Robert R. Treanor
Executive Director
California Fish and Game Commission
1416 Ninth Street
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Agenda item F.1
June 2002

April 26, 2002

Dear Mr. Treanor,

I recently reviewed the "The Economic Effects of Sportfishing Closures in Marine Protected Areas: The Channel Islands Example" by Robert Southwick. I find this report to be seriously flawed; it overstates the impact of proposed marine closures in the Channel Islands by as much as 86%. I attach my brief review.

By way of disclaimer, please note that I am an assistant professor of international relations and environmental studies at the University of Southern California. My doctoral degree is in Natural Resource and Environmental Economics from Yale University. I work closely with commercial fishermen from Southern California and I have received funding from the National Oceanic and Atmospheric Administration for my research on beach water quality. To avoid bias, I have not read Dr. Leeworthy's rebuttal to Mr. Southwick's report.

I would be happy to provide additional feedback beyond that included in the attached review.

Sincerely,

Linwood H. Pendleton

A Brief Critique of "The Economic Effects of Sportfishing Closures in Marine Protected Areas: The Channel Islands Example."

Average vs. Marginal Impacts

The proposed closures of recreational fishing areas in the Channel Islands Marine Sanctuary will undoubtedly impact the economic well being of sportsfishers that use party/charter boats and private sportsfishing boats to fish the waters of the Channel Islands. Mr Southwick, following Leeworthy and Wiley (2001) reports that somewhere between 21,770 and 155,152 fishing trips (days) may be lost due to these proposed closures. It is important, however, to remember that while these fishing trips may be lost from the areas associated with the Channel Islands Marine Sanctuary, it is likely that many of these fishers will choose to fish elsewhere. As a result, the impacts of closures in the Channel Islands Marine Sanctuary ought to be considered marginal impacts – these closures may effect where anglers choose to fish and possibly the total number of trips taken by individual anglers, but these closures are not likely to prevent most anglers from fishing altogether. These closures will impact local expenditures associated with trips to the area, but are unlikely to significantly impact expenditures that are not made on a per trip basis – e.g. expenditures made on durable items (equipment) or items that are purchased on an annual basis (licenses, subscriptions, etc.).

The report by Southwick is seriously flawed in that it attempts to estimate the loss of average total expenditures per trip for a situation (a marine closure) in which only marginal (per trip variable) expenditures ought to be considered. Mr. Southwick combines per trip expenditures (marginal expenditures) with average annual expenditures per trip to arrive at estimates for the impacts of proposed closures in the Channel Islands. By doing so, Mr. Southwick estimates impacts that are greater than 7 times what ought to be considered reasonable for this analysis.

Needed Increase in Non-Fishing Recreation Days

Mr. Southwick writes that non-fishing recreation days would need to increase by 3.5 times to overcome the loss of fishing days due to closures. This calculus is false – recreation days and fishing days cannot be compared directly from an economic perspective. Instead, the value of non-fishing recreation days gained needs to be compared against the value of fishing days lost. Further, non-fishing recreation includes non-market values that are likely to be significant. While Mr. Southwick attempts to include these non-market values in his discussion of the valuation of lost fishing days, he does not include these values in his discussion of non-fishing recreation.

Preference of Fishing Compared to Other Activities

The data Mr. Southwick provides regarding the preferences of Americans for fishing activities compared to other activities shed little light on the marine closures debate. Figures given for participants involved in fishing include freshwater fishing. Further, participation in any one activity does not preclude participation in other activities.

Non-market Values of Fishing

Mr. Southwick writes that consumer surplus, option values, bequest values, and existence values ought to be added to current expenditures attributed to fishing. Consumer surplus values are important, but are not part and parcel of an analysis on expenditures. Mr. Southwick is correct in his assertion that other non-market values are important, but he incorrectly defines option values, bequest values, and existence values in his report. What Mr. Southwick calls option value is in fact option price – an amount that includes expected use values. Bequest values are also expected use values, only for future progeny and not today's anglers. Finally, the existence values described by Mr. Southwick are really more appropriately termed altruistic values. Existence values would be better ascribed to the willingness of anglers to pay for the existence of fish rather than the existence of fishers.

Comments on ASA report entitled "No take marine protected areas (nMPAs) as a fishery management tool, a pragmatic perspective" by Robert L. Shipp, Ph.D.

By

Drs. Mark Carr, Paul Dayton, Steven Gaines, Mark Hixon, George Leonard,
Stephen Palumbi, and Robert Warner
(authors listed alphabetically)
June 7, 2002

As members of the academic science community with research experience on marine reserves and marine protected areas, we wish to provide comments on a report released on March 7, 2002 by the American Sportfishing Association (ASA) that reportedly evaluates the potential role of marine reserves as a fishery management tool. An examination of the peer-reviewed scientific literature and other existing data suggest that the ASA report seriously underestimates the important role marine reserves (referred to as nMPAs in the report) could play in sustaining both fisheries and marine ecosystems in general. The ASA report is misleading because it:

- underestimates the scope of the fisheries problem,
- biases the analysis in favor of traditional fisheries management,
- ignores the important contribution of marine reserves to the protection of habitats and intact, functional ecosystems,
- takes an incomplete view of how marine reserves may function within a fisheries context, and
- employs faulty logic regarding the presumed costs to fisheries should marine reserves fail to provide fishery benefits.

1) The scope of the problem

The ASA report maintains that data from NMFS (2001) show that only 10% of U.S. fish stocks are overfished and that only 6.3% are both overfished and still subject to overfishing. It uses these figures to argue that U.S. fish stocks are generally healthy and that very few are in need of new, more restrictive management measures. These figures, however, are extremely misleading (a point admitted to but downplayed in the report), because the status of the majority of U.S. fish stocks is unknown. The scope of fishery problems is better understood by considering the percentage of assessed stocks that are overfished. Of the 959 U.S. stocks, about 307 have been assessed. Of those, 33% (rather than the 10%, above) are currently classified as overfished (NMFS, 2002) and very few of these are recovering in any substantial way. Along the U.S. west coast the situation is far worse. Of the 82 species of groundfish in the Pacific Fishery Management Council management plan, only 19 (23%) have been reliably assessed. Of these, 9 species (nearly 50%) are classified as overfished (Stephen Ralston, NMFS, personal communication).

In discussing 60 species of reef fishes in the South Atlantic and Gulf of Mexico, where stock assessments for "the vast majority...have not been performed and life history data, including movement patterns, are also unknown", the ASA report posits "any considerations of nMPA benefits for these species is premature." In so doing, the ASA report tacitly assumes that all unassessed stocks are in pristine condition but there is no scientific basis for the assumption that unassessed stocks are any healthier than assessed stocks. A more realistic approach is to apply the percentage of overfished stocks in the known sample to the unknown stocks. In this case, using data from NMFS' most recent report (2002), nearly 316 of the 959 U.S. fish stocks are estimated as overfished. Clearly, the scope of the problem (and the need for new management measures) in U.S. fisheries is substantially greater than that stated in the ASA report. Because many of these are coastal species, near-shore marine reserves could play an important role in their restoration, conservation and sustainable use.

2) Achieving multiple fishery and ecosystem goals with marine reserves

The critical and overlooked goal of habitat and ecosystem protection

Marine reserves are fundamentally an ecosystem-based management tool whose goal is to protect habitats and intact ecosystems against a variety of threats, including overfishing. It has been well established that many types of ecosystems can dramatically recover when protected from overfishing (e.g., Babcock et al. 1999). Reserves have the potential to conserve and replenish marine ecosystems in ways that may strengthen their resilience in the face of other impacts, such as climate change. They address the needs of thousands of species at the same time, species that humans eat as well as the numerous species that serve as food for the species that humans eat. By protecting habitats, reserves protect the underlying structure of coastal ecosystems and in so doing are critical to maintaining the other non-fishery "goods and services" on which humans depend (Dailey 1997, Costanza 1999).

As an ecosystem management tool, marine reserves can achieve fishery goals that are difficult to accomplish using standard practices such as gear restrictions, seasonal closures, etc. The most important of these is the protection of habitat critical to juvenile and adult survival. Trawling is known to damage bottom habitats and the recovery times for these sensitive habitats in many cases can be far longer than the frequency with which they are trawled (NRC 2002). Although gear restrictions reduce bottom damage, the most effective way to eliminate such impacts entirely is with the use of marine reserves. The scientific literature is replete with examples of the importance of habitat to various aspects of finfish and shellfish life history (e.g.,. Lindholm et al. 1999; Domeier and Colin 1997; Koenig et al. 2000). The ASA report, too, acknowledges "habitat preservation is an important feature of future management of many fish species" but does not state how such protection for the numerous species being harvested will be accomplished. Because marine reserves protect intact ecosystems, they prevent bottom disruption from mining, oil development, or destructive fishing methods. By preserving entire natural ecosystems, including biological habitats like kelp forests and oyster reefs, they simultaneously protect the species on which many commercial and recreational fisheries depend.

The precautionary approach and overfishing

The ASA report defines a fishery management tool as "one that *sustains* and/or increases through time the yield of a fish stock" (italics added). This includes precautionary management tools that prevent declines before they occur. The report then contradicts itself by stating only stocks in serious trouble should be managed: if "stocks are healthy, and projected to remain so … the need for nMPAs as a management tool is nil." Although yield is an important goal of fishery management, it should not be the only goal and overfishing should not be a prerequisite for the use of marine reserves. By emphasizing a precautionary approach, marine reserves can help reduce the probability that both healthy stocks and those of unknown status become overfished in the first place. Hence, marine reserves can play an important role long before a crisis is reached and long before data are available on the many stocks currently being landed.

The alternative to using marine reserves and a framework of ecosystem management is to rely on multiple, overlapping, single species management plans that become cumbersome and difficult to implement and enforce. Today's fisheries increasingly exploit a plethora of species from finfish to sedentary invertebrates to seaweeds. Managing all these species, one at a time, is the current fisheries paradigm and the mandate of the Magnuson-Stevens Fishery Conservation and Management Act, but this paradigm was generated when fisheries were dominated by a few, high-value finfish. Simultaneously managing all the present day species for optimum yield, as currently demanded by federal law, is a coordination challenge that no fishery agency has yet been able to meet. In contrast to the current approach, marine reserves and an ecosystem approach provide management value for hundreds of species at the same time and provide a unique mechanism for the management of many of the species currently mandated. Sustainable fisheries will only be achieved through a combination of protecting a portion of the stock from fishing mortality and by protecting the habitat on which these and other species depend. Marine reserves can achieve both these goals simultaneously while traditional effort control cannot.

Insurance against the unknowns of natural variability

An additional fishery benefit is that marine reserves provide insurance against the variability inherent in marine ecosystems. By protecting a proportion of the population (especially large, reproductive females), the resultant larger population will offer more resistance to and resilience from both natural and manmade disturbances, which themselves are highly variable and difficult to predict. This added resistance and resilience will directly benefit the long-term sustainability of fish stocks by reducing the probability of population crashes. In addition, marine reserves provide insurance against our own ignorance in the face of the immense complexity of ocean ecosystems. Although scientists and fishermen have considerable knowledge about fish and their habitats, there is clearly much to be learned. Failures in traditional fishery management are due, in part, to our poor ability to precisely quantify fish stocks and the patterns and consequences of human induced and natural mortality. It is unlikely that the perfect knowledge needed for effective traditional management will ever be achieved. By protecting sections of ecosystems within their borders, marine reserves offer an elegant solution to the problems inherent in single species management highlighted above and the difficulties of limited information. It should be stressed that marine reserves are not an excuse for our limited knowledge. Rather, they

illustrate what new information is needed to manage marine ecosystems effectively and to provide critical baselines for understanding human impacts on marine ecosystems.

Marine reserves as a supplement to traditional management practices

We emphasize that marine reserves should not replace traditional management, but should be an additional tool that is compatible with existing approaches. The tenor of the ASA report implies that marine reserves would completely replace traditional fishery management. The academic community has continually argued that marine reserves are not a panacea for the ocean's problems. Like others, we suggest that a combination of traditional management and place-based approaches such as marine reserves can substantially improve the long-term viability of fisheries and the fish stocks on which they depend.

3) How reserves function in a fisheries context

The role of animal movement

The ASA report is founded on a misunderstanding of marine reserve function and design. The report maintains that marine reserves "are predicated on two fundamental components: keeping harvesters out and keeping the species in." Although effective enforcement is critical to the success of marine reserves (as it is for *any* management measure), movement of animals and their offspring does not doom marine reserves to failure. On the contrary, marine reserves have the potential to benefit fisheries only if adult fish move and/or their larvae disperse on ocean currents. The ASA report concludes that because nearly all fish move to some extent, that marine reserves cannot possibly work as a management tool. Presenting fish simply as either sedentary or mobile ignores the subtleties in life history and behavior that make many species good candidates for marine reserves. For example, recent data for red drum near Merritt Island in Florida (Roberts et al. 2001) clearly demonstrate reserve effectiveness for this mobile species.

In addition, although the ASA report acknowledges that rocky reefs act as natural refuges for west coast rockfish (and hence, are an effective form of 'natural' marine reserve), it maintains that additional marine reserves would not work. This is especially perplexing because numerous well-respected scientists believe the life history characteristics of rockfish make them some of the best candidates for the habitat protection afforded by marine reserves (Yoklavich 1998). One source of confusion in the ASA report is equating a species range with mobility or range of an individual. Many species are wide ranging (that is, have large geographic ranges) yet do not exhibit wide movement as individuals (that is, individuals themselves do not travel over large distances). Some rockfish are good examples of species with wide ranges yet limited movement. The substantial movement that does occur is part of the life history of the individual, where young rockfish gradually move into deeper water as they grow. Thus, marine reserves could be effectively situated to protect immature rockfish in shallower water and/or large spawning adults in deeper water. In general, the conclusion that marine reserves will not work for many species is simply at odds with the increasing body of empirical evidence that shows that, despite fish movement, marine reserves consistently increase fish abundance, size and reproductive capacity within their borders (e.g.

Halpern, in press). If marine reserves were bound for failure, as the ASA report maintains, then this wealth of scientific data showing strong effects could simply not exist.

Non-fish fisheries

In concentrating on finfish, the ASA report ignores the growing number of invertebrates that make up U.S. fisheries. Among others, these include lobster, sea urchin, abalone, squid, crab, shrimp and oysters. As finfish landings decline, these "non-fish fisheries" are expanding and now account for over 50% of the gross landings (in dollars) along the U.S. west coast (data available at http://www.st.nmfs.gov/st1/commercial/landings/annual_landings.html). Many of these species are *less* mobile as adults than most of the finfish examined in the ASA report and hence are very strong candidates for the successful use of marine reserves in their management. For example, spatial management has been argued to be a critical component to the management of non-Dungeness crabs (Orensanz et al., 1998) and sea cucumbers (Schroeter and Reed 2001). Because many invertebrates (and some fish) form dense aggregations during mating (Dayton et al. 2000; Tegner et al. 1996; Stokesbury and Himmelman 1993), marine reserves can play a critical role in ensuring densities are large enough to result in successful reproduction. Without the explicit spatial protection afforded by marine reserves, this is unlikely. Even using the faulty logic in the ASA report, if invertebrate fisheries were included, then a substantially larger proportion of fisheries stocks would have been found to benefit from marine reserves.

Evidence and importance of adult spillover and larval seeding

The ASA report claims that there is no evidence that spillover of adult fish from reserves to surrounding areas occurs. Although empirical studies of spillover are still limited, this important effect of marine reserves has occurred consistently when it has been examined. As the density and size of fish increase within a reserve, individuals move outside the reserve boundaries because of density-dependent effects or ontogenetic habitat shifts. Evidence for adult spillover exists from both the fish (e.g. Roberts et al., 2001) and the fishermen themselves. "Fishing the line" is now a commonplace phenomenon where fishermen congregate at reserve boundaries to capture the large fish as they move outside the reserve borders (McClanahan and Mangi 2000). A recent example includes lobster fisherman setting traps outside the border of the Sambos Ecological Reserve in the Florida Keys (Jim Bohnsack, NMFS, personal communication).

Much more important, however, are the increasing number of observations that marine reserves also export larvae beyond their borders and can act to replenish fisheries via the enhancement of recruitment. For example, when areas of George's Bank in the Gulf of Maine were closed to groundfishing (Murawski et al. 2000), they subsequently supported a profitable scallop fishery in areas near reserves (Fogarty et al., 2000).

By ignoring that the depletion of breeding adults occurs, the ASA report dismisses the potential of marine reserves to contribute to stock restoration via larval replenishment. It is true that there is often little relationship between stock biomass and recruitment in natural populations because larval production far exceeds recruitment. However, many fished stocks are at such depleted levels that low recruitment clearly limits their ability to recover (Myers and Barrowman 1996). Marine reserves often result in the build up of large numbers of big

fish, including females (Murray et al. 1999). Larger females produce a disproportionately large number of eggs and larvae than smaller fish (Wootton 1990) and thus they play an important potential role in restoring fisheries. Moreover, larger females produce young that are more fit than those produced by smaller individuals (Berkeley et al. submitted). Developing a fishery to protect large females is nearly impossible without using marine reserves. In short, larval dispersal is much more important to enhancing fisheries than is adult spillover and the build up of biomass and reproductive potential increasingly evident within marine reserves could go a long way toward helping to reverse our current crisis in fisheries.

Optimal yield

The ASA report argues that the yield under a marine reserve scenario is always less than that for a perfectly managed fishery. This argument is predicated on the assumption of an optimally managed fishery, a goal that has rarely (if ever) been achieved using traditional management approaches. Under more realistic conditions, the yield disparity between marine reserves and traditional measure disappears. New modeling results suggest that marine reserves can actually provide an equivalent (Hastings and Botsford 1999) or in some cases greater yield (Gaines et al. in press) when one incorporates our growing knowledge of spatial variation in marine habitats and larval dispersal.

The ASA report cites Murray et al. (1999) and their recommended guidelines for developing marine reserves. We are in total agreement with the report that reserves (and other management measures) should have clear goals, objectives and expectations. For fishery management, we also agree that marine reserves should be evaluated specifically with regard to fishery benefits while not losing sight of their important habitat and ecosystem benefits. We freely admit that data are limited on marine reserve performance for fisheries. Only by establishing a significant network of marine reserves, however, will scientists finally accumulate the empirical data industry seeks illustrating their true potential as a supplemental fishery management tool. There is clearly more to learn, but the evidence available today suggests that marine reserves can contribute to healthy fish stocks.

4) Are there costs of "unsuccessful" reserves to fisheries?

