors in the current fisheries' situation.

Fish Behavior and Marine Reserves

One of the common arguments used by people favoring marine reserves is that they will provide areas where the marine fauna can recover to densities approaching those prior to exploitation. It is clear from population dynamics theory that marine reserves will foster conditions within the reserves that will result in increased fish density and diversity and a more natural age composition in comparison to that occurring at the present highly exploited state. But the state that is fostered will not be the same as that before exploitation. There will be fewer pelagic predators and small pelagic forage fishes, because of their exploitation outside the reserves, and there may possibly be more benthic and sedentary fishes. Because fishing effort will be displaced from areas that are included in reserves, the areas open to fishing should be expected to have exploitation rates considerably higher than the present ones. Marine reserves may increase recruitment to exploited areas for species with extensive pelagic larval stages, but species with little dispersal during the larval stage are unlikely to increase outside the reserves.

The success of marine reserves in maintaining near virgin densities will be highly dependent upon the behavior of the individual species (table 1). Species with highly pelagic or migratory behavior, such as Pacific sardine or Pacific hake, will be only partially, temporally protected by reserves, and their densities within the reserves should not be expected to differ greatly from those outside the reserves. Species with moderate mobility will be partially protected by reserves; depending on how much they move, their densities in the middle of large reserves could approach virgin densities. Near reserve boundaries, their densities will approach those outside the reserves. If, however, fishers respond to a reserve by concentrating their activity just outside the reserve, the net effect near the boundary may be densities that are

TABLE 1
Fish Behavior and Mobility in Relation to Residence Time within a Marine Reserve

1. Epipelagic and migratory species
Species that freely move in and out of reserves; they are often stocks with a large biomass. Their fisheries have minor bycatch, a minor effect on the substrate, and a high percentage of the catch may be taken in a relatively minor portion of their range:

Hake	Salmon	Albacore
Herring	Squid	Mackerels
Sardine	Anchovy	White seabass

Marine reserves will do little toward achieving optimum yield for these species. Annual quotas, closed seasons, or limitations on total and/or temporal effort will more likely be successful.

2. Benthopelagic, often schooling species
Species with moderate movement in and out of reserves and extensive larval dispersal:

Bocaccio	Widow rockfish	Pacific ocean perch
Chilipepper	Sablefish	Shortbelly rockfish
Kelp bass	Lingcod	Yellowtail rockfish

These are the most likely candidates for primary management by marine reserves or closed areas. Fisheries often have high bycatch rates and effects on the substrate.

3. Benthic, sedentary species
(particularly species such as abalone that have little larval dispersal); species that would have little movement out of reserves:

Many flatfishes	Abalones	Many littoral species
Many rockfishes	Sea urchins	Market crab

These are good candidates for achieving near virgin biomass levels in reserves but not likely candidates for improvement of fishery yields through reserve or closed-area management.

considerably less than those deep in the reserve or even those at a considerable distance from a reserve.

Modeling studies suggest that marine reserves are most likely to positively affect fishery yields in species with moderate movements (Polacheck 1990; DeMartini 1993). This is particularly true when the reserve protects the younger fish that will move into the area open to fishing as they become larger. This was obviously realized by those who closed nearshore areas to trawling and have thus protected nursery grounds for more than four decades in California.

Benthic, sedentary species that move in and out of a reserve very little as adults are most likely to reach biomass densities and age structures near virgin levels. In theory, these species could attain even higher densities within marine reserves than before exploitation. This could happen if their populations are limited by predators or competitors that have highly or moderately mobile behavior, because these species would tend to be less dense than before exploitation. In contrast, modeling studies suggest that sedentary species are unlikely to increase with marine reserves (Polacheck 1990; DeMartini 1993). In fact, it is unlikely that a species could achieve near virgin biomass levels within a reserve and also increase fishery yields above levels that would occur with proper management without reserves. The exception to this is the special case where a large percentage of the recruitment of a stock consistently comes from a relatively small percentage of its habitat, and this same habitat is placed in a reserve. Species such as market squid and Pacific herring, which reproduce in restricted spawning grounds, are examples; in both cases, however, the species are highly mobile, and current fisheries are located primarily on their spawning grounds.

Growth versus Recruitment Overfishing

Fisheries biologists generally divide overfishing into two conceptual classes: growth overfishing and recruitment overfishing. The management techniques used to avoid these two classes of overfishing are quite different.

Growth overfishing is most likely to occur in species with low growth and natural mortality rates as well as delayed sexual maturity. It is therefore likely to occur in fisheries for rockfishes and other slow-growing groundfish species. Generally, the term refers to fishing a stock beyond the maximum yield per recruit, and this generally occurs when a species is exploited before the age that an individual cohort achieves its natural maximum biomass.

Growth overfishing is generally avoided by delaying, or at least reducing, fishing mortality on fish that have not yet reached the size or age of sexual maturity; this is often near the age that a year class reaches its maximum biomass. Typical management measures to avoid growth overfishing include size restrictions, mesh size restrictions, and area closures to prevent harvest in nearshore nursery grounds. These area closures have traditionally been limited to specific types of fishing gear (e.g., trawls or purse seines). No-take reserves have not been used to prevent growth overfishing in the California Current region.