Finally, the ASA report employs faulty logic on the potential costs to fisheries should marine reserves fail to provide fishery benefits. It argues strongly that marine reserves should not be used because they cause significant financial hardship while providing few fishery benefits. As discussed above, the ASA report expects reserves to fail frequently because fish move and consequently will not stay within reserve boundaries. The great irony of this argument is that if reserves provide no benefit (because fish leave protected areas too frequently) then reserves also have little or no cost to fishermen. If the fish are still being caught when they leave the reserve, the only effect on the fishery will be that fish will be caught in different places. Carefully designed and placed reserves could minimize these costs to fishermen. The primary tenet of the report's analysis is that most species will continue to be caught by fishermen since they are too mobile to be protected in reserves. For every species where this is true, reserves should do no harm. As a result, reserves could achieve all of their other non-fishery goals (e.g., conservation of biodiversity, benchmarks for scientific understanding, etc.) while only

changing the location of fishing. In this sense, by arguing against reserves because they will not provide protection from fishing, the ASA report has developed an untenable argument. If these management tools are truly as ineffective as the ASA report would have you believe, then the fishing industry is likely to neither experience the costs and hardship that they maintain nor the fishery benefits that many scientists and conservationists have proposed. Should this be true, reserves could then be established without regard to their effect on fisheries issues.

References

Babcock, R. C. and S. Kelly, N. T. Shears, J. W. Walker and T. J. Willis (1999). Changes in community structure in temperate marine reserves. Marine Ecology Progress Series 189: 125-134.

Berkeley, S. A., C. Chapman, S. J. Bobko, and S. M. Sogard. (Submitted). Longevity and population stability in marine fishes. Science.

Costanza, R. (1999). The ecological, economic, and social importance of the oceans. Ecological Economics. 31(2): 199-213.

Daily, G. C., editor (1997). Nature's services: societal dependence on natural ecosystems. Island Press. 416 pp.

Dayton, P. K., E. Sala, M. J. Tegner and S. Thrush (2000). Marine reserves: parks, baselines and fishery enhancement. Bulletin of Marine Science 66 (3): 617-634.

Domeier, M.L. and P.L. Colin. 1997. Tropical reef fish spawning aggregations: defined and reviewed. Bulletin of Marine Science 60: 698-726.

Fogarty, M. J., J. A. Bohnsack and P. K. Dayton (2000). Marine reserves and resource management. In Seas at the Millennium: An Environmental Evaluation. Volume III. Global issues and processes. Charles C. Sheppard, ed. Pp. 375 - 392.

Gaines, S. D., B. Gaylord, and J. Largier. (2002 – in press). Avoiding current oversights in marine reserve design. Ecological Applications.

Halpern, B. (2002 – in press). The impact of marine reserves: does reserve size matter? Ecological Applications

Hastings, A. and L. W. Botsford (1999). Equivalence in yield from marine reserves and traditional fisheries management. Science 284: 1537 – 1538.

Koenig, C. C., F. C. Coleman, C. B Grimes, G. R. Fitzhugh, K. M. Scanlon, C. T. Gledhill and M. Grace (2000). Protection of fish spawning habitat for the conservation of warm-

Exhibit F.1.b
CFGC Letter
June 2002

GRAY DAVIS
Governor

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STATE OF CALIFORNIA

Fish and Game Commission

Flex your POWER

May 16, 2002

Dr. Donald O. McIsaac
Executive Director
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384

Dear Dr. McIsaac:

In response to your April 29, 2002, letter, the Commission appreciates the Pacific Fishery Management Council's (Council) patience in waiting for the draft environmental document and regulations for the proposed marine reserves within the Channel Islands National Marine Sanctuary (CINMS). The Commission has now received the draft environmental document from the Department of Fish and Game to complete our transmittal package to the Council. Copies of the draft regulatory language and environmental document are being sent to you under separate cover.

Given the timeline mentioned in your letter for the Council to provide adequate review of the proposed alternatives, the Commission will delay its final adoption until its December 6, 2002, meeting in Monterey. The Commission looks forward to receiving the Council's comments on these proposals.

If you have any questions or if the Commission can provide any additional information on this matter, please don't hesitate to contact me.

Sincerely,

Bob Treanor

Robert R. Treanor
Executive Director

cc: All Commissioners
Director Hight
Deputy Director Brazil
Mike Valentine, General Counsel
LB Boydstun, Intergovernmental Affairs Office
Patty Wolf, Regional Manager, Marine Region
John Ugoretz, Marine Region–Santa Barbara
William Cunningham, Deputy Attorney General
Matt Pickett, Channel Islands National Marine Sanctuary

Exhibit F.1.c
Supplemental CPSAS Report
June 2002

COASTAL PELAGIC SPECIES ADVISORY SUBPANEL STATEMENT ON REVIEW OF PROPOSAL FOR MARINE RESERVES IN STATE WATERS OF THE CHANNEL ISLANDS NATIONAL MARINE SANCTUARY (CINMS)

The Coastal Pelagic Species Advisory Subpanel (CPSAS) heard a brief report from Mr. Jim Seger on the marine reserves process and associated California Environmental Quality Act (CEQA) document prepared by California Department of Fish and Game submitted to the Council for comment. The CPSAS has the following recommendation and comments.

There was a consensus by the CPSAS that any panel which is created to review marine reserves issues should include members of each Council species advisory subpanel, not just Council members.

The majority of the CPSAS is concerned the CEQA document as presented fails to consider the body of scientific opinion both published and unpublished that finds only theoretical biological basis for 30%-50% set aside which is the foundation the preferred alternative is based on.

The majority of the CPSAS agrees with the Scientific and Statistical Committee (SSC) the document fails to address adequately the environmental effects of reserves outside of the closed areas.

Generally, the majority of the CPSAS expresses concern the proposed reserves offer little or no biological benefit to CPS resources yet will produce extreme economic hardship on CPS fishermen by restricting their current access to fishing grounds.

The majority of the CPSAS strongly encourages using caution when moving forward with recommendations to the CINMS process without considering social and economic effects to consumptive user groups and without thorough review of all scientific opinion available.

A minority of the CPSAS is generally supportive of the reserve size recommendation as it relates to the biodiversity and sustainable fisheries goals as defined in the specific context of the CINMS, as was published in the November 2001 Supplemental SSC Report. A minority finds the proposed reserve recommendation went through a process that produced a thorough ecological and socioeconomic assessment that attempted to minimize short and long-term impacts and maximize the benefits. A minority supports the adequacy of the CEQA document and supports the preferred alternative.

PFMC
06/20/02

Exhibit F.1.c
Supplemental GAP Report
June 2002

GROUNDFISH ADVISORY SUBPANEL STATEMENT ON THE CHANNEL ISLANDS NATIONAL MARINE SANCTUARY

The Groundfish Advisory Subpanel (GAP) reviewed the Scientific and Statistical Committee's (SSC's) draft report on the proposal for marine reserves in the Channel Islands National Marine Sanctuary (CINMS) and offers the following comments.

The GAP believes the SSC's report demonstrates the inadequacies of both the science surrounding development of marine reserves and the process that has been employed in examining marine reserves in the CINMS. The GAP advises that substantially more work be done prior to moving forward on a reserve designation, including better efforts to include affected users.

In regard to further Council participation in the Channel Islands reserve process, or other processes, the GAP again recommends to the Council that a marine reserve policy committee be established which contains representation from all appropriate Council advisory bodies. This will facilitate analysis of documents and allow more efficient coordination by the Council and its advisory bodies.

PFMC
06/19/02

Exhibit F.1.c
Supplemental HC Report
June 2002

HABITAT COMMITTEE REPORT ON REVIEW OF PROPOSAL FOR MARINE RESERVES IN STATE WATERS OF THE CHANNEL ISLANDS NATIONAL MARINE SANCTUARY

The Habitat Committee (HC) recommends establishing a marine reserve at the Channel Islands National Marine Sanctuary (CINMS), but rather than endorsing the preferred alternative, or deferring to the MLPA, the HC prefers the alternative that protects the most habitat. There are several current developments in fisheries management that led the HC to this conclusion. Among these are concerns over rebuilding overfished species, potential closures in marine protected areas, and potential management closures on the continental shelf, which may result in shifts in fishing effort. Also, the Sanctuary's Science Advisory Panel recommended that marine protected areas protect a minimum of 30% to 50% of all available habitat. While none of the options meet this target, the HC feels that the greatest area protected provides the greatest potential for improved biological productivity.

The HC also recognizes that:

- California's Channel Islands are a unique ecosystem
- The CINMS proposal contributes to meeting the biodiversity goals of California Department of Fish and Game (CDFG) and CINMS
- The Channel Islands contain essential fish habitat and are likely to contain habitat areas of particular concern, and contribute to meeting these protection goals
- CINMS would contribute to the cumulative effects of a network of marine protected areas
- The CINMS proposal would provide the first opportunity on the West Coast to have a network of marine protected areas (MPAs) and associated control sites for study purposes
- The specific effects of the marine protected area will vary according to management decisions
- San Miguel Island, the area known as the "footprint," and the Gull Island parcel are particularly valuable for cowcod, bocaccio, lingcod, and potentially yelloweye.

The HC would also like to emphasize the importance of ensuring research funding for continued monitoring and enforcement and to study the habitat impacts of fishing on the boundaries of the area, and displacement of effort to other areas.

We support the Scientific and Statistical Committee's conclusion that this marine reserve is not likely to have stock-wide benefits for rebuilding, but it may have local population-level benefits. Additionally, these reserves may become part of a system which cumulatively could have stock-wide benefits. Our comments are given in the context of both state and federal waters proposed for MPAs.

PFMC
06/20/02

Mark Powell

Exhibit F.1.c
Supplemental HMSAS Report
June 2002

HIGHLY MIGRATORY SPECIES ADVISORY SUBPANEL STATEMENT ON REVIEW OF PROPOSAL FOR MARINE RESERVES IN STATE WATERS OF THE CHANNEL ISLANDS NATIONAL MARINE SANCTUARY

With respect to the Council process for commenting on the marine reserves proposals, all of the Highly Migratory Species Advisory Subpanel (HMSAS) members except one would like the Council committee to include one member from each advisory subpanel.

The HMSAS is concerned that one of the effects of the proposed reserves will be that displaced fishers will enter the albacore fishery. The HMSAS also notes that highly migratory species are taken in a number of areas proposed for reserves.

PFMC
06/19/02

Exhibit F.1.c
Supplemental SAS Report
June 2002

SALMON ADVISORY SUBPANEL STATEMENT ON REVIEW OF PROPOSAL FOR MARINE RESERVES IN STATE WATERS OF THE CHANEL ISLANDS NATIONAL MARINE SANCTUARY

The Salmon Advisory Subpanel generally opposes marine protected areas that include no take for salmon fisheries where concern is for other species.

PFMC
06/20/02

Mark Cedergreen

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON REVIEW OF PROPOSAL FOR MARINE RESERVES IN STATE WATERS OF THE CHANNEL ISLANDS NATIONAL MARINE SANCTUARY

BACKGROUND

At the April 2002 Council meeting, the State of California requested that the Council review a draft environmental document (DED) being prepared by the California Department of Fish and Game (CDFG) to evaluate eight alternatives for the establishment of marine protected areas (MPAs) at the Channel Islands National Marine Sanctuary (CINMS). The Scientific and Statistical Committee (SSC) offered to have its Ad-Hoc Marine Reserve Subcommittee provide a technical review of the document. Because the SSC is accustomed to conducting reviews in the context of federal regulatory requirements and the DED was intended to meet requirements of the California Environmental Quality Act (CEQA), the SSC requested guidance from the Council regarding the criteria that should be considered in reviewing the DED. The SSC was instructed to conduct a general technical review of the DED, keeping in mind any distinctions between the requirements of CEQA and the National Environmental Policy Act (NEPA).

In late May, the SSC received the DED, which was prepared by Messrs. John Ugoretz and David Parker of the CDFG and entitled "Draft Environmental Document - Marine Protected Areas in NOAA's Channel Islands National Marine Sanctuary," dated May 2002. The SSC also received a CD-ROM copy of an untitled, undated document co-authored by Dr. Vernon Leeworthy and Mr. Peter Wiley (NOS) that provided a socioeconomic analysis of MPA alternatives at CINMS. Information from the socioeconomic document was referenced extensively in the DED, and having the original socioeconomic analysis was helpful to the SSC.

The SSC Ad-Hoc Marine Reserve Subcommittee met on June 10-11, 2002 in Portland, Oregon to review the DED. Mr. John Ugoretz (CDFG), Dr. Satie Airame (CINMS), Mr. Peter Wiley (NOS), Dr. Steve Gaines (University of California, Santa Barbara) and Mr. Jim Seger (Council staff) also participated in the meeting. Several other people participated or observed by speaker phone, including Mr. L.B. Boydstun (CDFG), Ms. Rene Hawkins (CDFG General Counsel) and Ms. Stephanie Campbell (NOAA General Counsel). The SSC appreciates the contributions of all participants to the meeting discussions.

At the meeting, Ms. Rene Hawkins provided the Subcommittee with a useful table (pages 10 through 12) that compared CEQA and NEPA in terms of their respective informational, analytical and procedural requirements. As indicated in the table, one notable difference between CEQA and NEPA is that CEQA "does not require any consideration of social or economic effects, except where any such impact has a direct or indirect effect on the environment." While a socioeconomic analysis is not strictly required under CEQA, the DED includes extensive socioeconomic content and is apparently intended to do more than meet CEQA requirements. As stated in the DED, "The DED evaluates the important social, economic and environmental effects that may result from the proposed action" (p. 2-15). With regard to the rationale for going beyond CEQA requirements, the DED states, "... in the forum of the PFMC, socioeconomic constraints would be considered along with scientific recommendations. This mirrors the process that occurred within the Department in developing the proposed project and is demonstrated through the socioeconomic analysis in Chapter 5.4" (p. 5-17). The SSC reviewed the DED in its entirety, including analyses pertaining to both environmental and socioeconomic effects.

MANAGEMENT ALTERNATIVES

Eight management options are discussed in the DED. The preferred alternative (referred to as the "proposed project") and alternatives 1-5 represent alternative MPA configurations at CINMS. Alternative 6 is to defer the decision to establish MPAs at CINMS to the Marine Life Protection Act (MLPA). Alternative 7 is the "no action" alternative.

Proposed project and alternatives 1-5: The ecological characteristics and socioeconomic effects of the proposed project are discussed in Chapter 5 of the DED, and alternatives 1-5 are discussed in similar fashion in Chapter 6. To facilitate its discussion of the six MPA alternatives, the SSC constructed several tables to facilitate side-by-side evaluation of all alternatives. The tables (labeled SSC-1 through SSC-3) are attached to this statement.

The DED characterizes CINMS as consisting of three major biogeographical regions (Oregonian bioregion, Californian bioregion and a transition zone where the two bioregions converge) and various habitat types (sandy and rocky coast, soft and hard sediment, emergent rocks, submarine canyons, kelp forest, eelgrass, surfgrass). Representation of the three biogeographic regions under the preferred project is described in Table 5-3 (p. 5-2) for state waters and in Table 5-4 (p. 5-34) for state and federal waters combined. Similar tables are not included in the DED for alternatives 1-5. However, the DED does include separate tables for each of the six MPA alternatives that describe the extent to which representative and unique/vulnerable habitats are represented under each alternative. Table SSC-1 (attached) provides a side-by-side comparison of the alternatives in terms of habitat representation. The column totals in the table represent the total number of square nautical miles and the total percentage of CINMS waters set aside in no-take reserves under each alternative. In terms of the MPA alternatives for state waters, the area held in reserves ranges from 68.7 to 136.6 square nautical miles (nm^2), comprising 6% to 12% of CINMS waters. In terms of state and federal waters combined, the area held in reserves ranges from 140.8 to 390.2 nm^2, comprising 12% to 34% of total CINMS waters. The proposed project covers 279.0 nm^2 or 25% of CINMS waters (114.4 nm^2 in state waters, 164.6 nm^2 in federal waters).

Alternative 6 (defer to MLPA): Alternative 6 is briefly discussed in the Executive Summary of the DED.

Alternative 7 ("no action" alternative): The "no action" alternative is described in Chapter 4 in terms of characteristics of the physical, biological and human environment.. The biological environment is described largely in terms of habitat types and species of interest. The human environment is described largely in terms of commercial fishing and consumptive and non-consumptive recreational activities.

EFFECTIVENESS OF THE DRAFT ENVIRONMENTAL DOCUMENT IN ADDRESSING CEQA REQUIREMENTS

The SSC has the following comments regarding the DED as it relates to CEQA requirements:

1. CEQA requires that a baseline description be provided of the physical environment in the vicinity of the proposed project. Chapter 4 of the DED provides such a description.

2. CEQA requires preparation of an Environmental Impact Report which considers a range of reasonable alternatives that achieve the objectives of the project; the range of alternatives must include the "no project" alternative. The SSC notes the following regarding the alternatives:

    a. The DED evaluates the proposed project and five other MPA alternatives relative to the "no project" alternative (i.e., status quo). However, the DED provides little if any information regarding the effect of the status quo relative to the goal of the project (i.e., what would happen if the project did not occur). If the intent of the proposed project is simply to establish marine reserves, then the DED should state that the status quo is by definition inconsistent with that goal. If the goal is something else, then a more extensive discussion is required to establish the inadequacy of the status quo for achieving the goal.

    b. The DED rejects alternative 6 on the following basis: "The Department feels that deferring a decision would not change the proposed project and there is a potential to underestimate local economic and environmental impacts by combining them with those of the entire State....a timely decision would provide needed insight and experience in the implementation of reserves before the MLPA suggests MPAs for the entire State. Furthermore, biological and economic monitoring will contribute more information to the biological and fishery effects of reserves thus helping to refine future MPA decisions like the MLPA" (pp. E-3 and E-4). The rationale for rejecting this alternative is not clear to the SSC. Given that one of the MLPA goals is "to ensure that the state's MPAs are designed and managed, to the extent possible, as a network" (p. A1-5), it is possible that deferring the establishment of reserves at CINMS to the MLPA process could cause the proposed project to change when viewed in the context of a statewide network of reserves. It is also not clear why local impacts would be "underestimated" if combined with the MLPA.

3. CEQA requires that the proposed project be evaluated in terms of potentially adverse effects on the environment - including direct, indirect and cumulative effects - and that feasible mitigation measures be adopted to address significant adverse effects. A relevant issue in this regard is whether effort displacement from reserve areas causes adverse environmental effects outside reserves. Specifically, to what extent would effort displacement adversely affect the physical and natural habitat by intensifying the effects of fishing operations outside reserves? To what extent would effort displacement exacerbate existing pressure on fishery resources outside reserves?

   The DED does not consider the possibility of habitat effects associated with effort displacement to outside areas. Moreover, the DED refers only in positive terms to effort that might be attracted to the vicinity of the reserves after their establishment. Specifically, the DED cites behavior such as "fishing the line" as "compelling evidence" of fishery benefits associated with spillover of adult fish from reserves into open areas (p. 1-9) but does not consider the possibility of negative impacts on the physical habitat associated with "fishing the line".

   With regard to the effects of effort displacement on fishery resources outside reserves, the DED acknowledges that "this displacement could cause congestion of effort and a potential negative environmental impact outside MPAs" (p- 5-1). However, in terms of the need for measures to mitigate adverse environmental impacts, the DED is ambiguous. On the one hand, the DED concludes that "Because no significant adverse environmental impacts would result from the proposed project, no measures to mitigate impacts are proposed" (p. 5-57). However, other language in the DED suggests a need for mitigation. For instance, the DED notes that "The proposed project attempts to limit this potential [for adverse environmental impacts] by specific area choices limiting the direct impacts to fishing activities. Potential displacement of effort may also be offset by the potential beneficial effects caused by increased production and spillover from the proposed MPAs. In addition, existing harvest controls (e.g., size limits, bag limits, seasons) will continue to control take outside MPAs and other regulatory processes limiting total effort of fisheries in the area are underway" (p. 5-1). The DED also cites the Nearshore Fishery Management Plan (FMP), the Squid FMP and effort reduction in the spot prawn trap fishery as examples of long term management plans that are expected to reduce effort or fleet size, and concludes that "the net effect of reducing effort, while closing some areas to fishing, should limit the possibility for congestion outside MPAs" (p. 5-18).

   With regard to references in the DED to existing harvest controls and pending management plans for the nearshore, squid and spot prawn fisheries, the SSC notes that these management actions are being developed independently of whatever happens at CINMS. Existing and pending programs are part of baseline conditions and provide a context within which potential mitigation measures for displacement from CINMS should be considered. Baseline conditions may affect the nature and severity of mitigation measures required. For instance, effort displaced to depleted stocks would need to be dealt with more restrictively than effort displaced to less than fully utilized stocks. However, the baseline conditions themselves cannot be claimed as mitigative measures unless they are modified to deal specifically with CINMS displacement.

   The SSC realizes that an evaluation of the effects of effort displacement on the physical and natural habitat outside reserves is not possible; however, it is important that the potential for such effects be at least acknowledged in the DED. With regard to the effects of effort displacement on fishery resources outside reserves, the SSC notes that the DED provides some information regarding the extent of effort displacement among consumptive recreational users. For instance, 63,322 person days of consumptive recreation would be displaced from reserve areas under the proposed project and an additional 14,586 days would be displaced in the federal phase of the project (Table 5-10, p. 5-50). Total state-federal displacement under the proposed project comprises 18% of the 437,908 person days of such activity that occur with the CINMS (Table 4-30, p. 4-163).

   Displacement of commercial fisheries is expressed in the DED in terms of ex-vessel revenues, not fishing effort. Specifically, $3.3 million in harvest would be displaced from reserve areas under the proposed project and an additional $200,000 in the federal phase of the project (Table 5-5, p. 5-45). Total state-federal displacement would account for 16% of the $22.4 million in revenues generated by commercial fishing activities in CINMS (Table 4-20, p. 4-147). While the revenue estimates are categorized by

species, the SSC notes that revenues are not necessarily indicative of the amount of effort displaced, as average revenue per unit effort can vary widely among fisheries. While it is not possible to predict precisely what would happen to displaced effort, fish ticket data could be used to obtain approximate estimates of the number of trips displaced and the specific CINMS fisheries from which they would be displaced. Such information can provide policy makers with a starting point from which to evaluate potential effects on fisheries outside reserves and to anticipate what types of specific management actions (if any) might be required to mitigate the effects of displacement. Lack of such information precludes a substantive discussion of this issue.

4. CEQA requires that agencies determine whether the proposed project has potentially adverse significant effects on the environment according to locally adopted "thresholds of significance." The DED provides an explicit ranking system for evaluating how well a habitat is represented in reserves. According to the system, the inclusion of 30%+ of a habitat in MPAs is characterized as "well represented", 20-29% as "adequately represented," 10-19% as "inadequately represented" and 0-9% as "poorly represented" (p. 5-12). The DED characterizes most habitats to be "adequately represented" by the proposed project, which incorporates at least 20% representation for most (12 of 17) habitats (see Table 5-3, p. 5-20). Thus 20% habitat representation appears to be the threshold of significance in the DED. The SSC notes that the DED's threshold is lower than the SAP's reserve size recommendation of 30-50%, suggesting that factors other than those considered by the SAP are reflected in the threshold. While CEQA gives agencies broad latitude in defining the threshold of significance, it would be helpful if the criteria underlying the threshold were documented in the DED.

EFFECTIVENESS OF THE DRAFT ENVIRONMENTAL DOCUMENT IN EVALUATING NON-CEQA RELATED EFFECTS OF MPA ALTERNATIVES

While CEQA requires that significant adverse environmental effects of the proposed project be identified and mitigated, it does not require an evaluation of the environmental benefits or socioeconomic effects of the proposed project or other alternatives. Thus the SSC's comments regarding those aspects of the DED are provided here separately from the comments pertaining to CEQA requirements.

Biodiversity Benefits Within Reserves

Based on the extent of habitat representation and other ecological criteria, the DED concludes that "Protecting the MPAs in the proposed project could contribute to increasing biomass, individual size, and reproductive potential of organisms within the reserve areas, particularly for species with low dispersal and high reproduction. The proposed project would likely achieve the goal for conservation of ecosystem biodiversity established by the MRWG because the reserve areas include all habitat types in all bioregions, encompassing at least some portion of the ranges of most species of interest" (p. 5-32). The SSC considers the choice of reserve size to be a policy decision. However, beyond the issue of size, the SSC notes that habitat representation is a fundamentally sound approach to determining which areas to place in reserves to protect biodiversity.

Fisheries Benefits Outside Reserves

The DED provides a graph (Figure 6-1, p. 6-68) that attempts to show how biodiversity conservation and fisheries benefits change with reserve size. According to the DED, "Localized fisheries benefits are not expected unless MPAs are large enough to contribute to productivity in fished areas through export of larvae and spillover of adults. The maximum fisheries benefits are likely to occur when 40 percent of the suitable habitat or the fished population are protected in reserve areas" (p. 6-67).

The SSC notes that, due to the relatively small scale of the CINMS relative to the full distribution of the most of the fishery resources that inhabit CINMS, substantial fisheries benefits on a stock-wide scale are unlikely to result under any of the MPA alternatives at CINMS. 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.

Socioeconomic Effects

The DED includes an extensive discussion of socioeconomic effects of the MPA alternatives. The approach to the socioeconomic analysis, the comparison of alternatives and the conclusions regarding socioeconomic effects contained in the DED are largely taken from the SEA. The socioeconomic analysis covers both economic impacts and economic value. Economic impacts (as reflected in estimates of income and employment impacts) pertain to effects of MPAs on local (i.e., county) economies. Economic value estimates (as reflected in estimates of consumer and producer surplus) pertain to values held by consumptive and non-consumptive users of CINMS, as well as non-use value (i.e., the value that the public attaches to reserves at CINMS, regardless of whether they ever utilize or even see any of the amenities at CINMS). While economic impact analysis sheds light on the distributional effects of MPAs, it is the economic value estimates that comprise the elements of cost-benefit analysis. The SSC notes that the socioeconomic analysis does a commendable job of making the appropriate conceptual distinction between economic impacts and economic value.

For purposes of the economic analysis, the baseline against which the MPA alternatives were compared was the 1999 level of activity for recreational activities and the average annual level of activity during 1996-1999 for commercial fishing activities. The reason for using a multi-year average for commercial fisheries is to ensure a more representative level of fishing activity than 1999, which was a record year for squid landings (p. 5-39). The SSC agrees that 1996-1999 is a reasonable baseline period for commercial fisheries.

According to Table 4-18, the baseline level of commercial and recreational activities in CINMS generates $172 million in income impacts (Table 4-18, p. 4-138) and 4,888 jobs (Table 4-19, p. 4-138) within the designated southern California seven-county area. As noted in the DED, CINMS activities account for less than 1% of total income and employment in those counties (p. 4-137). The SSC agrees with this assessment and notes that - given the large size and diversity of the local economies within the seven-county area - the relative contribution of CINMS to local economies is not likely to change much from the status quo regardless of how much area is set aside in marine reserves.

The analytical approach used to evaluate socioeconomic effects involved consideration of so-called "Step 1" and "Step 2" effects (p. 5-36). The Step 1 analysis involved quantitative estimation of consumptive activities that would be displaced from reserve areas. For commercial fisheries, Step 1 provides estimates of ex-vessel value and income and employment impacts. For consumptive recreational activities, Step 1 provides estimates of person days; direct sales, wages/salaries, and employment; income and employment impacts; and consumer surplus and profits. While these quantitative estimates are characterized as "maximum potential losses", the DED also notes that "In cases where congestion effects occur due to displacement and relocation of fishing effort, actual losses could exceed estimates of maximum potential loss or losses may be overestimated where offsetting factors such as effort reduction are instituted" (p. 5-36).

As part of the Step 1 analysis, three socioeconomic surveys of commercial and recreational use at CINMS were conducted specifically for the purpose of evaluating MPA alternatives at CINMS. The surveys provided valuable information regarding the spatial distribution of commercial and recreational activity and contributed significantly to the evaluation of alternatives. The spatial distribution information for party/charter and for-hire recreational operations is likely quite reliable, as it is based on a census of operators in CINMS. Given the reluctance of the industry to provide precise location of catch information, the commercial fisheries data are less precise; nevertheless the analysis does a commendable job of making use of the available data in a reasonable way. The estimates of private boat consumptive recreation are subject to fairly serious data limitations and based on a number of unsubstantiated assumptions regarding similarities between party/charter and private boat recreational activities; those estimates are subject to considerable uncertainty. As indicated in the DED, data on private boat non-consumptive activity are not available at all, resulting in underestimation of total non-consumptive recreation at CINMS.

For the consumptive recreational sector, aggregate consumer surplus is estimated by multiplying the number of person days by a value of $11.58 per person day. The consumer surplus estimates were based on results from Wegge (1986) and Rowe (1985). Wegge and Rowe provides a range of consumer surplus estimates derived from various model specifications. The SSC recognizes the challenges associated with translating estimates derived from different models under different assumptions into a single estimate of consumer surplus per person day and requests that documentation be added to the DED (or at least the SEA) regarding how this was done.

The Step 2 analysis focused on potential benefits of MPAs to consumptive and non-consumptive users and to the public in the form of non-use value. The estimates of potential losses to consumptive users and potential gains to non-consumptive recreation are summarized for each alternative in Tables SSC-2 and SSC-3 respectively. The SSC has the following comments regarding the Step 2 analysis:

1. Estimates of profits for the party/charter and for-hire recreational sector were based on data collected from a census of operators in CINMS and used as a proxy for producer surplus. The SSC considers these estimates to be quite reliable.

2. Given the lack of available information on consumer and producer surplus for commercial fisheries in CINMS, the DED assumes a value of $8 million per year - based on estimates of consumer and producer surplus for commercial fisheries at the Tortugas Ecological Reserve in the Florida Keys National Marine Sanctuary. It is not clear to the SSC why the value of fisheries at Tortugas should be a reasonable proxy for the value of fisheries at CINMS.

3. The estimates of benefits to non-consumptive users are based on assumptions regarding increases in "quality" (10%, 50%, 100%) that are likely to occur as a result of reserves, where "quality" is defined as "a composite attribute that takes into consideration the range of benefits that would have an impact on the non-consumptive recreation experience. This includes such attributes as diversity of wildlife, abundance of fish and invertebrates, the decrease in the density of users, and the increase in water quality" (p. 5-54). A parameter referred to as the "value elasticity of quality" (defined as the percentage increase in consumer surplus associated with a 1% increase in quality) was used to link hypothesized changes in quality to subsequent changes in value. Alternative assumptions regarding quality changes (10%, 50%, 100%), combined with alternative estimates of the value elasticity of demand (0.04, 1.0 and 4.5) were then used to provide a range of estimates for the increase in non-consumptive recreation associated with each alternative. Table SSC-3 summarizes the changes associated with the various combinations of quality changes and value elasticities under each MPA alternative.

   As indicated in Table SSC-3 - as well as Table 6-59 of the DED (p. 6-71) - the change in consumer surplus associated with the proposed project can range anywhere from $332 to $372,969; similar thousand-fold differences between low and high estimates were also indicated for the other MPA alternatives. The SSC considers the underlying basis of these estimates to be questionable. The increases in non-consumptive recreational quality (10%, 50% and 100%) included in the analysis are assumed and not substantiated. The SEA indicates that the value elasticities (0.04, 1.0 and 4.5) are based on results of a meta-analysis of recreational travel cost models conducted by Smith and Kaoru (1990). The SSC notes that the Smith/Kaoru paper focuses on an entirely different parameter - the price elasticity of demand. In order to apply the Smith/Kaoru results to the analysis of MPA alternatives at CINMS, it is necessary to assume that the value elasticity of quality for CINMS is similar in value (though necessarily opposite in sign) to Smith/Kaoru's price elasticity estimates - a significant assumption that is not substantiated in the DED or the SEA.

4. The non-use values cited in the DED for marine reserves at CINMS are based on the assumption that 1% of U.S. households have positive non-use value for marine reserves at CINMS, and that the value per household ranges from $3 to $5 to $10 per year. The basis for these assumptions is described in the DED and in greater detail in the SEA as follows:

   a. According to national surveys conducted in the late 1980s and early 1990s regarding attitudes toward the environment and more recent national and California surveys regarding attitudes toward ocean health and marine sanctuaries, a high percentage of respondents express positive attitudes toward environmental protection. Based on the results of these surveys and a poll indicating that 8% of U.S. households contributed to environmental organizations in 1990, it was deemed reasonable to assume that 1% of U.S. households are willing to pay some positive amount of money for establishment of MPAs in CINMS. This 1% was characterized as a "conservative lower bound estimate" (SEA, p. 103).

   b. Nineteen studies were conducted in the 1980s and early 1990s that included estimates of non-use value. The studies estimate the public's willingness-to-pay for a wide variety of environmental goods - including whooping cranes, bald eagles, striped shiners, grizzly bears, bighorn sheep and Atlantic

salmon; visibility at the Grand Canyon; nature preserves in Australia, Illinois and Colorado; potable groundwater supplies in Cape Cod, Massachusetts; water quality in specific river basins in Colorado, Pennsylvania and Montana; water quality in all rivers and lakes in the U.S.; and prevention of future oil spills off the Washington/British Columbia coast and Prince William Sound in Alaska. Given that willingness-to-pay for environmental goods was higher than $10 per household in almost all these studies, values of $3, $5 and $10 per household per year were assumed to represent a "probable lower bound set of estimates" for willingness-to-pay for MPAs at CINMS (SEA, p. 102).

The SSC has the following reservations regarding the estimation of non-use values at CINMS: The connection between the percentage of respondents who express positive attitudes about environmental protection and the percentage of households who would be willing to pay for marine reserves at CINMS is tenuous. The survey research literature indicates that attitudinal surveys are not a reliable indicator of willingness to pay. With regard to the assumption that 1% of U.S. households are willing to pay for reserves at CINMS, that percentage could just as well be 0.1% or 2% (or any number of other percentages). While the differences among 0.1%, 1% and 2% may appear quite small, the effect of choosing a particular percentage is magnified by the fact that the percentage is multiplied by the total number of U.S. households. The assumption that $3, $5 and $10 represent a "probable lower bound" on the public's willingness-to-pay is arbitrary as well.

The DED repeatedly notes the uncertainties in the cost-benefit analysis. For instance:

> "Overall, the socioeconomic analysis is not a comparison of potential costs and benefits because there are limited data and scientific studies related to consumptive and non-consumptive values of the project area" (p. 5-35).
>
> "It is important to note that the Socioeconomic Panel did not conduct a comprehensive comparison of all potential costs and benefits that may be associated with the establishment of MPAs with project area. As a consequence, the socioeconomic analysis is limited by a degree of uncertainty with respect to the potential social and economic costs and benefits of MPAs" (p. 5-35).
>
> "All the benefits and costs of MPAs cannot be quantified, and so a formal benefit-cost analysis was not conducted" (p. 5-36).

The DED further characterizes the evaluation of non-use benefits at CINMS as a "general qualitative overview on potential benefits to non-use or passive use values" (p. 5-36).

Despite these caveats, the DED goes on to provide quantitative estimates of benefits and costs - including estimates of non-use benefits. 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. Specifically, based on the size of the non-use benefit estimates, the DED concludes that "..one can conclude that there would be net national benefits from adopting any of the marine reserve alternatives for the Sanctuary, even when estimates for consumptive users are biased upwards and we compare then with the lowest potential non-use or passive use economic values" (p. 6-77). While the SSC considers non-use value to be an essential component of cost-benefit analysis of MPAs at CINMS, the estimates in the DED are ad-hoc and not properly validated and should not be treated as quantitative estimates.

In terms of making the cost-benefit analysis more complete, the SSC notes that the analysis should acknowledge the potential benefits that monitoring and scientific research may provide over the long term. The analysis should also reflect the costs associated with biological and economic monitoring, enforcement of reserve boundaries and any incremental management responsibilities that may be associated with mitigating effects of effort displacement outside the reserves. While some of these elements are difficult (perhaps impossible) to measure, it is important that all relevant cost and benefits be at least acknowledged in the DED.

The SSC also notes that the cost-benefit analysis provided in the DED is a static analysis and does not consider how costs and benefits might change over time. The choice of a time frame, the temporal distribution of costs and benefits and the assumed discount rate can have a significant effect on the

conclusions of a cost-benefit analysis. 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), it is understandable why a dynamic analysis was not attempted. However, 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.

SUMMARY OF SSC CONCLUSIONS REGARDING THE DRAFT ENVIRONMENTAL DOCUMENT

The DED is intended to address the CEQA requirement to identify and mitigate significant adverse environmental impacts associated with the proposed project. While CEQA does not require that alternatives be evaluated in terms of their environmental benefits or socioeconomic effects, the DED also provides an analysis of such effects. The SSC reviewed the DED in all its aspects.

In terms of addressing CEQA requirements, the DED does not demonstrate whether or not the proposed project would have significant adverse effects on the physical and natural habitat or on fishery resources outside the reserve. The SSC realizes that a definitive evaluation of adverse environmental impacts is not feasible. However, the possibility of habitat impacts should at least be acknowledged in the DED. Further evaluation of the extent of effort displacement and its potential affect on outside fisheries should be done. While the DED provides some estimates of effort displacement for recreational consumptive activities, similar information is also needed for commercial fisheries.