Depending on the growth and behavior of individual species, reserves may or may not affect growth overfishing. Nonetheless, many of the beneficial effects of marine reserves observed in modeling studies are related to growth overfishing. The reserve models essentially protect fish at younger ages; then these fish move out of the reserve and are caught at a beneficial yield-per-recruit age and mortality rate. If reserves were concentrated in nearshore, nursery areas, they would have the same effect as the gear-specific closed areas mentioned above. In this case, the reserves will not fulfill the role of maintaining near virgin densities and population age structures because they will not protect adults. For sedentary fishes, where the areas open to fishing encompass the habitat of the whole age structure of the species (i.e., where there is no nursery grounds effect), regulations to prevent growth overfishing will have to be maintained.

Recruitment overfishing refers to fishing that reduces reproductive output to levels that markedly decrease recruitment. It is generally assumed that this does not occur at biomass levels less than 50% of the virgin level. Management techniques to avoid recruitment overfishing include setting annual quotas, fishing mortality, or fleet sizes at levels that will not reduce the adult biomass below some reference level. Unfortunately, this reference level is difficult to determine, and in practice it is seldom established until it has been exceeded.

Marine reserves of even modest size may help prevent recruitment overfishing of fishes that are sedentary, or have limited mobility and long pelagic larval stages. Very large marine reserves may protect enough of these fishes to prevent recruitment overfishing by providing a source of young fish even without any other regulations. In fact, several models suggest that reserves occupying up to 50% of a species' habitat may even increase yields (Polacheck 1990; DeMartini 1993). DeMartini (1993) showed that increased yields and protection of spawning biomass were highly dependent upon the behavior and growth rates of the species modeled; the best fishery and spawning enhancement occurred in species with moderate mobility and fast growth rates.

Spawner-Recruit Relationships

One convention often used in fisheries assessments is to assume that natural mortality and growth rates are not dependent on year or year class. Given these two assumptions, the shape of the spawner-recruit relationship

becomes the primary factor in determining the stock's surplus production and thus the productivity of the stock. The spawner-recruit model most often used for California Current species is the Ricker model:

$$R = a\,S\,e^{-b\,S}$$

where R = recruit biomass or number
S = parent biomass, number, or reproductive output
a = the density-independent parameter
b = the density-dependent parameter

The potential productivity of a species with a Ricker spawner-recruit relation is described by the a coefficient, whereas the effect of stock size in reducing the potential productivity is determined by the b coefficient. Although it is not generally realized, the b coefficient also determines the percentage of the equilibrium stock size at which the maximum surplus production occurs. When biomass is expressed as a percentage of the equilibrium biomass, there is a unique b coefficient that defines any stock that has optimum production at a given percentage of equilibrium biomass (although it may be scaled by the assumed age at recruitment and the units that are used).

Ricker spawner-recruit models are usually fitted with a linear regression of the log of recruits/spawner on reproductive output or some proxy such as spawning biomass. A Ricker spawner-recruit relationship with maximum surplus production at 35% of the virgin biomass has a moderate dome shape (fig. 1); with maximum surplus production at 40%, the relationship has only a slight dome; and with 45%, recruitment continues to increase even beyond the virgin biomass level. In each case the potential productivity is dependent upon the a coefficient.

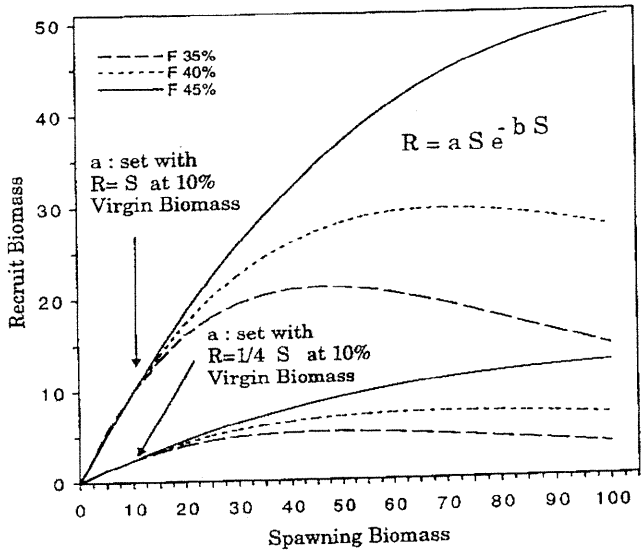

Figure 1. Ricker spawner-recruit curves. The upper set has an a coefficient four times as large as the lower set.

Source of Density-Dependence in Recruitment

The magnitude of compensatory density-dependence (the tendency for increased recruitment rates as the parent biomass decreases) is a measure of a stock's resiliency to exploitation and to temporary adverse environmental conditions. The source and degree of this density-dependence is not known for most, or perhaps any, of the exploited marine fishes in the California Current system. Knowledge of the source, or at least the life-history stage at which most of the density-dependence occurs, will be crucial in determining the relative merits of reserve versus traditional management.