The issue of effort displacement is critical to evaluating the effects of reserve size. While larger reserves provide greater opportunity to enhance biodiversity inside the closed area, they are generally accompanied by increases in the amount of effort displaced from reserves. In considering what happens to this displaced effort, it is important to recognize the trade-off between short-term economic losses borne by those displaced from reserves and the potential for adverse environmental effects in the open area. Minimal short-term losses imply the existence of opportunities for displaced fishermen to offset their losses in outside areas, but also require consideration of the effects of displaced effort on habitats and fishery resources in those outside areas and management measures to mitigate habitat effects and prevent localized depletion of fishery resources. Conversely, maximum short term economic losses imply few offsetting opportunities and therefore little need to consider adverse environmental effects outside reserves.

Given the small scale of reserves at CINMS and the fact that most of the 119 species of concern identified by the Marine Resources Working Group have distributions that extend well outside CINMS boundaries, the SSC considered habitat representation to be an appropriate way to designate areas for inclusion in reserves at CINMS. Given this approach to reserve design, biodiversity benefits may accrue in reserve areas. The small scale of reserves at CINMS is not expected to yield stock-wide benefits. As indicated above, 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.

The socioeconomic evaluation of alternatives involved "Step 1" and "Step 2" analyses. The Step 1 analysis (quantification of existing commercial and recreational activity in proposed reserve areas) was generally well done, given the limitations of the data. However, the Step 2 analysis (predicting costs and benefits associated with the MPA alternatives) draws quantitative conclusions that cannot be substantiated. Given the deficiencies in some of the data and analysis and uncertainties regarding the effects of reserves at CINMS, it is not possible to determine whether economic benefits associated with establishment of reserves outweigh the costs.

OTHER SSC COMMENTS

SSC comments regarding the DED are generally applicable to MPA alternatives at CINMS, regardless of whether the alternatives pertain to state or federal waters. However, this SSC statement does not address all federal regulatory requirements. Evaluation of MPA alternatives in federal waters at CINMS will require consideration not only of NEPA but other regulatory requirements (e.g. the Regulatory Flexibility Act) that were not considered in this review.

The SSC offers the following caveats regarding the potential applicability of the approach to MPA design used at CINMS to large-scale MPAs:

1. The methodology used to design MPAs at CINMS required a relatively rich set of habitat maps. The SSC notes that habitat maps at the CINMS level of detail will likely not be available for most areas of the West coast. Thus the habitat-based MPA siting algorithm used at CINMS may not be as feasible for other areas.

2. MPAs at CINMS were designed to ensure approximately equal representation of each habitat type. While equal habitat representation may be reasonable for MPAs on the scale of those at CINMS, the SSC recognizes that all habitat types are not equal with respect to their importance to marine organisms. A more detailed approach to evaluating species-specific interactions between organisms and habitat may be applicable in cases where larger scale MPAs are considered.

3. For Council-managed species, whatever is done at CINMS is likely to have negligible stock-wide impacts. The situation may be quite different for large scale reserves. Large scale reserves may also require reconsideration of how stock assessments are done.

PFMC
06/19/02

Differences Between CEQA and NEPA

	CEQA	NEPA
Purpose	Substantive Mandate: CEQA contains a substantive mandate that public agencies refrain from approving projects with significant environmental effects if there are feasible alternatives or mitigation measures that can substantially lessen or avoid those effects. *Mountain Lion Foundation v. Fish and Game Commission* (1997) 16 Cal.4th 105.	Procedural Framework: NEPA requires agencies to consider and disclose environmental impacts of proposed projects. Provides an interdisciplinary framework for environmental planning by federal agencies. Note, "P" stands for "policy," not "protection." It is "well settled that NEPA itself does not mandate particular results, but simply prescribes the necessary process." *Robertson v. Methow Valley Citizens Council* (1989) 490 U.S. 332.
Application	To all governmental agencies at all levels in California, including local agencies, regional agencies, and state agencies, boards, districts and commissions.	To all federal agencies.
Activities	All approvals or discretionary projects, that have not been exempted from CEQA by statute or regulation, that may result in either a direct or reasonably foreseeable indirect physical change in the environment.	Whenever a federal agency proposes an action, grants a permit or agrees to fund or otherwise authorize any other entity to undertake an action that could possible affect environmental resources.
Regulation	Resources Agency adopted CEQA Guidelines at Public Resources Code §§ 21000. Public agencies must adopt implementing procedures.	President's Council on Environmental Quality (CEQ) adopted regulations and guidelines. Also, individual agencies may adopt more detailed and/or demanding NEPA procedures.

Documents	Full analysis includes an Environmental Impact Report, which must be certified by the lead agency. In addition, the lead agency must make certain independent substantive "findings," based on substantial evidence, that potential impacts have been reduced to a level below significance, or otherwise issue a statement of overriding conditions.	"Major" actions must be described in an Environmental Impact Statement. The project approval is announced in a less detailed Record of Decision.
Baseline	Must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time of the NOP or preparation of the environmental analysis.	Usually consists of the pre-project environmental conditions, at a fixed point in time. The EIS should explain why a particular point in time was selected for the baseline.
Analysis	Must determine whether there are potentially adverse significant effects on the environment. Lead agencies are given broad latitude in determining what is "significant" according to locally adopted "thresholds of significance." Must analyze direct, indirect and cumulative impacts.	Must determine whether the proposed action may significantly affect the quality of the human environment. What is "significant" is based on "context" and "intensity." Some agencies have developed specific thresholds. Must analyze direct, indirect and cumulative impacts (although NEPA application may be treated differently).
Lacking Science	No requirements to use anything other than the evidence in the record before the lead agency, unless a "fair argument" can be made that there are potentially significant impacts.	Must acknowledge where science or studies are lacking. Must obtain such information, with original research if necessary, unless costs of obtaining it are "exorbitant" or the "means to obtain it are unknown." If unavailable, EIS must evaluate the impacts based on generally accepted theoretical approaches.

Economic and Social Impacts	Does not require any analysis of social or economic impacts, except where any such impact has a direct or indirect physical effect on the environment. Physical effects do not include economic or social impacts without any accompanying impact on the environment.	Does not require any analysis of social or economic impacts, except where any such impact has a related physical or human impact. Human impacts may include economic, social or health impacts.
Alternatives	EIR must consider "a range of reasonable alternatives" that achieve the objectives of the project, in "meaningful detail," which has been interpreted as less onerous than NEPA's "substantial treatment" standard. Need not be exhaustive of all conceivable alternatives. One must be the "no project" alternative.	EIS must evaluate all reasonable alternatives. The alternatives generally must be analyzed at a greater level of detail than in CEQA. NEPA requires an EIS to "devote substantial treatment to each alternative considered in detail." Must include a "no action" alternative.
Mitigation Measures	Lead agency must adopt feasible mitigation measures to lessen environmental impacts, or must make a statement of overriding consideration based on substantial evidence.	EIS must suggest appropriate mitigation measures, but no requirement for the agency to act on them, even if feasible.
Process	NOI/Draft EIR with 45 day comment period/Circulate responses to comments 10 days before certification of Final EIR to responsible and commenting agencies. CEQA and Permit Streamlining Act require time-limited approvals in many cases.	NEPA contains no time limits for the process. NEPA's public notice requirements are less detailed and in some cases less stringent than CEQA. However, final EIR must be publicly circulated for 30 days before ROD

TABLE SSC-1: HABITAT REPRESENTATION IN RESERVE AREAS (p. 1 of 4)

HABITAT REPRESENTATION IN SQ NAUTICAL MILES

State Waters	**Prop Project**	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Alternative 5**
DED Table 6-56						
Sandy coast	13.8	7.7	7.2	6.6	13.9	13.8
Rocky coast protected	19.8	7.6	5.3	8.1	16.8	22.4
Rocky coast exposed	13.3	7.6	8.9	8.7	12.8	13.3
0-30 m:						
Soft sediment	28.6	9.1	8.6	11.0	19.9	22.6
Hard sediment	13.5	5.9	6.7	6.0	11.8	13.9
30-100 m:						
Soft sediment	76.6	28.8	31.7	35.6	50.6	47.2
Hard sediment	7.6	7.1	5.0	7.7	7.9	8.2
100-200 m:						
Soft sediment	38.9	11.3	9.6	11.3	13.8	20.6
Hard sediment	0.0	0.0	0.0	0.0	0.0	0.0
>200 m:						
Soft sediment	8.1	2.5	3.1	2.5	2.5	16.9
Hard sediment	0.0	0.0	0.0	0.0	0.0	0.0
Emergent rocks near	136	62	89	66	172	175
Emergent rocks off	8	0	7	8	8	8
Submarine canyons	7	6	7	6	6	7
Kelp forest	5.1	2.6	3.2	3.8	5.8	5.8
Eelgrass	0.2	0.2	0.1	0.2	0.3	0.3
Surfgrass	6.4	3.3	3.7	3.9	6.2	6.6
Total	114.4	68.7	72.0	88.6	119.5	136.6

Federal Waters	**Prop Project**	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Alternative 5**
DED Source	Tbl 5-3&5-4	Table 6-1	Table 6-12	Table 6-23	Table 6-[illegible]	Table 6-45
Sandy coast	0.0	0.0	0.0	0.0	0.0	0.0
Rocky coast protected	0.0	0.0	0.0	0.0	0.0	0.0
Rocky coast exposed	0.0	0.0	0.0	0.0	0.0	0.0
0-30 m:						
Soft sediment	0.0	0.0	0.0	0.1	0.0	0.0
Hard sediment	0.0	0.0	0.0	0.0	0.0	0.0
30-100 m:						
Soft sediment	22.7	31.7	20.5	26.5	44.7	51.3
Hard sediment	0.3	1.3	0.0	0.0	1.3	1.7
100-200 m:						
Soft sediment	33.0	15.8	19.0	54.8	73.3	64.0
Hard sediment	0.0	0.0	0.0	0.0	0.0	0.0
>200 m:						
Soft sediment	89.6	39.4	41.8	47.4	91.4	118.1
Hard sediment	0.0	0.0	0.0	0.0	0.0	0.0
Emergent rocks near	0	0	0	0	0	0
Emergent rocks off	3	3	3	2	4	4
Submarine canyons	5	9	5	9	9	5
Kelp forest	0.0	0.0	0.0	0.0	0.0	0.0
Eelgrass	0.0	0.0	0.0	0.0	0.0	0.0
Surfgrass	0.0	0.0	0.0	0.0	0.0	0.0
Total	164.6	72.1	88.9	142.8	220.3	253.6

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HABITAT REPRESENTATION AS % OF CINMS

State Waters	**Prop Project**	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Alternative 5**
DED Table 6-56						
Sandy coast	32%	18%	17%	15%	32%	32%
Rocky coast protected	34%	12%	9%	13%	28%	37%
Rocky coast exposed	31%	18%	21%	20%	30%	31%
0-30 m:						
Soft sediment	34%	11%	10%	13%	23%	27%
Hard sediment	28%	12%	14%	12%	24%	29%
30-100 m:						
Soft sediment	23%	9%	10%	11%	15%	14%
Hard sediment	20%	19%	13%	21%	21%	22%
100-200 m:						
Soft sediment	16%	5%	4%	5%	6%	8%
Hard sediment	0%	0%	0%	0%	0%	0%
>200 m:						
Soft sediment	1%	0%	1%	0%	0%	3%
Hard sediment	0%	0%	0%	0%	0%	0%
Emergent rocks near	27%	12%	17%	13%	33%	34%
Emergent rocks off	20%	0%	18%	20%	20%	20%
Submarine canyons	19%	17%	19%	17%	17%	19%
Kelp forest	21%	11%	13%	16%	24%	24%
Eelgrass	35%	35%	23%	35%	53%	53%
Surfgrass	28%	14%	16%	17%	26%	29%
Total	10%	6%	6%	8%	10%	12%

Federal Waters	**Prop Project**	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Alternative 5**
DED Source	Tbl 5-3&5-4	Table 6-1	Table 6-12	Table 6-23	Table 6-34	Table 6-45
Sandy coast	0%	0%	0%	0%	0%	0%
Rocky coast protected	0%	0%	0%	0%	0%	0%
Rocky coast exposed	0%	0%	0%	0%	0%	0%
0-30 m:						
Soft sediment	0%	0%	0%	0%	0%	0%
Hard sediment	0%	0%	0%	0%	0%	0%
30-100 m:						
Soft sediment	7%	9%	6%	8%	14%	16%
Hard sediment	1%	3%	0%	0%	4%	5%
100-200 m:						
Soft sediment	13%	6%	8%	22%	30%	26%
Hard sediment	0%	0%	0%	0%	0%	0%
>200 m:						
Soft sediment	16%	7%	7%	9%	17%	21%
Hard sediment	0%	0%	0%	0%	0%	0%
Emergent rocks near	0%	0%	0%	0%	0%	0%
Emergent rocks off	8%	8%	7%	5%	10%	10%
Submarine canyons	14%	24%	14%	24%	25%	14%
Kelp forest	0%	0%	1%	0%	0%	0%
Eelgrass	0%	0%	0%	0%	0%	0%
Surfgrass	0%	0%	0%	0%	0%	0%
Total	15%	6%	8%	13%	19%	22%

TABLE SSC-1 (p. 3 of 4)

HABITAT REPRESENTATION IN STATE&FEDERAL WATERS - SQ NAUTICAL MILES

DED Source	Table 5-4	Table 6-1	Table 6-12	Table 6-23	Table 6-34	Table 6-45
Sq. Nautical Miles	**Prop Project**	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Alternative 5**
Sandy coast	13.8	7.7	7.2	6.6	13.9	13.8
Rocky coast protected	19.8	7.6	5.3	8.1	16.8	22.4
Rocky coast exposed	13.3	7.6	8.9	8.7	12.8	13.3
0-30 m:						
Soft sediment	28.6	9.1	8.6	11.1	19.9	22.6
Hard sediment	13.5	5.9	6.7	6.0	11.8	13.9
30-100 m:						
Soft sediment	99.3	60.5	52.2	62.1	95.3	98.5
Hard sediment	7.9	8.4	5.0	7.7	9.2	9.9
100-200 m:						
Soft sediment	71.9	27.1	28.6	66.1	87.1	84.6
Hard sediment	0.0	0.0	0.0	0.0	0.0	0.0
>200 m:						
Soft sediment	97.7	41.9	44.9	49.9	93.9	135.0
Hard sediment	0.0	0.0	0.0	0.0	0.0	0.0
Emergent rocks near	136	62	89	66	172	175
Emergent rocks off	11	3	10	10	12	12
Submarine canyons	12	15	12	15	15	12
Kelp forest	5.1	2.6	3.2	3.8	5.8	5.8
Eelgrass	0.2	0.2	0.1	0.2	0.3	0.3
Surfgrass	6.4	3.3	3.7	3.9	6.2	6.6
Total	279.0	140.8	160.9	231.4	339.8	390.2

HABITAT REPRESENTATION IN STATE&FEDERAL WATERS - % OF CINMS

	Prop Project	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Alternative 5**
Sandy coast	32%	18%	17%	15%	32%	32%
Rocky coast protected	34%	12%	9%	13%	28%	37%
Rocky coast exposed	31%	18%	21%	20%	30%	31%
0-30 m:						
Soft sediment	34%	11%	10%	13%	23%	27%
Hard sediment	28%	12%	14%	12%	24%	29%
30-100 m:						
Soft sediment	30%	18%	16%	19%	29%	30%
Hard sediment	21%	22%	13%	21%	25%	27%
100-200 m:						
Soft sediment	29%	11%	12%	27%	36%	34%
Hard sediment	0%	0%	0%	0%	0%	0%
>200 m:						
Soft sediment	17%	7%	8%	9%	17%	24%
Hard sediment	0%	0%	0%	0%	0%	0%
Emergent rocks near	27%	12%	17%	13%	33%	34%
Emergent rocks off	28%	8%	25%	25%	30%	30%
Submarine canyons	33%	41%	33%	41%	42%	33%
Kelp forest	21%	11%	14%	16%	24%	24%
Eelgrass	35%	35%	23%	35%	53%	53%
Surfgrass	28%	14%	16%	17%	26%	29%
Total	25%	12%	14%	21%	29%	34%

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OTHER CHARACTERISTICS OF MPA ALTERNATIVES

	Prop Project	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
# marine reserves	10	9	8	8	10	10
Marine Conserv Area	MCA 1,2		MCA 3,4,5			
CCA redefinition?	yes	no	no	no	no	no
# monitoring sites	9	2	4	2	9	8

MCA 1 - Anacapa Island - comm/recr spiny lobster & recr pelagic finfish harvest allowed
MCA 2 - Painted Cave (Santa Cruz Island) - recr spiny lobster & pelagic finfish harvest allowed
MCA 3 - Anacapa Island - comm/recr spiny lobster & recr pelagic finfish harvest allowed
MCA 4 - Scorpion (Santa Cruz Island) - comm/recr spiny lobster & recr pelagic finfish harvest allowed
MCA 5 - Carrington Pt (Santa Rosa Island) - all comm/recr harvest allowed except rockfish
Cowcod Conservation Area redefinition-NE Sta Barbara Isl> 20 fathoms reverts to standard rockfish/lingcod regulations.