Density-dependence in recruitment could occur during three life-history stages. The first stage includes processes affecting the production of eggs or larvae, and it would most likely be related to the availability of food for mature and maturing fish. Variations in food availability and quality would be expected to affect both the number and quality of eggs or larvae produced. This may be particularly important for live-bearers such as the rockfishes and for indeterminate spawners such as the California sardine.

The second life-history stage—the pelagic larval phase—is quite extended in many California Current groundfish species. Most of these species have relatively small adult populations and therefore a very small biomass at the pelagic larval stage. Density-dependence at this stage is therefore unlikely because the larvae constitute a very minor portion of the zooplankton. Possible exceptions to this are Pacific hake and shortbelly rockfish, which have large populations; one could also argue that these species are not really groundfish but benthopelagic species.

The third life-history stage—postsettlement juvenile—is a likely candidate for density-dependence in many benthic fishes because their nursery grounds are often spatially restricted, so predation, competition, and cannibalism are potential sources of density-dependence in both juvenile growth and mortality. At this stage the density-dependence could be caused by the abundance of larvae or juveniles that are settling or by the abundance of older fish already present.

If a stock has an extensive larval-drift stage and if density-dependence occurs at the postsettlement stage, management with large reserves could be a real advantage for recruitment. For example, if the stock has maximum recruitment at 35% of the virgin biomass, well-placed large reserves would help maintain the stock near the level that produces the maximum recruitment even if the stock were depressed in areas open to fishing.

In contrast, if density-dependence occurs at the egg/larvae production stage (i.e., it is dependent upon the

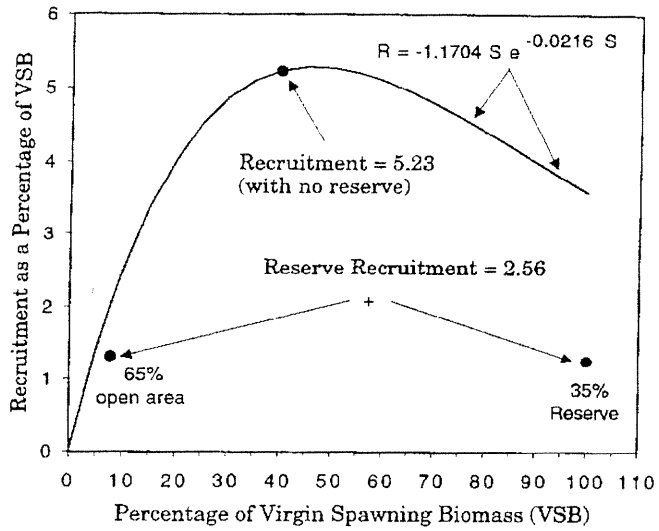

Figure 2. A comparison of recruitment under 35% reserve and no reserve management, when recruitment is density-dependent at the larval production stage.

condition of adults), management with 35% reserves could be counterproductive. To demonstrate this potential problem, I will use an example of a highly sedentary species with essentially no movement as adults between the reserve and exploited areas but with extensive dispersal during the pelagic larval stage. The stock has 40% of its virgin biomass—35% within reserves and 5% in open areas. The fish in the reserves would have a local density equal to the virgin state, and those in the open areas would have a local density of 5/65 virgin density. The stock-recruitment model is a typical Ricker spawner-recruit relation that produces a recruit biomass that is one-fourth of the spawning biomass at 10% of the virgin spawning biomass level, and maximum recruitment occurs at 35% of the virgin biomass. With reserve management, the total recruitment would be less than half of that which would occur without reserve management, and there would be more recruitment from the 5% of virgin biomass located outside the reserve than from the 35% within the reserve (fig. 2).

CASE HISTORIES

To evaluate the relative merits of reserve versus traditional fisheries management, one should first describe the state of traditional management. I will use one case that could be described as a failure (bocaccio, *Sebastes paucispinus*) and one that could be described as a success (widow rockfish, *Sebastes entomelas*).

The general harvest policy for most of the groundfish stocks regulated by the PFMC was an F35% policy (i.e., the stock should be harvested at a rate that produces a spawning potential per recruit equal to 35% of that which would occur if the stock were unexploited). Very recently, the PFMC has begun moving away from this policy—to F40% and F45% for several groundfish stocks, and it has enacted a management strategy for Pacific sardine, a very significant forage fish, that results in an average F65%.

Much of the analysis presented here will use the F35% base management strategy to compare traditional fisheries management as it has been practiced in the groundfish fisheries of the U.S. west coast, with reserve management using the management strategies that have been recently proposed to the fisheries management councils. Note that, by definition, an F35% policy will result in a steady state spawning biomass that is 35% of the virgin spawning biomass.

Given three assumptions—(1) a steady state environment, (2) a reserve system that protects 35% of the species' adult habitat, and (3) a highly sedentary species that is uniformly distributed over its habitat and highly dispersed during its pelagic larval stage—it would be expected that the reserve would prevent the reproductive output from falling below 35% of the virgin level even if the adult biomass in the area outside the reserve is reduced to trace levels. Thus in the worst case scenario a 35% reserve policy and no other fishery regulations could be considered the equivalent of a successful F35% exploitation policy with no reserves.

To assess the relative value of the historical fisheries management strategy versus reserve management, I will use the information available from stock-synthesis models for the two species: bocaccio (Ralston et al. 1996) and widow rockfish (Ralston and Pearson 1997). Bocaccio is a relatively productive species with a fast growth rate and a relatively early age of sexual maturity. It has been extensively exploited with a wide variety of gears for more than 80 years (Phillips 1939); its present biomass is in a very depressed state; and current management allows only a very small quota (Ralston et al. 1996). Widow rockfish is a less productive species, virtually unexploited by U.S. fisheries prior to 1977, when a fishery using midwater trawls rapidly developed. Landings increased quickly to a peak of nearly 28,995 MT in 1981; quotas were enacted in 1989; and the fishery has been managed with increasingly smaller quotas since 1989 (Ralston and Pearson 1997). Management was based on an F35% strategy, but this has recently been altered to F45% (PFMC 1998).

Ricker spawner-recruit curves were fitted for bocaccio and widow rockfish, and for comparison I have also shown two assumed spawner-recruit relationships. These assumed relations have an *a* coefficient that produces recruitment equal to 1/4 of the spawning when the spawning biomass is at 1/10 of the virgin level, and *b* coefficients that yield surplus production at 35% and 45% of the virgin biomass.

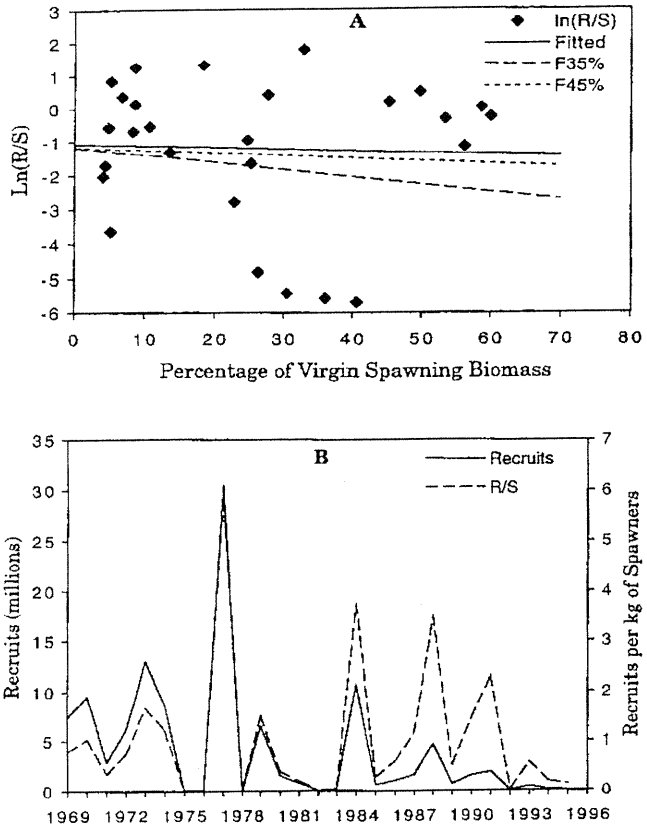

Figure 3. *A*, Bocaccio recruitment success, Ln(R/S), versus percentage of virgin spawning biomass. *B*, Bocaccio recruitment pattern 1969–95. (Data from Ralston et al. 1996.)