TABLE SSC-2: CONSUMPTIVE ACTIVITY DISPLACED FROM RESERVE AREAS - STATE WATERS (p. 1 of 3)

State Waters	Prop Project	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
nm^2 (% of CINMS)	114.4 (10%)	68.7 (6%)	72.0 (6%)	88.6 (8%)	119.5 (10%)	136.6 (12%)
Commercial Fishing/Kelp Harvesting (baseline=average 1996-1999):						
DED Source	Tbl 5-5,7,8	Tbl 6-2,4,5	Tbl 6-13,15,16	Tbl 6-24,26,27	Tbl 6-35,37,38	Tbl 6-46,48,49
Ex-vessel value	3,307,652	2,015,082	2,103,776	2,136,610	3,815,416	4,805,706
Income	10,123,680	5,362,962	5,631,389	5,656,664	11,168,136	13,838,166
Employment	296	156	161	164	324	397
Consumptive Recreation (baseline year=1999):						
DED Source	Table 5-10	Table 6-6	Table 6-17	Table 6-28	Table 6-39	Table 6-50
Person days	63,322	32,585	59,451	34,113	69,182	81,716
Direct sales	4,824,499	2,682,838	4,527,946	2,800,674	5,298,977	6,289,616
Direct wages/sal	1,876,605	1,097,074	1,769,845	1,143,952	2,070,691	2,460,811
Direct employment	59	34	56	36	65	78
Income-upper bound	3,284,059	1,919,879	3,097,229	2,001,916	3,623,708	4,306,419
Income-lower bound	2,814,908	1,645,610	2,654,767	1,715,928	3,106,036	3,691,216
Employ-upper bound	89	51	84	54	98	116
Employ-lower bound	74	43	70	45	82	97
Consumer surplus	733,184	377,296	688,366	394,989	801,044	946,171
Profits	52,125	33,439	47,436	34,738	58,280	68,324
Total Consumptive Impacts - DED Table 6-57:						
Income	13,407,739	7,282,841	8,728,618	7,658,580	14,791,844	18,144,585
Employment	385	207	245	218	422	513

TABLE SSC-2: CONSUMPTIVE ACTIVITY DISPLACED FROM RESERVE AREAS - FEDERAL WATERS (p. 2 of 3)

Federal Waters	**Prop Project**	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Alternative 5**
nm^2 (% of CINMS)	164.6 (15%)	72.1 (6%)	88.9 (8%)	142.8 (13%)	220.3 (19%)	253.6 (22%)
Commercial Fishing/Kelp Harvesting (baseline=average 1996-1999):						
DED Source	Tbl 5-5,7,8	Tbl 6-2,4,5	Tbl 6-13,15,16	Tbl 6-24,26,27	Tbl 6-35,37,38	Tbl 6-46,48,49
Ex-vessel value	214,463	146,873	117,720	232,544	328,891	333,830
Income	530,992	394,857	249,592	496,988	715,674	813,434
Employment	16	12	8	15	22	25
Consumptive Recreation (baseline year=1999):						
DED Source	Table 5-10	Table 6-6	Table 6-17	Table 6-28	Table 6-39	Table 6-50
Person days	14,586	8,093	12,424	12,160	19,279	22,781
Direct sales	1,314,575	670,114	1,104,886	1,143,113	1,843,149	2,147,909
Direct wages/sal	553,123	275,836	464,849	488,756	791,910	917,454
Direct employment	17	8	14	15	24	27
Income-upper bound	967,966	482,713	813,485	855,322	1,385,842	1,605,544
Income-lower bound	829,685	413,754	697,273	733,133	1,187,865	1,376,181
Employ-upper bound	25	13	21	22	35	41
Employ-lower bound	21	10	17	18	29	34
Consumer surplus	168,893	93,711	143,856	140,800	223,232	263,774
Profits	18,294	8,647	15,247	16,525	26,988	31,107
Total Consumptive Impacts - DED Table 6-57:						
Income	1,498,958	877,570	1,063,077	1,352,310	2,101,516	2,418,978
Employment	41	25	29	37	57	66

TABLE SSC-2: CONSUMP ACTIVITY DISPLACED FROM RESERVE AREAS - STATE&FED WATERS (p. 3 of 3)

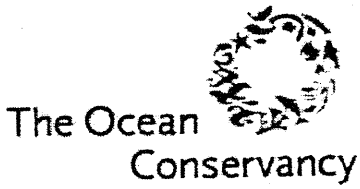
State&Fed Waters	Prop Project	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
nm^2 (% of CINMS)	279.0 (25%)	140.8 (12%)	160.9 (14%)	231.4 (21%)	339.8 (29%)	390.2 (34%)
Commercial Fishing/Kelp Harvesting (baseline=average 1996-1999):						
DED Source	Tbl 5-5,7,8	Tbl 6-2,4,5	Tbl 6-13,15,16	Tbl 6-24,26,27	Tbl 6-35,37,38	Tbl 6-46,48,49
Ex-vessel value	3,522,115	2,161,955	2,221,496	2,369,154	4,144,307	5,139,536
Income	10,654,672	5,757,819	5,880,981	6,153,652	11,883,810	14,651,600
Employment	312	168	169	179	346	422
Consumptive Recreation (baseline year=1999):						
DED Source	Table 5-10	Table 6-6	Table 6-17	Table 6-28	Table 6-39	Table 6-50
Person days	77,908	40,678	71,875	46,273	88,461	104,497
Direct sales	6,139,074	3,352,952	5,632,832	3,943,787	7,142,126	8,437,525
Direct wages/sal	2,429,728	1,372,910	2,234,694	1,632,708	2,862,601	3,378,265
Direct employment	76	42	70	51	89	105
Income-upper bound	4,252,025	2,402,592	3,910,714	2,857,238	5,009,550	5,911,963
Income-lower bound	3,644,593	2,059,364	3,352,040	2,449,061	4,293,901	5,067,397
Employ-upper bound	114	64	105	76	133	157
Employ-lower bound	95	53	87	63	111	131
Consumer surplus	902,077	471,007	832,222	535,789	1,024,276	1,209,945
Profits	70,419	42,086	62,683	51,263	85,268	99,431
Total Consumptive Impacts - DED Table 6-57:						
Income	14,906,697	8,160,411	9,791,695	9,010,890	16,893,360	20,563,563
Employment	426	232	274	255	479	579

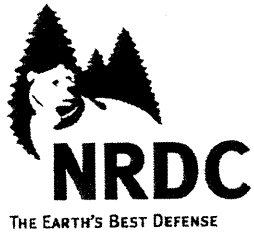
TABLE SSC-3: POTENTIAL GAIN IN NONCONSUMP RECREATION - STATE&FED WATERS (p. 1 of 2)

	Prop Project	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
nm^2 (% in CINMS)	279.0 (25%)	140.8 (12%)	160.9 (14%)	231.4 (21)	339.8 (29%)	390.2 (34%)
Non-consumptive recreation in reserve areas (baseline year=1999, DED Table 5-14):						
Consumer surplus	82,882	31,106	82,860	31,113	100,711	123,083
Income	1,042,185	382,643	1,030,380	383,508	1,249,921	1,535,419
Employment	30	12	30	12	36	45
Person days	7,158	2,687	7,157	2,687	8,698	10,629
Predicted increases in non-consumptive recr under alternative assumptions regarding quality and elasticity:						
DED Source	Table 5-15	Table 6-11	Table 6-22	Table 6-33	Table 6-44	Table 6-55
Quality=10%, elasticity=4%						
Consumer surplus	332	124	331	124	403	492
Income	4,169	1,531	4,122	1,534	5,000	6,142
Employment	0	0	0	0	0	0
Person days	29	11	29	11	35	43
Quality=50%, elasticity=4%						
Consumer surplus	1,658	622	1,657	622	2,014	2,462
Income	20,844	7,653	20,608	7,670	24,998	30,708
Employment	1	0	1	0	1	1
Person days	143	54	143	54	174	213
Quality=100%, elasticity=4%						
Consumer surplus	3,315	1,244	3,314	1,244	4,028	4,923
Income	41,687	15,306	41,215	15,340	49,997	61,417
Employment	1	0	1	0	1	2
Person days	286	107	286	107	348	425
Quality=10%, elasticity=100%						
Consumer surplus	8,288	3,111	8,286	3,111	10,071	12,308
Income	104,219	38,264	103,038	38,351	124,992	153,542
Employment	3	1	3	1	4	5
Person days	716	269	716	269	870	1,063
Quality=50%, elasticity=100%						
Consumer surplus	41,441	15,553	41,431	15,555	50,355	61,542
Income	521,093	191,322	515,190	191,754	624,961	767,710
Employment	15	6	15	6	18	22
Person days	3,579	1,344	3,578	1,344	4,349	5,315
Quality=100%, elasticity=100%						
Consumer surplus	82,882	31,106	82,861	31,110	100,710	123,083
Income	1,042,185	382,643	1,030,380	383,508	1,249,921	1,535,419
Employment	30	11	30	12	36	45
Person days	7,158	2,687	7,156	2,687	8,698	10,630

TABLE SSC-3 (p. 2 of 2)

	Prop Project	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Predicted increases in non-consumptive recr under alternative assumptions regarding quality and elasticity:						
Quality=10%, elasticity=450%						
Consumer surplus	37,297	13,998	37,287	14,000	45,320	55,387
Income	468,983	172,189	463,671	172,578	562,465	690,939
Employment	14	5	13	5	16	20
Person days	3,221	1,209	3,220	1,209	3,914	4,784
Quality=50%, elasticity=450%						
Consumer surplus	186,485	69,989	186,437	69,998	226,598	276,937
Income	2,344,916	860,947	2,318,355	862,892	2,812,323	3,454,693
Employment	68	26	67	26	82	101
Person days	16,106	6,046	16,101	6,046	19,571	23,918
Quality=100%, elasticity=450%						
Consumer surplus	372,969	139,977	372,875	139,995	453,195	553,874
Income	4,689,833	1,721,895	4,636,710	1,725,785	5,624,646	6,909,387
Employment	135	51	133	52	164	202
Person days	32,211	12,092	32,202	12,092	39,141	47,835





May 31, 2002

Donald O. McIsaac
Executive Director
Pacific Fishery Management Council
770 NE Ambassador Place, Suite 200
Portland, OR 97220-1384
Sent Via Fax: (503) 326-6831

RE: State of California's Draft Regulations to Create Marine Reserves and MPAs in State waters of the Channel Islands National Marine Sanctuary

Dear Dr. McIsaac,

The Ocean Conservancy, Environmental Defense, and the Natural Resources Defense Council, on behalf of our combined membership of over 900,000 concerned citizens, are writing to comment on California's draft regulations and related California Environmental Quality Act (CEQA) document to create marine reserves in state waters of the Channel Islands National Marine Sanctuary. Our organizations participated, over the past 3 years, in the joint state-federal Marine Reserves Working Group (MRWG) process that resulted in the Preferred Alternative. We recommend that you support the state's Preferred Alternative because it is the alternative that will best protect biodiversity and help sustain fisheries while minimizing short-term socioeconomic impacts to fishermen and other users.

The Marine Reserves Working Group (MRWG) was comprised of commercial and sport fishermen, environmentalists, local government, public, and other constituency groups. This group met over 20 times to try to come to consensus on a plan. While we were unable to do so, we did agree by consensus to goals and objectives and a problem statement. The Socioeconomic and Science Panels provided support for the MRWG. This process utilized an unprecedented level of biological, economic, and ecological detail on the Channel Islands area. The Council's Scientific and Statistical Committee reviewed the MWRG Science Panel's methodology last year and concluded that "the SSC is generally supportive of their reserve size recommendation as it relates to the biodiversity and sustainable fisheries goals as defined in the specific context of CINMS." We concur.

The Channel Islands are a National Park, a National Marine Sanctuary, and a United Nations Biosphere Reserve, in recognition of and to protect the diverse fish and wildlife unique to this area. These designations provide statutory mandates to provide greater protection to the area than that of surrounding waters. California's proposal attempts to provide protections for a variety of underwater habitats for 119 species of fish, protected species, and plants (such as kelp, critical for healthy coastal fisheries). It attempts to meet all of these goals, the MRWG's Goals and Objectives, and the goals of the state's legal and policy mandates, such as the Marine Life Protection Act and Marine Managed Areas Improvement Act, among others.

The State's proposal also recognizes the importance of maintaining sustainable fisheries, and the reserves are designed as a network to help conserve, enhance and restore fisheries in the region. The MRWG's deliberations attempted to minimize impacts to fishermen by identifying areas that currently had less use, by attempting to share the burden on all fisheries more or less equally, and by proposing a plan that was less than the Science Panel's 30-50% recommendation – which the SSC 'generally supported' – in order to avoid "draconian" impacts to fishermen. The Preferred Alternative also re-opens a section of the current cowcod closure, an area that has historically been very important for the CPFV fleet, for bottomfish fishing (except for fishing for cowcod). It does so in exchange for a new reserve that scientists believe will provide protection for cowcod comparable to that in the area proposed to be re-opened.

Our organizations believe that the state's proposal is the minimum compromise necessary to achieve the project's goals. We strongly believe that the proposal, though not a panacea or a substitute for fishery management measures, will help achieve sustainable fisheries in state waters for the long term. The State's proposal affects a relatively small part of the range of Council-managed species, even as it provides great benefits for the goals and objectives it is intended to achieve. The proposal will provide important protections for state managed species and protected species. It will certainly have far less impact than difficult decisions the Council and NMFS currently face with respect to yelloweye, bocaccio, and other depleted groundfish stocks.

As the Council makes a recommendation on marine reserves in the Channel Islands, it must also make difficult choices on a whole suite of management issues for West Coast groundfish. We wish that such decisions did not have to be made, and we believe that steps like the state's proposal for marine reserves around the islands can help put a number of species of concern on the road to recovery more quickly than would otherwise occur, for the long-term benefit of sport and commercial fishermen and all of us. The severity of the current situation reinforces the need for precautionary approaches, like the State's proposal, that will provide insurance for

fisheries in state waters. Refusing to make unpopular decisions and to "delay the pain" will only make the pain worse for future generations of fishermen.

In light of the extensive public process and the biological, social, and economic information that supports this compromise, we urge the Council to demonstrate leadership and support California's Preferred Alternative for marine protected areas in state waters of the Channel Islands National Marine Sanctuary.

Thank you for consideration of our view. Please feel free to contact us if we can be of further assistance.

Sincerely,

Warner Chabot
The Ocean Conservancy

Karen Garrison
Natural Resources Defense Council

Dr. Rod Fujita
Environmental Defense

COMMERCIAL FISHERMEN of SANTA BARBARA INC.
6 HARBOR WAY, BOX 155
SANTA BARBARA, CALIFORNIA 93109

May 15, 2002

VADM Conrad C. Lautenbacher, Administrator
National Oceanic and Atmospheric Administration
HCHB Building, Room 5128
14th & Constitution Ave. NW
Washington, DC 20230-0001

Re: Management plan revision process for Channel Islands National Marine Sanctuary

Dear Admiral Lautenbacher:

Commercial Fishermen of Santa Barbara Inc (CFSB) has been representing the commercial fishing community in Santa Barbara since 1971. Our organization has a long history of being proactive on fishery management issues and protection of the resources we depend for our livelihoods. We supported the creation of the Channel Islands National Marine Sanctuary (CINMS) in 1982 with the understanding that the CINMS would protect our resources, fisheries and water quality from oil drilling and mineral extraction. Our organization also supported the creation of a Sanctuary Advisory Council and a community process to establish marine reserves in the CINMS.

For myself I was born and raised in Santa Barbara, my parents were avid recreational boaters so I was fortunate to spend a lot of time on the ocean and the Channel Islands while growing up and have been making a living fishing the Channel Islands and Salmon in Alaska since the age of 18. I have been representing our local port association for the last five years and I am the current fishing representative for the Channel Island Sanctuary Advisory Committee and the alternate fishing seat in a recently failed Marine Reserves Working Group (MRWG) process to consider marine reserves for the Channel Islands.

We are writing you to express our concerns and major problems the fishing community is currently having with the Sanctuary program. In the recent past we had a very good working relationship with the CINMS and supported the CINMS in 1999 to be neutral conveners in a community process to develop marine reserves for the Channel Islands. However mid way through this process the Presidential Executive Order for marine protected areas was given and a new Sanctuary manager came on board. The Sanctuary declared themselves as stakeholders in the community MRWG process by way of the Executive Order. The MRWG process failed to reach consensus for reserve alternatives, so the agencies (California Department of Fish and Game and CINMS) developed a preferred alternative and a range of reserve alternatives for consideration. The agencies failed to produce any acceptable alternatives for the fishing community.

In the midst of the reserve process the CINMS began working on its management plan revision and boundary expansion. We expressed our concerns that three ongoing processes's, reserves, boundary expansion and management plan revision were too much for the fishing community to deal with at once. Our concerns were brushed aside, in February 2001 Dan Basta made a visit to area and met personally with Advisory Council Members with the exception of the fishing representatives. It appears the Sanctuary program would have happily continued to move forward despite the fishing community concerns had it not been for a change of administration.

The CINMS is ready begin work again with its management plan again, the fishing community is ready to participate, however we no longer have trust or relationship we had only a few years ago and we have questions and concerns that we would like addressed by NOAA before we move forward with the CINMS management plan.

We would like clarification regarding the Sanctuary's role as a stakeholder in our community. Our fishing community had a good working relationship with the CINMS as a neutral convener and coordinator for stakeholders and agencies; this was an effective role for the Sanctuary to help the local community. Since declaring themselves stakeholders CINMS has essentially acted as an extension for the National Environmental NGO's rather than achieve balanced solutions that would benefit both the fishing and environmental community.

We would also like clarification from NOAA regarding the Sanctuary's role regarding resource management. Our understanding of the Sanctuaries Designation Document is the Sanctuary is not to be involved with fisheries management issues. The Sanctuary has taken a position in the past on the squid fishery without consulting the Sanctuary Advisory Council or the SAC fishing representative. We have requested that Sanctuary staff as a courtesy consult with the SAC fishing representative when commenting on fishing issues; however this request has so far been ignored as the Sanctuary commented on the preparation of the Market Squid Management Plan in February 2002 with out consulting the fishing community. It is crucial that the fishing community have a clear understanding of the Sanctuaries role regarding resource management.

We believe clear policies on the above issues will allow the fishing community to work successfully with the Sanctuary Program and NOAA in the future. We would like to thank you for your attention to these issues and we welcome the opportunity to discuss these or any resource issues in the future.

Sincerely,

Harry Liquornik
President
Commercial Fishermen of Santa Barbara Inc.

cc: Dan Basta, Director, NOAA National Marine Sanctuary Program
Dr. William T Hogarth, NOAA National Marine Fisheries
Margaret A Davidson, NOAA National Ocean Service
Dr. Donald O Mc Isaac, Pacific Fishery Management Council
Angela Corridore, U.S. Commission on Ocean Policy

RECEIVED
MAY 7 2002
PFMC

NRDC
THE EARTH'S BEST DEFENSE

e
ENVIRONMENTAL DEFENSE
finding the ways that work

The Ocean Conservancy

May 3, 2002

Mr. Robert Treanor, Executive Director
California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Re: Channel Islands marine reserves schedule and PFMC

Dear Mr. Treanor and Members of the Commission;

We understand that the Pacific Fishery Management Council (Council) has asked for additional time to complete its review of the state's marine reserves proposal for the Channel Islands. The Natural Resources Defense Council, Environmental Defense and The Ocean Conservancy, representing about a million members, urge you to hold to your planned August 2nd decision date for that proposal. We do so in view of several considerations: that the proposal before the Commission involves only state waters not under the Council's purview, that the Council has been informed and consulted at every step in the process and has sufficient time to comment, and that all agencies should be held to the same timeline for reviewing the proposal.

To put in context whether a delay is warranted, it's useful to note the findings of the Council's Scientific and Statistical Committee (SSC) when it considered last month what review process the Council should adopt. The SSC rightly acknowledged that "it is the state's prerogative to make decisions about marine reserves in state waters," and that the California Environmental Quality Act (CEQA) document might not be fully reviewed in the Council process. It further observed that full Council review of the National Environmental Policy Act (NEPA) analysis of the effects of reserves in federal waters *would* be appropriate once the federal portion of the Channel Islands proposal moves forward. We concur. The SSC then supported California's proposal to the Council for a process that could have produced final Council comments at its June meeting, in time for the scheduled decision in August. The Council itself, however, does not appear to have taken account of the difference in its authority over the state vs. the federal portion of the reserves proposal. If it had, we believe there would be little problem completing a review in the time period provided.

As the federal portion of the marine reserves proposal moves forward over the next year, the Council will have the opportunity, consistent with provisions of the National Marine Sanctuaries Act, to draft fishery regulations in *federal* waters of the Channel Islands Sanctuary for species

under federal fishery management plans.. The Council will also have many months to review that portion of the proposal and the NEPA documents that accompany it, using standards that are clearly specified in the Sanctuary Act.

The Sanctuary and DFG first started a dialogue on this issue with Council staff in April 1999. Council staff noted that a National Marine Fisheries Service representative, Mark Helvey, was involved with the Channel Islands marine reserve process and the Council's Ad Hoc Marine Reserves Committee and could serve as a liaison to the Council. The Sanctuary consulted NMFS' Southwest office at the same time. Sanctuary staff have attended and briefed the Council and appropriate committees at *every meeting since September 2000*. The Council and its committees have received, reviewed and commented on a good portion of the materials and products developed during the Channel Islands reserves process.

In particular, the Council's SSC conducted a detailed review of the scientific basis for the marine reserve size recommendations made by the Channel Islands Science Advisory Panel. The SSC review concluded with general support for the Panel's advice, endorsed the use of marine reserves as a fishery management tool, and acknowledged their value as a potentially useful way to protect essential fish habitat and meet other Magnuson-Stevens Act requirements. The Commission, in turn, invited SSC members to make a presentation on its findings at a public Commission meeting, to ensure those results had a full hearing. In short, the state has made a serious effort to provide opportunities for review as the Channel Islands process developed. We're concerned that the Council has not made a similarly serious effort to respond to California's request for comments in time for the August meeting.

Evidence for this concern comes from the Council's conduct at its meeting last month. There, the Council's California delegate advised the Council that its June meeting would be the last opportunity to put together comments on the state's Channel Islands process in time for the Commission's August decision. California requested that the Council form an ad hoc committee to review the proposal and report back before June. This step could have allowed the Council to finalize comments at its June meeting, yet the Council failed to act on California's request.

The Council has been aware of the schedule and has had access for months to all the decision documents except the CEQA analysis. If the CEQA documents are finished by May 15 as planned, it will have over two months to evaluate those documents should it wish to do so. While we support the state's decision to consult the Council, we expect the same degree of respect from the Council in response. Instead, the Council has requested that the Commission conform to *the Council's* desired schedule for a decision over which it has no authority. Given those facts and the regular briefings, numerous opportunities for review, extensive background materials, and presentations by participants that the Sanctuary and California Department of Fish and Game (DFG) have taken pains to provide over the past three years, we see no reason why the Council should not be able to provide comments in a timely fashion.

In conclusion, you have provided ample time for agencies and the public to comment on the state's proposed regulations. Indeed, you have given the Council unprecedented opportunity to review a state decision. We see no compelling reason to treat the Council differently from all

other state and federal agencies. The Commission has worked on this initiative for over three years, and has been extremely patient through extensive public comment. We ask you to act in August and, we hope, make the preferred alternative a reality.

Sincerely,

Karen Garrison, Co-Director
NRDC Oceans Program

Rod Fujita, Marine Ecologist
Environmental Defense

Warner Chabot, Vice President for Regional Operations
The Ocean Conservancy

Cc: The Honorable Lois Capps
Dr. Don McIsaac, Executive Director, PMCC
Matt Pickett, Manager, Channel Islands Marine Sanctuary
Mary Nichols, CA Resources Secretary
Robert Hight, Executive Director, CA DFG
Patty Wolf, DFG Marine Region Director

Exhibit F.1.d
Supplemental Public Comment 2
June 2002

J. Kevin McCeney
60 Amador Ave
Goleta Ca. 93117
USA
805-968 6035

June 10, 2002

Pacific Fisheries Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon
97220-1384

Dear Member's of the Council,

I am writing this letter concerning the CEQA document for the Channel Islands Marine Reserves. I have been a commercial fisherman for 19 years. My wife and I fish together. And commercial fishing is our sole source of income. Over the last decade we have focused our business towards harvesting lobsters and crabs using traps around the Channel Islands.

At this point I have not completely read the CEQA document. However I have spoken to member's of the department of fish and game and reviewed certain parts of the document. It appears that the document does not fully address the congestion that is going to occur when this plan is implemented.

Every time we lose a fishery, it puts more pressure on the fisheries that are left. The gillnet and abalone closures have already put more pressure on the lobster and crab fisheries. Now the department proposes shrinking the area we get to fish by 25%. This is going to push more traps into a smaller area. Catch per trap is going to decrease. Our productivity is going to be lower. In addition, we are going to have to burn more fuel transiting across closed areas.

In sec. 5.3.1 page 5-17 the document discusses congestion. It appears that the department is going to reduce allowable catch proportionate to the area closure. This reduced quota is going to reduce the total value of the fishery. And this will further reduce our gross income.

I believe that the economic loss is flawed because it ignores these two issues. Our total economic loss has been understated. The true economic loss should be calculated as follows:

Economic loss = Area loss (Departments calculated loss) + Qouta Loss + Productivity Loss

It also appears that the CEQA document does not address mitigation strategies for dealing with the congestion created by the proposed reserves. For instance, maybe a buy out plan or an area permit plan could help mitigate the congestion. Another method might be to permit lobster and crab fishing in some of the proposed reserves in order to lesson the economic impact.

In addition, I've been told that the economic impact of the proposed plan exceeds the allowable economic impact permitted by the Regulatory Flexibility Act. I believe that this issue should also be addressed.

Thank you for your consideration.

Sincerely,

J. Kevin McCeney

J. Kevin McCeney
60 Amador Ave
Goleta Ca. 93117
USA
805-968-6035

Exhibit F.1.d
Supplemental Public Comment 3
June 2002

June 07, 2002

Pacific Fisheries Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon
97220-1384

Dear Member's of the Council,

I am writing this letter concerning the CEQA document for the Channel Islands Marine Reserves. I have been a commercial fisherman for 19 years. My wife and I fish together. And commercial fishing is our sole source of income. Over the last decade we have focused our business towards harvesting lobsters and crabs using traps around the Channel Islands.

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In addition, I've been told that the economic impact of the proposed plan exceeds the allowable economic impact permitted by the Regulatory Flexibility Act. I believe that this issue should also be addressed.

Thank you for your consideration.

Sincerely,

J. Kevin McCeney

J. Kevin McCeney

Subject: Public Comment - Channel Islands National Marine Sanctuary
From: Lloyd Reeves <lloyd@fastkayak.com>
Date: Fri, 07 Jun 2002 06:54:50 -0700
To: jim.seger@noaa.gov

Return-Path: <lloyd@fastkayak.com>
Received: from relay-east.nems.noaa.gov ([205.156.4.216]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GXC9GZ00.N5U for <Jim.Seger@mercury.akctr.noaa.gov>; Fri, 7 Jun 2002 06:58:11 -0700
Received: from nems.noaa.gov (gummo-out.nems.noaa.gov [205.156.4.217]) by relay-east.nems.noaa.gov (Netscape Messaging Server 4.15) with ESMTP id GXC9GY00.17V for <jim.seger@noaa.gov>; Fri, 7 Jun 2002 09:58:10 -0400
Received: by nems.noaa.gov; id JAA00753; Fri, 7 Jun 2002 09:58:10 -0400 (EDT)
Received: from mx1.fix.net(64.4.129.13) by gummo.nems.noaa.gov via csmap (V4.1) id srcAAA_EayDb; Fri, 7 Jun 02 09:58:09 -0400
Received: from fastkayak.com (pm5-broad-26.snlo.dialup.fix.net [64.4.130.26]) by othello.fix.net (8.11.6/8.11.6) with ESMTP id g57Dw7Z31567 for <jim.seger@noaa.gov>; Fri, 7 Jun 2002 06:58:07 -0700
Message-ID: <3D00BB2A.21B051B8@fastkayak.com>
X-Mailer: Mozilla 4.61 (Macintosh; I; PPC)
X-Accept-Language: en
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii; x-mac-type="54455854"; x-mac-creator="4D4F5353"
Content-Transfer-Encoding: 7bit

Lloyd Reeves wrote:

> 6//7/02
>
> Public Comment - Channel Islands National Marine Sanctuary
>
> Dear Folks;
>
> This letter is to let you know that I support the Channel Islands National Marine Sanctuary. I feel that Marine Sanctuaries will do more
> in the way of enhancing fish stocks than any other management tool. For
> starters it effects every fisherman equally and best of all - unlike some management tools there are no discards! In fact I believe that Marine Sanctuaries are the answer to the current groundfish crisis. I
>
> believe that had we created Marine Sanctuaries every other 20 miles of
>
> coastline and out the full 200 miles instead of limited entry that we would be in a much more healthy place right now.
>
> Please continue your efforts in this direction.
>
> Sincerely,
>
> Lloyd Reeves - owner longline A permit # 0005
> 1155 2nd Street
> Los Osos, Ca. 93402

PACIFIC FISHERY MANAGEMENT COUNCIL

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

CHAIRMAN
Hans Radtke

EXECUTIVE DIRECTOR
Donald O. McIsaac

Telephone: 503-326-6352
Fax: 503-326-6831
www.pcouncil.org

April 29, 2002

Mr. Robert R. Treanor, Executive Director
California Fish and Game Commission
PO Box 944209
Sacramento, CA 94244-2090

Re: Marine Reserves in the Channel Islands National Marine Sanctuary Area

Dear Mr. Treanor:

Thank you for your January 3, 2002 reply to our November 29, 2001 letter and the Commission's interest in accommodating Council comment during your process for considering marine reserves for state waters of the Channel Islands National Marine Sanctuary (CINMS). We hope an informed Council perspective will be of value to the Commission, and it can be provided before the Commission makes a final decision on this matter.

The Council had hoped to receive the Commission's environmental assessment papers by its March Meeting. During the relatively closely timed March and April Council meetings, we would have anticipated full analysis and review by our 7 scientific and technical advisory bodies, practical and policy input from our 4 fishery advisory bodies, and public input from all those that participate in the Council process. Given the effort tracking the development of alternatives up to that point, the Council would have been in good position to offer informed comment or a specific recommendation to the Commission in time for your projected August 2, 2002 meeting decision date. However, we have yet to receive the documents.

In lieu of this anticipated process, the Council held extensive floor discussion at the April meeting on how to best review the state documents within the Council process once they are received. For example, a subcommittee approach was considered between the April and June Council meetings in an attempt to consolidate technical and policy review of alternatives in a short time frame with single-meeting consideration for final action. In the end, however, the Council returned to what it believes is the strength of the Council process, and what will likely be most meaningful to the Commission: full review and analysis by our established advisory bodies, open comment from the public on the results of these reviews, and comprehensive integration of such advice by Council members with Council fishery management plans (FMP), policies, procedures, and legal counsel.

The Council concluded that the preferred approach is a two meeting process that can be triggered to start with the June Council meeting if we receive the state documents by May 15. The materials would be provided to the Scientific and Statistical Committee (SSC) Marine Reserves Subcommittee for a meeting prior to the June Council meeting, and included in the briefing book for the other advisory bodies and the Council members. The full SSC would meet the day before the normal onset of the Council meeting, and provide its review to the Council

and its advisory bodies at the onset of the June Council meeting. The Council would consider all advice at the June Council meeting and provide direction to a small subcommittee of Council members to synthesize a policy recommendation for consideration at the September 9-13 Council meeting. At that time, advisory bodies and the public would provide final input on the subcommittee's recommendation, and the Council would take final action; we would forward the results to you soon thereafter.

This schedule will not provide final comments for your August Commission meeting, should your current planning still include that meeting as a final decision point. If the Commission does not delay their decision to a later meeting, the Council will try to provide whatever comments it can in the time allotted. However, the Council feels it will be most able to provide you with its best advice if it has until September to deliberate on this matter.

Regarding the adoption of regulations in federal waters to compliment the Commission's action in state waters, the Council will take that up as a separate action. We anticipate working with the CINMS in initiating the process for considering complimentary marine reserves in federal waters, both within the 3-6 miles areas of the Sanctuary boundaries and the 6-200 mile waters beyond. A premier consideration will be consistency with any state action taken in nearshore waters and existing offshore closures such as the large cowcod closure zone off southern California.

Thank you in advance for your consideration of the substance of this letter. The Council sees this issue as an important concern, and agrees with the viewpoint that the optimal solution for marine reserve considerations in the state and federal waters in this area will come from a process whereby all governmental perspectives are known before any party establishes regulations. Final action taken by the parties in the CINMS area will carry precedence in the Council consideration of marine protected areas in other areas being considered under the California Marine Life Protection Act, at least three other National Marine Sanctuaries in California, and initiatives by governmental bodies in other West Coast states.

Should you have any questions on this matter, please don't hesitate to contact me.

Sincerely,

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

DOM:kla

c: Dr. Matthew Cahn, CSU Northridge
Congresswoman Lois Capps
LT David Cleary, Chair, Enforcement Consultants
Dr. John Coon, Council Deputy Director
Council Members
Council Staff Officers
Mr. Steve Crooke, Co-Chair, Highly Migratory Species Plan Development Team
Mr. Brian Culver, Co-Chair, Groundfish Management Team
Mr. Robert Fletcher, Chair, Highly Migratory Species Advisory Subpanel
Dr. James Hastie, Co-Chair, Groundfish Management Team
Mr. Paul Heikkila, Chair, Habitat Committee
Dr. Kevin Hill, Chair, Coastal Pelagic Species Management Team
Mr. Tom Jagielo, Chair, Scientific and Statistical Committee
Scientific and Statistical Committee Marine Reserves Subcommittee
Mr. Rod Moore, Chair, Groundfish Advisory Subpanel
LCDR Matthew Pickett, CINMS
Mr. John Royal, Chair, Coastal Pelagic Species Advisory Subpanel
Dr. Dale Squires, Co-Chair, Highly Migratory Species Plan Development Team

Draft

Environmental Document

Marine Protected Areas in NOAA's Channel Islands National Marine Sanctuary

(Sections 27.82, 630, and 632 Title 14, California Code of Regulations)

Photo Courtesy William Dewey, 1989

April 2002
State of California
The Resources Agency
Department of Fish and Game

Cover: An aerial view looking west at the northern Channel Islands. In the foreground is Anacapa Island then moving west is Santa Cruz, Santa Rosa, and San Miguel Islands. These islands, along with Santa Barbara Island to the south, form the National Oceanic and Atmospheric Association's Channel Islands National Marine Sanctuary (Sanctuary). The Sanctuary encompasses 1,252 square nautical miles from the mean high tide line to six nautical miles offshore these islands. State waters within the Sanctuary encompass 592 square nautical miles from the mean high tide line to three nautical miles offshore. Photo by Bill Dewey.

Draft

2002 Environmental Document

Marine Protected Areas in the National Oceanic and Atmospheric Administration's Channel Islands National Marine Sanctuary

Sections 27.82, 630, and 632 Title 14, California Code of Regulations

by

John Ugoretz - California Department of Fish and Game
David Parker - California Department of Fish and Game

State Clearing House Number XXXXXXXXXX

April 2002

ACKNOWLEDGMENTS

The Department of Fish and Game would like to thank and acknowledge the many individuals without whose help this Document could not have been written. The technical assistance, data collection and input on the document from the staff of the Channel Islands National Marine Sanctuary, especially Dr. Satie Airame, Mr. Sean Hastings, and Mr. Michael Murray, was critical to the development of the draft document. The socioeconomic analysis performed by Dr. Vernon R. Leeworthy and Mr. Peter C. Wiley, as well as the entire Socioeconomic Panel, provided detailed data exceeding any previously available. The Marine Reserves Working Group Scientific Advisory Panel provided detailed analyses and input on both the process and this document. The work and dedication of the members of the Marine Reserves Working Group provided valuable detail on alternatives and concerns. We greatly appreciated the editorial review, and input on the CEQA requirements, seabirds and mammals of the Department's Ms. Reneé Hawkins, Ms. Deborah Johnston, Ms. Nora Rojek, and Ms. Marilyn Fluharty. Parts of the glossary were carefully compiled by Ms. Kristen Sortais.