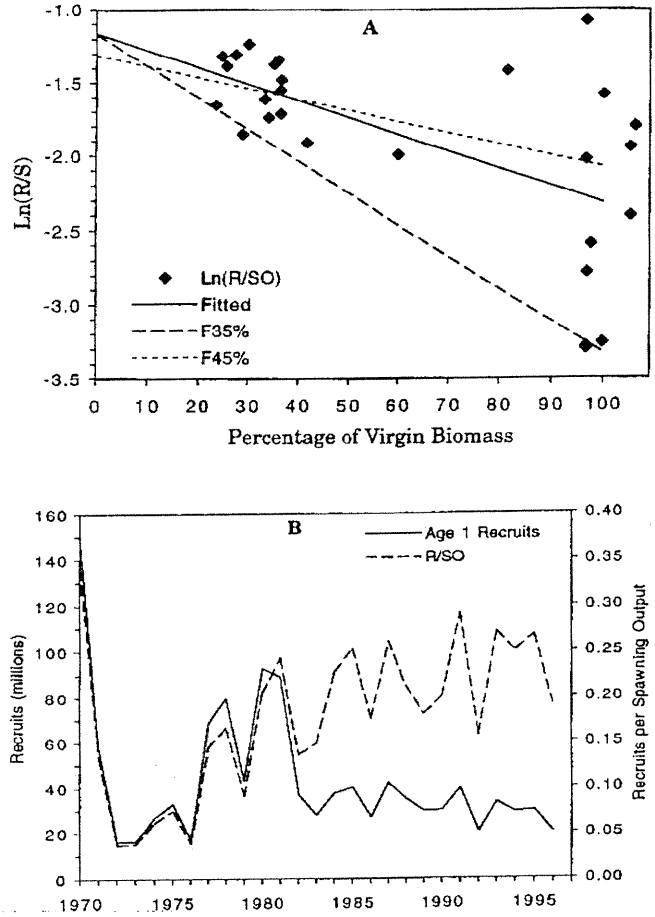

Figure 4. *A*, Widow rockfish Ln(recruits/spawning output). *B*, Widow rockfish recruitment pattern 1970–96. (Data from Ralston and Pearson 1997.)

The variation in reproductive success of the bocaccio stock is so large that it is difficult to determine if there is any density-dependence in the relationship. The fitted Ricker relation has a maximum surplus production at F47%; however, the relation accounted for only 0.2% of the variance and was obviously not statistically significant (fig. 3A). The F35% Ricker curve has essentially the same poor fit to the data as an F45% curve or the fitted curve. The time series of reproductive success and recruitment implies that the stock is maintained primarily by infrequent years of high reproductive success (fig. 3B). This pattern suggests that recruitment in bocaccio is environment-dependent, highly variable, and that no management strategy is likely to stabilize the population.

Widow rockfish have a much narrower range of reproductive success, and there is a marked density-dependence, with the number of recruits per spawning output increasing as the stock declines (fig. 4A). The fitted Ricker relation for widow rockfish results in an F40% surplus production, which accounts for 35.7% of the variance and is significant at the $P = 0.001$ level. The time series of reproductive success also clearly shows that recruits per reproductive output increased in recent years as the biomass declined, demonstrating that widow rockfish have considerable density-dependence in recruitment (fig. 4B).

The above spawner-recruit relationships suggest that recruitment is so variable that it cannot be determined which F strategy should be used for bocaccio, and that an F40%, not an F35%, strategy would be the minimum appropriate for widow rockfish. In 1997 an F40% management strategy for widow rockfish was proposed to the PFMC (Ralston and Pearson 1997) and in 1998 an F45% policy was enacted (PFMC 1998). It should be noted, however, that the previously mentioned and well documented climatic shift that occurred in 1976–77 could be responsible for the increase in the recruitment rate in widow rockfish as well as the lack of density-dependence in bocaccio.

Surplus Production

The potential productivity of the two species can be roughly estimated by calculating the surplus produc-

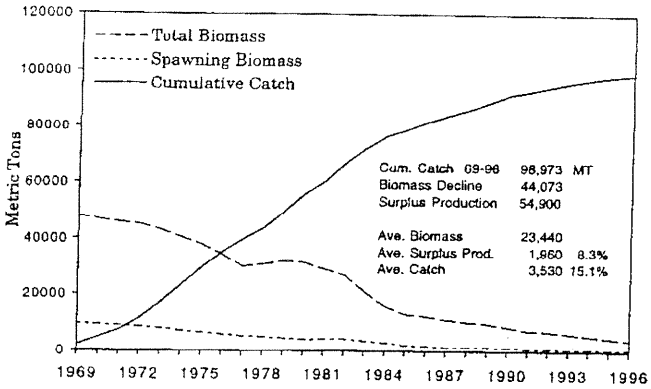

Figure 5. Bocaccio rockfish biomass, cumulative catch, and surplus production, 1969–96 (data from Ralston et al. 1996).

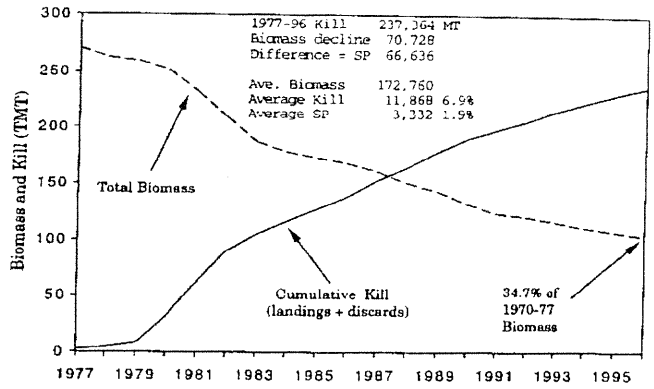

Figure 6. Widow rockfish biomass, cumulative kill, and production (data from Ralston and Pearson 1997).

tion during the period for which there is adequate information for each species. Of course, when estimated over a wide range of stock sizes, the estimate will be less than the maximum surplus production.