Table of Contents
Draft Environmental Document
Marine Protected Areas
in NOAA's
Channel Islands National Marine Sanctuary

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Defined Terms

ABC - Acceptable Biological Catch
ASBS - Areas of Special Biological Significance
BLM - Bureau of Land Management
CAAQS - California Ambient Air Quality
CalCOFI - California Cooperative Oceanic and Fisheries Investigations
Cal EPA - California Environmental Protection Agency
CCC - California Coastal Commission (Coastal Commission)
CCR - California Code of Regulations
CDFG - California Department of Fish and Game (Department)
CEC - California Energy Resources, Conservation & Development Commission
CEQA - California Environmental Quality Act
CESA - California Endangered Species Act
CINMS - Channel Islands National Marine Sanctuary (Sanctuary)
CINP-KFMP - Channel Islands National Park Kelp Forest Monitoring Program
Coastal Conservancy - California State Coastal Conservancy
CORPS - Army Corps of Engineers
CPFV - Commercial Passenger Fishing Vessel
CPS - Coastal Pelagic Species
CSC - California Special Concern
CSU - California State University
CWA - Clean Water Act
CZCS - Coastal Zone Color Scanner
CZMA - Coastal Zone Management Act
DBW - California Department of Boating and Waterways
DED - Draft Environmental Document
DEIR - Draft Environmental Impact Report
DFG - California Department of Fish and Game (Department)
DOC - California Department of Conservation
DOC - Department of Commerce
DOGGR - Division of Oil, Gas, and Geothermal Resources
DPR - California Department of Parks and Recreation
DWR - California Department of Water Resources
ED - Environmental Document
EEZ - Exclusive Economic Zone
EFH - Essential Fish Habitat
EIR - Environmental Impact Report
EN - El Nino
ENSO - El Nino Southern Oscillation
EPA - Environmental Protection Agency
ESA - Endangered Species Act

FEAM - Fishery Economic Assessment Model
FED - Final Environmental Document
FGC - California Fish and Game Commission (Commission)
FMP - Fishery Management Plans
FWS - Fish and Wildlife Service
GIS - Geographic Information system
HAPC - Habitat Areas of Particular Concern
IATTC - Inter-American tropical Tuna Commission
INPFC - International North Pacific Fisheries Commission
ISOR - Initial Statement of Reasons for Regulatory Action
ITQ - Individual Transferable Quota
IWC - International Whaling Commission
LCP - Local Coastal Program
MBTA - Migratory Bird Treaty Act
MCA - Marine Conservation Area
MFCMA - Magnuson Fishery Conservation and Management Act
MLMA - Marine Life Management Act
MLPA - Marine Life Protection Act
MLPP - Marine Life Protection Program
MMA - Marine Managed Area
MMAP - Marine Mammal Authorization Program
MMPA - Marine Mammal Protection Act of 1972
MMS - Minerals Management Service
MNBMC - Migratory Nongame Bird of Management Concern
MOA - Memorandum of Agreement
MOU - Memorandum of Understanding
MPA - Marine Protected Area
MPRSA - Marine Protection Research and Sanctuaries Act of 1972
MRFSS - Marine Recreational Fisheries Statistics Survey
MRPA - Marine Resources Protection Act
MRWG - Marine Reserves Working Group
MSY - Maximum Sustainable Yield
NAAQS - National Ambient Air Quality Standards
NC - Non-Consumptive
ND - Negative Declaration
NEPA - National Environmental Policy Act
NFMP - Nearshore Fishery Management Plan
NISA - National Invasive Species Act
NMFS - National Marine Fisheries Service
NMSP - National Marine Sanctuary Program
NOAA - National Oceanic and Atmospheric Administration
NOP - Notice of Preparation

NOS - National Ocean Service
NPDES - National Pollutant Discharge Elimination System
NPS - National Park Service
NSP - Non Point Source Pollution
Ocean Plan - California Ocean Plan
OCS - Outer Continental Shelf
OPA - Oil Pollution Act of 1990
OSP - Optimum Sustainable Population
OSPR - Oil Spill Prevention and Response
Panel - Socioeconomic Panel
PBR - Potential Biological Removals
PFMC - Pacific Fishery Management Council (Council)
PSMFC - Pacific States Marine Fisheries Commission
RecFIN - Recreational Fisheries Information Network
ROC - Reactive Organic Compounds
ROV - Remote Operated Vehicle
RWQCB - Regional Water Quality Control Boards
SAC - Sanctuary Advisory Council
SAP - Science Advisory Panel
SCAB - South Coast Air Basin
SCAMIT - Southern California Association of Marine Invertebrate Taxonomists
SCB - Southern California Bight
SCBPP - Southern California Bight Pilot Project
SCCWRP - Southern California Coastal Water Research Project
SCUBA - Self Contained Underwater Breathing Apparatus
SIC - Standard Industry Category
SLC - California State Lands Commission
SMMA - Soufriere Marine Management Area
SMR - State Marine Reserves
SMCA - State Marine Conservation Area
SO - Southern Oscillation
SSC - Science and Statistical Committee
SST - Sea Surface Temperatures
State Tidelands - State Tidelands and Submerged Lands
SWRCB - State Water Resources Control Board
T & E - Threatened and Endangered
UCSB - University of California Santa Barbara
USCG - United States Coast Guard
USFWS - United States Fish and Wildlife Service
USGS - United States Geological Survey
USN - United States Navy
VAFB - Vandenberg Air Force Base

CONVERSION TABLE

Metric to U.S. Customary

Multiply	By	To Obtain
millimeters (mm)	0.03937	inches
centimeters (cm)	0.3937	inches
meters (m)	3.281	feet
kilometers (km)	0.6214	miles
square meters (m^2)	10.76	square feet
square kilameters (km^2)	0.3861	square miles
hectares (ha)	2.471	acres
liters (l)	0.2642	gallons
cubic meters (m^3)	35.31	cubic feet
cubic meters	0.0008110	acre-feet
milligrams (mg)	0.00003527	ounces
grams (g)	0.03527	ounces
kilograms (kg)	2.205	pounds
metric tons (t)	2205.0	pounds
metric tons	1.102	short tons
kilocalories (kcal)	3.968	BTU
Celsius degrees	1.8(°C) + 32	Fahrenheit degrees

U.S. Customary to Metric

Multiply	By	To Obtain
inches	25.40	millimeters
inches	2.54	centimeters
feet (ft)	0.3048	meters
fathoms	1.829	meters
miles (mi)	1.609	kilometers
nautical miles (nmi)	1.852	kilometers
square feet (ft^2)	0.0929	square meters
acres	0.4047	hectares
square miles (mi^2)	2.590	square kilometers
gallons (gal)	3.785	liters
cubic feet (ft^3)	0.02831	cubic meters
acre-feet	1233.0	cubic meters
ounces (oz)	28.35	grams
pounds (lb)	0.4536	kilograms
short tons (ton)	0.9072	metric tons
British thermal units (BTU)	0.2520	kilocalories
Fahrenheit degrees	0.5556(°F - 32)	Celsius degrees

EXECUTIVE SUMMARY

Summary of Proposed Project

Existing law (Sections 200, 205(c),1590, and 2860, Fish and Game Code and Section 36725(a), Public Resources Code, Appendix 1) provides the Commission with authority to establish Marine Protected Areas which regulate take for commercial and recreational purposes.

Under the authority of Sections 200, 205(c) and 1580, Fish and Game Code, the Commission has established and changed areas or territorial limits for taking and has designated named, discrete geographic areas of ocean waters with restricted fishing. These areas are defined as Marine Protected Areas in section 2852(c), Fish and Game Code.

The Department is recommending that the Commission adopt regulations that will establish a network of Marine Protected Areas (MPAs) in State waters within the boundaries of the National Oceanic and Atmospheric Administration's (NOAA) Channel Islands National Marine Sanctuary (Sanctuary). These regulations will help provide for ecosystem biodiversity and sustainable fisheries in the project area. Specifically, the Department is recommending the Commission establish new regulations (Section 632 Title 14, CCR, Appendix 2) regarding MPAs, amend existing regulations (Section 27.82(a) Title 14, CCR, Appendix 2) regarding the boundaries of the Cowcod Conservation Area, repeal existing regulations (Sections 630(b)(5), 630(b)(101), and 630(b)(102) Title 14, CCR, Appendix 2) regarding ecological reserves as modified by the Department and interested parties intended to address particular resource problems or issues.

These recommendations establish a network of MPAs within the National Oceanic and Atmospheric Administration's Channel Islands National Marine Sanctuary. The Sanctuary encompasses 1,252 square nautical miles from the mean high tide line to 6 nautical miles offshore the northern Channel Islands (Anacapa, Santa Cruz, Santa Rosa and San Miguel Islands) and Santa Barbara Island. For the purposes of comparative size analysis, the project area was considered to be an area encompassing 1500 square miles (1133 square nautical miles) which could be easily described in a Geographic Information System database. The Fish and Game Commission has authority to establish MPAs within State waters. State waters within the project area encompass 592 square nautical miles from the mean high tide line to three nautical miles offshore. The State waters phase, proposed here, consists of a network of ten State Marine Reserves and two State Marine Conservation Areas encompassing approximately 114 square nautical miles, 19 percent, of State waters within the Sanctuary. A second Federal phase, which would occur after the State phase, recommends expanding the network into Federal waters. Both phases together would establish eleven State Marine Reserves, and two State Marine Conservation

Areas comprising approximately 279 square nautical miles, 25 percent, of the project area.

Effects on the Environment

The proposed project would have a net positive effect on the environment because it would eliminate consumptive uses of marine resources within the proposed project's boundaries. The proposed project, however, would affect recreational user groups, including sport anglers, and commercial harvesters because it would reduce the area within which they would be able to conduct their respective activities.

Alternatives

In addition to the proposed project, the Department is providing the Commission with 5 alternatives which would attain some of the basic objectives of the project, an alternative to defer decision to the Marine Life Protection Act process, and a no-action alternative. The alternatives are described in Chapter 3 and reviewed and evaluated in Chapter 6.

Alternative 1 establishes a smaller network of MPAs than the proposed project to limit immediate impacts to consumptive users. The State waters phase, proposed here, includes nine State Marine Reserves, encompassing approximately 12 percent of State waters within the project area. The full State and Federal waters recommendation includes nine State Marine Reserves encompassing approximately 12 percent of the Sanctuary. While this alternative would achieve some of the project objectives, the ecological gains would not be as great as the proposed project and certain critical areas are not protected. In addition, certain boundaries would be confusing and difficult to enforce, decreasing the effectiveness of this network. The Department would prefer to establish a network that has greater potential for long-term sustainability.

Alternative 2 establishes another smaller network of MPAs than the proposed project to limit immediate impacts to consumptive users. It also uses more limited take State Marine Conservation Areas to provide some protection to key species while still allowing take of others. The State waters phase, proposed here, includes eight State Marine Reserves and three Sate Marine Conservation Areas, encompassing approximately 12 percent of State waters within the project area. The full State and Federal waters recommendation includes eight State Marine Reserves encompassing approximately 14 percent of the Sanctuary and three State Marine Conservation Areas encompassing approximately 4 percent of the Sanctuary. While this alternative would achieve some of the project objectives, the ecological gains would not be as great as the proposed project. In addition, certain boundaries would be confusing and difficult to enforce, decreasing the effectiveness of this network. The Department would prefer to establish a network that has greater potential for long-term protection and sustainability.

Alternative 3 establishes another smaller network of MPAs than the proposed project to limit immediate impacts to consumptive users. The State waters phase, proposed here, includes eight State Marine Reserves, encompassing approximately 15 percent of State waters within the project area. The full State and Federal waters recommendation includes eight State Marine Reserves encompassing approximately 21 percent of the Sanctuary. While this alternative would achieve some of the project objectives, the ecological gains would not be as great as the proposed project and certain critical habitats and regions would not be represented. The Department would prefer to establish a network, that has greater potential for long-term protection and sustainability.

Alternative 4 establishes a larger network of MPAs than the proposed project to increase the overall protection of various habitats. The State waters phase, proposed here, includes ten State Marine Reserves, encompassing approximately 20 percent of State waters within the project area. The full State and Federal waters recommendation includes ten State Marine Reserves encompassing approximately 29 percent of the Sanctuary. While this alternative would achieve some of the project objectives, the immediate economic impacts to consumptive users would be significantly greater than the proposed project. In addition, certain boundaries would be confusing and difficult to enforce, decreasing the effectiveness of this network. The Department would prefer to establish a network that has lower economic impacts and uses other types of management measures to complete the overall regulatory framework.

Alternative 5 establishes another larger network of MPAs than the proposed project to increase the overall protection of various habitats. The State waters phase, proposed here, includes ten State Marine Reserves, encompassing approximately 23 percent of State waters within the project area. The full State and Federal waters recommendation includes eleven State Marine Reserves encompassing approximately 34 percent of the Sanctuary. While the alternative would achieve some of the project objectives, the immediate economic impacts to consumptive users would be significantly greater than the proposed project. The Department would prefer to establish a smaller network, that has lower economic impacts, and uses other types of management measures to complete the overall regulatory framework.

The alternative to defer decision would use the Marine Life Protection Act public process and master plan to evaluate and recommend MPAs at the Channel Islands. This alternative does not adequately recognize the exhaustive, intensive and comprehensive community, scientific, and economic data rich process that has already occurred in the project area (Appendix 3). The Department feels that deferring a decision would not change the proposed project and there is a potential to underestimate local economic and environmental impacts by combining them with those of the entire State. It is not possible to examine the potential environmental impacts of this alternative, as the decisions for the Marine Life Protection Act are still forthcoming. Rather a timely decision will provide needed insight and experience in the

implementation of reserves before the MLPA suggests MPAs for the entire State. Furthermore, biological and economic monitoring will contribute more information to the biological and fishery effects of reserves thus helping to refine future MPA decisions like the MLPA.

The no-action alternative would continue existing MPAs with no modifications. This alternative does not provide additional protection and does not meet the project objectives.

An analysis of the proposed project's potential impacts is set forth in Chapter 4. The Department has determined, based on this analysis, that the proposed project will not adversely affect the marine resources of the State. Table E-1 summarizes Department findings on impacts associated with the proposed project and the project alternatives.

Table E-1. Summary of impacts expected by the proposed project and each alternative.

Alternative	Impact	Nature of Impact	Mitigation Available	Nature of Mitigation
Proposed project: 19 % State waters 25 % Sanctuary	Biological	Positive impact on habitats and populations both within and outside MPAs	N/A	N/A
No Action	No	None	N/A	N/A
Alternative 1: 12 % State waters 12 % Sanctuary	Biological	Positive impact on species within MPAs	N/A	N/A
Alternative 2: 12 % State waters 14 % Sanctuary	Biological	Positive impact on species within MPAs	N/A	N/A
Alternative 3: 15 % State waters 21 % Sanctuary	Biological	Positive impact on some habitats as well as species within MPAs	N/A	N/A
Alternative 4: 20 % State waters 29 % Sanctuary	Biological	Positive impact on habitats and populations both within and outside MPAs	N/A	N/A
Alternative 5: 23 % State waters 34 % Sanctuary	Biological	Positive impact on habitats and populations both within and outside MPAs	N/A	N/A
Defer Decision	No	None	N/A	N/A

N/A - Not applicable

Chapter 1. SUMMARY

1.1 Introduction

The waters surrounding California's Channel Islands represent a unique and diverse assemblage of habitats and species. In the area between Santa Barbara Island in the south and San Miguel Island in the northwest two oceanic provinces, the colder Oregonian province in the north and the warmer Californian province in the south, converge and mix. Each province is defined by oceanic conditions and species assemblages which in turn are parts of distinct biogeographic regions. The mixing of these two provinces in the vicinity of the Channel Islands creates a transition zone within the island chain. In addition, upwelling and ocean currents in the area support a variety of species in a nutrient rich environment.

This rich oceanic and island ecosystem is recognized nationally and internationally and afforded protection at all levels of government. Additionally, many species are important to both commercial and recreational user groups and effect local, State and international economies. In order to insure long-term protection and to provide for sustainable use of this ecosystem and the associated species and habitats the proposed project establishes a network of Marine Protected Areas where commercial and recreational take is prohibited or limited. This document describes the proposed project and alternatives as well as their potential effects on the environment. The project area focuses on State waters within the National Oceanic and Atmospheric Administration's (NOAA) Channel Islands National Marine Sanctuary (Sanctuary).

1.2 Location and General Characteristics of the Project Area

The proposed project will affect the area within NOAA's Channel Islands National Marine Sanctuary. The Sanctuary encompasses 1,252 square nautical miles from the mean high tide line to 6 nautical miles offshore the northern Channel Islands (Anacapa, Santa Cruz, Santa Rosa and San Miguel Islands) and Santa Barbara Island. For the purposes of comparative size analysis, the project area was considered to be an area encompassing 1500 square miles (1133 square nautical miles) which could be easily described in a Geographic Information System database. State waters within the Sanctuary encompass 592 square nautical miles from the mean high tide line to three nautical miles offshore. The four northern islands parallel the east west trend of the coast and their closest points to the mainland coast vary between 13 and 25 miles offshore. Santa Barbara Island lies about 40 miles south of Point Mugu, California (Figure 1-1).

The Sanctuary and project area are a subset of the larger ecosystem of the Southern California Bight, an area bounded by Point Conception in the north and Punta Banda, Mexico in the south (Daily et al. 1993; Reisch et al. 1993). Point Conception is the

southern-most major upwelling center on the west coast of the United States, and marks a transition zone between cool surface waters to the north and warm waters to the south. The oceanic currents and upwelling effects, with their varying water temperatures, create at least three broad climatic/habitat zones in the Santa Barbara Channel and surrounding region (Figure 1-1). The proposed project is intended to address concerns within this unique region brought forward during public processes.

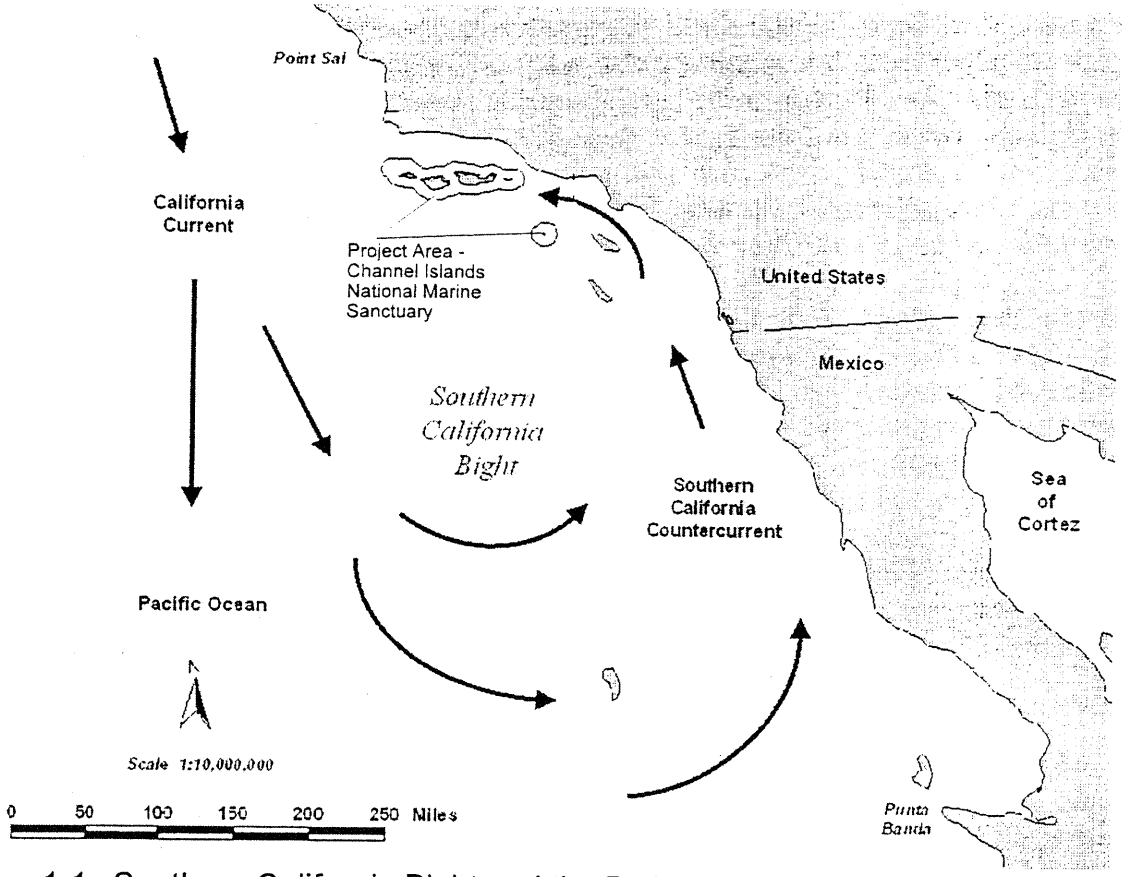

Figure 1-1. Southern California Bight and the Project Area.