Although the bocaccio fishery extends back into the early part of the century, biomass estimates are available only since 1969, when the stock stood at 47,930 MT; by 1996 the stock had declined to 3,857 MT, and the cumulative catch (1969–96) was 98,973 MT (fig. 5). The 1969–96 biomass decline was 44,073 MT which, when subtracted from the cumulative catch, implies that the total surplus production over the 28-year period was 54,900 MT. Average catch over the period was 3,530 MT per year, and the average annual surplus production was only 1,960 MT. The bocaccio stock was therefore exploited at nearly twice the rate (E = 15.1%) of its average surplus production (E = 8.3%).

Widow rockfish presents a rather unusual case, because a data-based estimate of virgin biomass is available. This is because the behavior of the species made it unsusceptible to capture with traditional bottom trawls, and its deep distribution made it relatively unavailable to hook and line fisheries. The widow rockfish's average total biomass, just prior to the development of the fishery (1970–77), was 287,025 MT (Ralston and Pearson 1997). By 1997 total biomass had been fished down to 99,576 MT, 34.7% of the 1970–77 "virgin" biomass (fig. 6).

Because the stated objectives of the PFMC were to achieve an F35% management policy, the widow rockfish fishery could be termed "perfect management" in 1997, if the criterion was biomass. That is, the council would have met its target. Whether the target was right is another matter. The criterion of spawning output produces a different story. Average spawning output as calculated by Ralston and Pearson (1997) fell from an average of 442,484 (units not given) for the "virgin" population to 102,879 in 1997—23.2% of the virgin spawning output. On the basis of spawning output, it appears that the council's management strategy did not prevent the resource from declining below the stated goal.

In terms of surplus production, the widow rockfish stock had an average annual kill (landings + discards) of 11,868 MT, but an average annual surplus production of only 3,332 MT. Annual removals were 3.6 times the annual surplus production. It is expected that this ratio would be high because the data include the period when the biomass was near the virgin level; however, this is clearly the reason that the biomass dropped so quickly.

Comparison of F35% versus 35% Reserve Policies for Widow Rockfish

To directly compare the current F35% harvest policy with a management policy based primarily on reserves, I will use widow rockfish and a management situation with 35% of the species habitat being placed in reserves. According to Ralston and Pearson (1997) the 1999 catch (landings + discards) from an F35% widow rockfish fishery would be 5,689 MT with an exploitation rate of 12.6% of the summary (i.e., exploitable) biomass. Using this information, one can compare the exploitation, fishing mortality, and effort rates that would occur with the F35% management strategy versus a strategy in which marine reserves occupying 35% of the widow rockfish habitat were established.

For this comparison I will use the 1999 information to demonstrate the exploitation, trawling rates, and total effort that would be required to achieve the 1999 catch with current management versus that necessary if 35% of the widow rockfish habitat were in a marine reserve. If a reserve had been established at the beginning of the 1999 season, 65% of the exploitable biomass would have been in the area open to fishing (assuming a uniform distribution). However, as time progressed, a smaller and smaller proportion of the exploitable biomass would be outside the reserve area. Therefore, for a broader comparison I have included situations with the same 1999 bio-

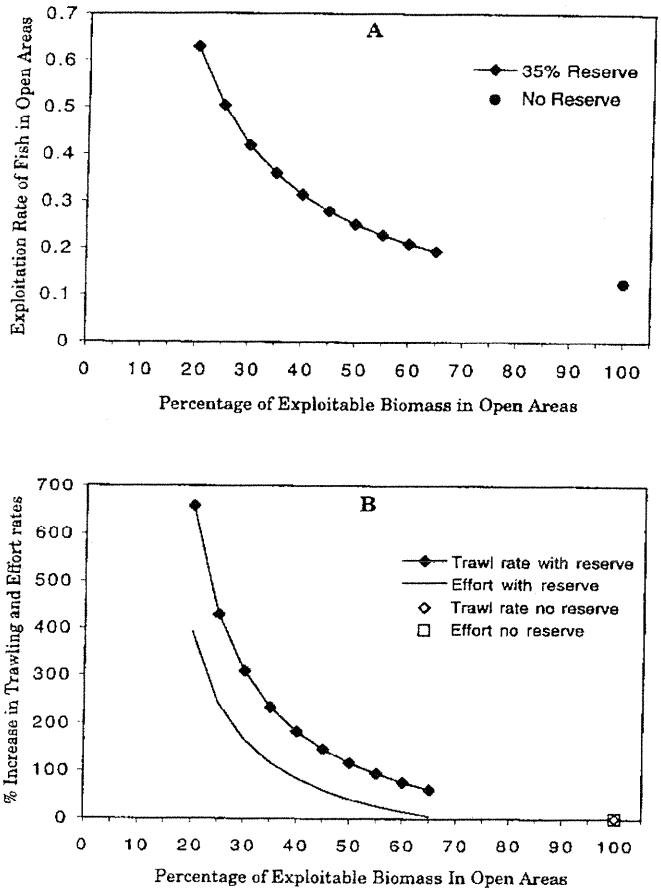

Figure 7. *A*, Exploitation rate of widow rockfish (outside of reserves) with a management of F35% and with 35% marine reserves. *B*, Widow rockfish trawling rate (in areas open to fishing) and total effort increases with F35% and with 35% marine reserves.

mass and catch, but with a varying percentage (20%–65%) of the exploitable biomass in the area open to fishing. Note that with a virgin density within the reserve and an exploitable biomass of 35% of virgin density, there would be 0% of the biomass in the area open to fishing.

In the situation where the local density of widow rockfish is the same in the reserve and in the open area, the exploitation rate of fish in the open area would increase from 12.6% to 19.3% (fig. 7A). There would be a 4% increase in total effort and a 60% increase in the trawling rate in the area open to fishing (fig. 7B). Where 50% of the biomass is in the area open to fishing, the exploitation rate is 25.1%, and the total effort and trawling rate increases are 41% and 116%. With 25% of the biomass in the open area, the values increase to 0.503%, 244%, and 429%.

An additional problem is that the increased exploitation rates on the exploited segment of the stock will reduce the age structure in the area open to fishing to just a few year classes, causing the fishery to become heavily dependent upon recruitment, which may be highly variable (figs. 3B, 4B).

The ecological damage caused by fishing (trawling or other gear) is a function of the fishing rates in an area (i.e., the instantaneous fishing mortality). Reserve management will greatly increase these rates in the area open to fishing, and decrease them to near zero within the reserve. The fishers' economic cost of harvesting is a function of the increased effort that will be required to catch the same volume of fish. The exploitation rate that the stock can support in the area open to fishing may, or may not, be higher than the current rate.

It is impossible, with this simple simulation, to determine if ecological factors (side effects of the increased trawling rate); fishery economics (the decreased catch per unit of effort); or population dynamics (increased exploitation rate) will be the limiting factor in reserve management of this type.

TRANSITION TO RESERVE MANAGEMENT

If very large marine reserves are established as an adaptive strategy for fishery management, one consideration will have to be the transition from the present state to a future state where there are near virgin levels within the reserves. At present some stocks are approaching or below 10% of their virgin levels (Ralston 1998). How long will this transition take, and what fishery yields can be taken from these depressed stocks during the transition?

In the California Current there have been three species (Pacific mackerel, Pacific sardine, and Pacific ocean perch) that were fished down to levels at which the directed fishery was closed long enough to expect a recovery of the population. The Pacific mackerel total biomass declined from a peak of 0.438 MMT in 1933 to 0.0001 MMT in 1968, and the commercial fishery was closed in 1970 (Parrish and MacCall 1978). By the late 1970s the population showed signs of a very strong recovery; in 1977 the fishery was reopened with modest quotas; by 1982, the population had surged to 1.18 MMT; and it has since declined again to 0.12 MMT in 1998 (Yaremko et al. 1999).

The Pacific sardine stock showed a similar pattern. Its total biomass was just under 4 MMT in 1934; it declined to 0.003 MMT in 1965; and the directed fishery was stopped in 1970 (Murphy 1966; MacCall 1979). Sardine biomass clearly increased during the 1980s and into the 1990s; total biomass reached 0.1 MMT in 1989 and 0.5 MMT in 1995 (Hill et al. 1998).

The Pacific ocean perch population was about 0.1 MMT before the foreign fishery developed in the mid-1960s; it declined to about 0.02 MMT in the mid-1970s and to about 0.01 MMT in 1995 (Ianelli and Zimmerman 1998). The fishery has been regulated at a lightly fished level (F = 0.05–0.10) from 1980 to the present.

Mackerel remained below 10% of the early peak biomass from 1966 to 1978. Sardine remained below 10% of the early peak biomass from 1951 to 1993. Pacific ocean perch continued to decline from about 25% of the early peak biomass in the mid-1970s to about 10% in 1995.

These examples indicate that quick-maturing, productive stocks such as the mackerel and sardine can be expected to show significant recovery in 1–3 decades when there is no directed fishery during early recovery. Slow-maturing, less productive stocks such as Pacific ocean perch may not recover in 3 decades, and may even decline further, when lightly exploited.

ALTERNATIVE STRATEGIES FOR MANAGEMENT

In recent years the management strategy used by the PFMC for rockfishes was based on the concept of a constant F35% harvest rate. This management strategy was not successful at stabilizing many of the rockfish stocks at or even near 35% of their virgin spawning biomass levels. There appear to be three major alternatives for change, and all three are currently being actively evaluated:

1. Incremental increases from F35% to F40% and higher; some of this change has already been made.
2. Establishment of marine reserves.
3. Adoption of recently proposed control rules that reduce the exploitation rate as biomass falls below some reference level. This change is also currently in progress.

As indicated by the preceding examples, catching the same quantity of fish while implementing reserve management will require an increase in total fishing effort and a large increase in fishing mortality rates within the exploited areas. Current management of widow rockfish is based on an F40% policy, and the fishing mortality required to achieve this policy without reserves is F = 0.153 (Ralston and Pearson 1997). To achieve the same landings with a reserve, the fishing mortality and fishing effort increase rapidly as the stock falls away from the virgin biomass. With a 35% reserve and a virgin stock, the fishing mortality rate required to achieve the F40% catch from the 65% open area is F = 0.2354. At a stock size 70% of the virgin biomass (i.e., with 35% in the reserve and 35% in the exploited area), it rises to F = 0.4371; at 45% it rises to more than 10 times the F = 0.153 (fig. 8). This estimate is based on the assumption that the reserve area remains at virgin biomass levels while the area outside the reserve is fished down (i.e., fish do not exchange between the reserve and open areas once they are old enough to be taken in the fishery). In addition, the entire increase in fishing effort will occur in the areas outside the reserve. If trawling does alter the nonexploited benthic fauna, the areas outside the reserves will be much more affected under reserve management than with the other two alternatives.

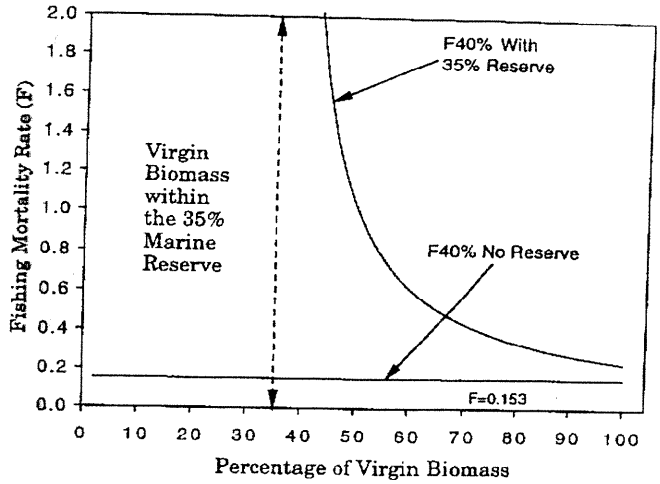

Figure 8. Widow rockfish fishing mortality rates in areas fished with and without a 35% reserve under a 40% harvest rate.

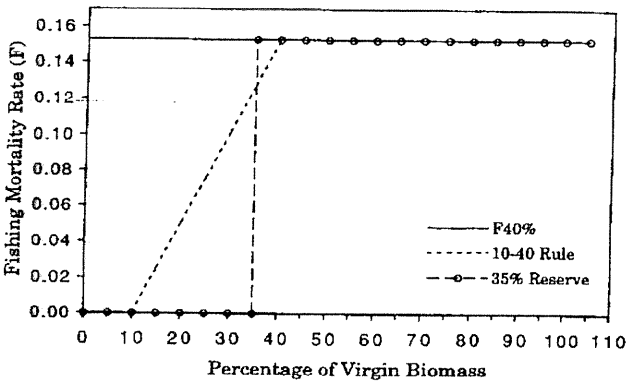

Figure 9. Widow rockfish instantaneous fishing mortality rates under different management strategies.

The third alternative for modification of the way the PFMC has been managing the Pacific Coast groundfish stocks is to base the exploitation rate on stock size and reduce the exploitation rate as the stock declines. An early example of this type of control was developed for the California Pacific mackerel fishery (Parrish and MacCall 1978). The PFMC has recently adopted such a rule for Pacific sardine, and in 1998 it adopted a new precautionary policy, the so-called 10-40 rule for groundfish management (PFMC 1998). This rule sets optimum yield at F_{MSY} when the stock biomass is above 40% of the virgin biomass, and the optimum yield declines linearly from F_{MSY} at 40% of the virgin biomass to zero at 10% of the virgin biomass (fig. 9).

The crisis in fishery management for groundfish and salmon in the region managed by the PFMC leads me to believe that all three alternatives will be employed during the next decade.

CONCLUSIONS

The admittedly "quick and dirty" fisheries analyses presented here suggest that considerable research should be carried out before very large reserves are considered as a viable alternative for managing the major fishery stocks of the California Current region. Concerns about management with large marine reserves include:

1. Considerable increases in fishing effort will be required to catch the same volume of fish, and the larger the reserves, the larger the increases will have to be.
2. Fishing mortality rates in the areas open to fishing are likely to increase well above present rates; if trawling causes ecological damage, reserves will extend this damage in the area open to fishing.
3. Reserves will have undesirable effects on the economics of fisheries for migratory species that are managed by annual quotas. These economic problems could be avoided by instituting closed areas for the fishing gear used to catch the species that need protection.
4. Depending upon the source of density-dependence in recruitment, reserves may result in considerable decreases in recruitment.
5. Increased exploitation rates in areas open to fishing will greatly reduce the age structure of the exploited portion of the population, concentrating most of the biomass in a very few year classes. Since many species (e.g., bocaccio) have highly variable recruitment, annual landings would also be expected to become more variable.
6. Some of the above concerns could be reduced if the total take were reduced by a percentage equivalent to the percentage of the habitat that is placed in reserves.

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