San Miguel Island and parts of Santa Rosa Island are bathed by the cooler waters of the California current and are within the cool Oregonian biogeographic province. The warm waters of the California Countercurrent dominate the Santa Barbara Channel and Anacapa Island. These areas belong to the Californian biogeographic province. Santa Barbara Island, Eastern Santa Rosa Island, and Santa Cruz Island occupy a transition zone between the cold and warm water provinces, and are generally considered a third biogeographic region.

1.3 Project Objectives

In 1998, the California Fish and Game Commission received a recommendation to create marine reserves, or no-take zones, around the northern Channel Islands. This recommendation suggested closing 20 percent of the shoreline outward to 1 nautical mile to all fishing. The recommendation led to more than one year of public discussion of the issue in the Commission forum. In response to the proposal and the need for an open constituent based process, the Channel Islands National Marine Sanctuary (Sanctuary) and the California Department of Fish and Game (Department) developed a joint Federal and State partnership to consider the establishment of marine reserves in the Sanctuary. The Commission endorsed this process at their March 4, 1999 meeting.

The Channel Islands National Marine Sanctuary Advisory Council (SAC), an advisory body to the Sanctuary Manager, created a stakeholder based community group called the Marine Reserves Working Group (MRWG) in July, 1999 (Appendix 3). This constituent panel was comprised of 17 members representing State and Federal agencies, conservation interests, consumptive recreational and commercial groups, the public at large, and the California Sea Grant program. The MRWG met 24 times between July 1999 and June 2001 to discuss issues surrounding the potential establishment of new MPAs and try to come to consensus on a recommendation on marine reserves at the Channel Islands.

While the MRWG did not reach consensus on a specific recommendation for the spatial placement of Marine Protected Areas, they did agree on a Mission Statement, Problem Statement, goals and objectives. The proposed project was created as a response to the consensus based Problem Statement:

> The urbanization of southern California has significantly increased the number of people visiting the coastal zone and using its resources. This has increased human demands on the ocean, including commercial and recreational fishing, as well as wildlife viewing and other activities. A burgeoning coastal population has also greatly increased the use of our coastal waters as receiving areas for human, industrial, and agricultural wastes. In addition, new technologies have increased the efficiency, effectiveness, and yield of sport and commercial fisheries. Concurrently there have been wide scale natural phenomena such as El Niño weather patterns, oceanographic regime shifts, and dramatic fluctuations in pinniped populations.
>
> In recognizing the scarcity of many marine organisms relative to past abundance, any of the above factors could play a role. Everyone concerned desires to better understand the effects of the individual factors and their interactions, to reverse or stop trends of resource

decline, and to restore the integrity and resilience of impaired ecosystems.

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

The proposed project also attempts to address the MRWG's consensus based goals and objectives, which were developed in response to the Problem Statement. The MRWG's goals stated the following:

Ecosystem Biodiversity Goal: To protect representative and unique marine habitats, ecological processes, and populations of interest.

Socio-Economic Goal: To maintain long-term socioeconomic viability while minimizing short-term socioeconomic losses to all users and dependent parties.

Sustainable Fisheries Goal: To achieve sustainable fisheries by integrating marine reserves into fisheries management.

Natural and Cultural Heritage Goal: To maintain areas for visitor, spiritual, and recreational opportunities which include cultural and ecological features and their associated values.

Education Goal: To foster stewardship of the marine environment by providing educational opportunities to increase awareness and encourage responsible use of resources.

Subsequent to the formation of the MRWG, the State Legislature passed the Marine Life Protection Act (Chap. 1015, Stats. 1999) (MLPA). Language and intent in both the MLPA and the Marine Life Management Act (Chap. 1052, Stats. 1998) (MLMA) support the concept of ecosystem management. The MLPA requires that the Commission adopt a Marine Life Protection Program that in part contains an improved marine reserve component [Fish and Game Code Section 2853 (c)(1)] and protects the natural diversity of marine life and the structure, function, and integrity of marine ecosystems [Fish and Game Code Section 2853 (b)(1)]. The MLMA specifically states that long term resource health shall not be sacrificed for short term benefits, and that habitat

should be maintained, restored, and enhanced [Fish and Game Code Sections 7056 (a) and (b)]. This protection may help provide sustainable resources as well as enhance functioning ecosystems that provide benefits to both consumptive and non-consumptive user groups. The proposed project attempts to meet these objectives.

The proposed project is intended to meet the following goals described in the Marine Life Protection Act [Fish and Game Code Section 2853(b)]:

(1) To protect the natural diversity and abundance of marine life, and the structure, function, and integrity of marine ecosystems.
(2) To help sustain, conserve, and protect marine life populations, including those of economic value, and rebuild those that are depleted.
(3) To improve recreational, educational, and study opportunities provided by marine ecosystems that are subject to minimal human disturbance, and to manage these uses in a manner consistent with protecting biodiversity.
(4) To protect marine natural heritage, including protection of representative and unique marine life habitats in California waters for their intrinsic value.
(5) To ensure that California's MPAs have clearly defined objectives, effective management measures, and adequate enforcement, and are based on sound scientific guidelines.
(6) To ensure that the State's MPAs are designed and managed, to the extent possible, as a network.

In addition, California Coastal Act requires the protection of marine and biological resources (Public Resources Code Section 30230). Section 30230 provides that:

> Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

1.4 Marine Protected Areas

No-Take Marine Protected areas, or marine reserves, are important tools for marine conservation and fisheries management, with the potential to provide ecosystem protection, improved fisheries yields, expanded understanding of

marine environments, and improved non-consumptive opportunities. The degree to which a reserve will provide certain benefits or achieve specific goals will vary with the species, depending on life-history characteristics and various aspects of reserve design.

The number of documented successful examples of no-take marine reserves is increasing rapidly. There is now abundant evidence to show that within areas protected from fishing, rapid increases in abundance, size, biomass, and diversity of animals, occurs regardless of where in the world reserves are sited. Halpern (in press) reviewed 76 studies of reserves that were protected from at least one form of fishing. He derived aggregate measures of reserve performance, by combining responses of all the organisms studied for each of four variables: abundance, total biomass, average body size, and species diversity. Across all reserves, abundance (measured as density) approximately doubled. After reserves were established biomass, or the weight of all organisms combined, increased 2.5 times that in fished areas. Average body size of organisms protected in marine reserves increased by approximately 30 percent. The increase in size contributes to greater reproductive potential. For example, a large female red snapper may produce the same number of eggs as 212 fish that are 2/3 the size. In addition to changes in biomass, abundance, size, and reproductive potential, the number of species present per sample increased by 30 percent. These results are generally seen within 3 to 5 years of reserve establishment, though can take longer or be less significant in areas that did not have heavy fishing pressure prior to establishment.

Increasing reproductive output and recruitment of fished species

Many studies demonstrate that marine reserves promote a rapid increase in biomass of commercially important fish species within their boundaries (Roberts and Hawkins 2000). In most marine reserve areas, biomass will double after three to five years of protection, although some species, particularly those that have been exploited intensively, can increase in biomass by orders of magnitude. For any given area, increased biomass of a species should result in a greater reproductive output. For example, it has been estimated that the reproductive output of Nassau groupers (*Epinephelus striatus*) in a reserve in Exuma Cay in the Bahamas is 6 times greater than that in fishing grounds (Sluka et al. 1997). In Puget Sound off the north-west US coast, such differences are even greater. The reproductive output of lingcod (*Ophiodon elongatus*) in a reserve has been estimated at twenty times greater than it is in fished areas; the reproductive output of the copper rockfish (*Sebastes caurinus*) is 100 times greater in reserve than in fished areas (Palsson and Pacunski 1995).

Bohnsack modeled egg production by red snapper in the Gulf of Mexico within and without a 20 percent network of reserve areas (CINMS 2001). He estimated that if 20 percent of the fishing grounds were closed, egg production would rise by 1200 percent due to the increased contribution from more older, larger fish which can produce many times more eggs per individual than smaller younger fish.

When two large reserve areas were established in 1994 on Georges Bank, stocks of scallops rebounded within four years and recruitment to adjacent fishing areas also increased (Murawski et al. 2000). In July 1998, total and harvestable scallop biomasses were 9 and 14 times denser, respectively, in closed than in adjacent open areas. Satellite tracking shows that scallop fisheries are now concentrated near reserves, and total landings are at 150 percent of 1994 levels.

The rate of recruitment in new reserves depends on the size of source populations, how close they are to reserves, and the ability of recruits to disperse from them. If animals that disperse only short distances are to repopulate, then other reserves must be close to the source populations. This is particularly important for many species that require high population densities to reproduce successfully. If traditional management measures do not maintain critical densities, or critical densities do not exist within or nearby reserves, these species will recover slowly, or possibly not at all. For example, despite a long-term closure to fishing, conch (*Strombus gigas*) populations in the Florida Keys have not rebounded (Roberts and Hawkins 2000).

Many questions about the effects of marine reserves on reproductive output and recruitment still remain unanswered. Part of the problem is that there are too few protected areas available for study and little research has been directed at the question of reproductive output and recruitment. Contributing to the problem, recruitment is an extremely variable process. Recruitment may vary by orders of magnitude from year to year making it extremely difficult to prove that any increases measured in fishing grounds are a result of nearby reserves.

Spillover

No-take marine reserve areas can be used to reverse population declines, help rebuild seriously depleted animal populations, and protect species that cannot tolerate heavy fishing. Recent scientific evidence indicates that reserves are not only powerful tools for conservation, but they can provide much needed support for fisheries. As the number and biomass of individuals increase within reserves, many species will move out of reserves into fishing grounds, enhancing stocks in fished areas through spillover.

The distances over which spillover is significant depends on the mobility of the species involved. Numerous tagging studies of fish and crustaceans demonstrate that these species have the potential to disperse sufficiently long distances to move out of reserves. For example, in South Africa, recreational game fish, the galjoen (*Coracinus capensis*), were tagged inside the De Hoop reserve and tag recoveries were monitored. Of 11,022 fish tagged, 1008 were recovered, and of these, 828 where recovered within 5 km of where they were released. The remaining 180 (18 percent) were recovered at least 25 km from where they were released, and the maximum distance that any fish traveled was 1040 km (Attwood and Bennett 1994).

The Soufriere Marine Management Area (SMMA) was created in 1995 alone the coast of the Caribbean island of Saint Lucia. It encompasses 11 km of coast and includes a network of five marine reserves that constitute about 35 percent of the coral reef fishing grounds. Combined biomass of five commercially important fish families tripled in reserves in 3 years. Biomass doubled in adjacent fishing areas, despite concentration of fishing efforts outside reserves (Roberts et al. 2001). Mean total catch for fishermen with large traps increased by 46 percent per trip whereas mean catch for fishermen with small traps increased by 90 percent per trip (Roberts et al. 2001). The total fishing effort remained stable over the course of the investigation.

Tagging studies in and around the Merritt Island National Wildlife Refuge in Florida, documented movements of red drum (*Sciaenops ocellatus*), spotted seatrout (*Cynoscion nebulosus*), black drum (*Pogonias cromis*), striped mullet (*Mugil cephalus*), common snook (*Centropomus undecimalis*), and sheepshead (*Archosargus probatocephalus*) from unfished to fished areas (Johnson et al. 1999).

If animals are moving out of reserves, then densities should be higher in areas close to reserve boundaries than far away. Ratikin and Kramer (1996) found this type of evidence for spillover in Barbados. In experimental trap fishing, they found highest catches and catch per unit effort inside the Barbados Marine Reserve. However, outside the reserve catches increased approaching the boundary from both the north and the south. Russ and Alcala (1996) found a gradual increase in densities of fish outside Apo Island reserve in the Philippines, but very close to its boundary. This effect only became apparent after the reserve had been protected for 9 years, suggesting that this time was required for critical densities accumulated inside the reserve.

McClanahan and Kaunda-Arara (1996) found a 110 percent enhancement of catch per unit effort in fishing grounds close to the Mombasa Marine National

Park in Kenya. This may have been due to a combination of spillover from the reserve and recruitment enhancement.

In Sumilon Island, Alcala and Russ (1990) found that catch per unit effort and total catches decreased by half after reserve protection broke down, despite a larger area of fishing grounds becoming available. This suggests that the reserve may have supported the fishery through a combination of spillover and recruitment enhancement.

In 1994, areas around the Georges Bank (USA) were closed to dredge gear designed for sea scallops (*Placopecten magellanicus*) in order to reduce the amount of groundfish bycatch (particularly flounders). Between 1994 and 1998, scallop biomass increased 14-fold within the closed areas (Murawski et al. 2000). In July 1998, total and harvestable scallop biomasses were 9 and 14 times denser, respectively, in closed than in adjacent open areas. Satellite tracking now shows that scallop fisheries are now concentrated near reserves, and total landings are 150 percent of 1994 levels.

Single-species closures provide further evidence of spillover. Spiny lobster (*Panulirus argus*) are protected from fishing in their nursery ground in the Biscayne Bay Spiny Lobster Sanctuary. As they grow, the lobsters move to fishing grounds in the Florida Keys where they may be harvested by commercial trappers (Davis and Dodrill 1980). Closures for snow crab in Japan also led to higher catches nearby (Yamaski and Kuwahara 1990).

The most compelling evidence that spillover is significant can be found in changing patterns of fishing effort following reserve establishment. In places where there are well-respected reserves, "fishing the line" or fishing close to the reserve boundaries, becomes increasingly prevalent. There are growing numbers of examples of fishing the line in different places in the world. Recreational anglers were frequently observed fishing the edge of the Merritt Island National Wildlife Refuge in Florida (Johnson et al. 1999). Several world record fish were caught near the Merritt Island National Wildlife Refuge, including four red drum (*Sciaenops ocellatus*), one black drum (*Pogonias cromis*), and three spotted seatrout (*Cynoscion nebulosus*). Conch and lobster fishers in Belize preferentially fish close to the edge of the Hol Chan marine reserve (Polunin and Roberts 1993). In Spain, fishers report 50-85 percent higher catches close to the Tabarca marine reserve after 6 years of protection (Ramos-Espla and McNeill 1994). Fishing patterns show that spillover does happen and it does benefit local fishers.

While fishing the line may increase effort and density of vessels near reserves, population benefits still exist. This increased effort removes only the excess stock produced by the reserve. As long as the reserve is large enough to contain a standing stock of large breeding adults, they will continue

to reproduce. In practice, as noted above, the overall catch and catch per-unit-effort increases compared to pre-reserve levels.

Benefits and Costs of No-Take Marine Protected Areas

There are two perspectives on identifying the benefits and costs of marine reserves. The first focuses on the ecological/biological benefits and costs. Sanchirico (2000) has provided a simple summary of these benefits and costs (Figure 1-2). These are issues for which the Science Panel for the Marine Reserves of the CINMS has summarized the literature supporting the ecological/biological benefits and costs. A key distinction is the closed areas themselves versus the areas outside the closed areas, and the linkages between the areas. As Sanchirico and Wilen (2001) have shown, the ecological/biological benefits and costs are contingent on socioeconomic behavioral responses. So even though socioeconomic benefits and costs are dependent on the ecological/biological benefits and costs, the ecological/biological benefits and costs are predicated on socioeconomic behavioral responses. The determination of final outcomes is dependent upon both how the natural environment and humans respond to the protection strategy.

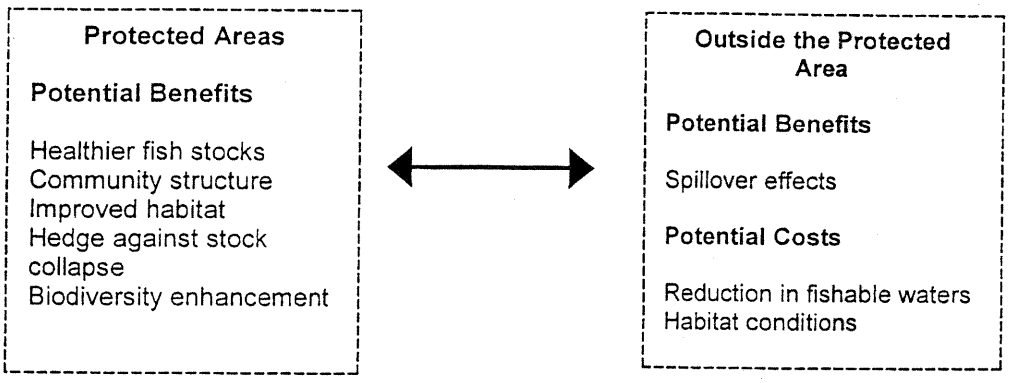

Figure 1-2. Potential Ecological/Biological Benefits and Costs of Marine Reserves. The boundaries of the two areas are drawn with dashed lines to symbolize the openness of the marine ecosystem. The link between the two areas is formally defined by the migration/dispersal patterns of fish stocks residing within and outside the protected areas along with the geographic or oceanographic characteristics of the marine environment. In general, fish migration patterns depend upon currents, temperatures, prevailing winds, and behavioral characteristics. The term "community structure" refers to the potential benefits in age/size structure of the fish stock and in trophic levels present in the protected area [From: Sanchirico (2000)].

The second perspective on benefits and costs of marine reserves is the socioeconomic benefits and costs. As stated above, they are both contingent on the ecological/biological benefits and costs and on socioeconomic behavioral responses. Below we list each potential benefit and cost along with each user group that would receive each benefit and/or cost and what

measurement we would use to quantify or describe qualitatively the benefit and/or cost.

Potential Benefits

Environmental Ethics

Increasingly, society values the quality of the environment and recognizes that animals, plants, and habitats have some right to protection from human disturbance (NRC 2001). These "biocentric values", valuing nature for its own sake, are important to many people's views on how humans and nature should interact. When polled regarding the "environment-versus-economy" balance, more than 50 percent of people chose environmental protection over economic benefits (NRC 2001). Biocentric values, and the trends towards a desire for environmental protection, suggest that MPAs may be supported based on environmental ethics alone.

In addition, people value certain places and spaces that form a "cultural landscape" which links the physical environment and human values (NRC 2001). The theory of cultural landscapes includes (1) places (called landmarks), (2) spaces between places, and (3) a relational pattern that integrates space and place (NRC 2001). Places may contain archaeological artifacts, like shipwrecks, or may be culturally significant natural places. Marine areas can have significant cultural value beyond their pure economic value. MPAs can protect areas that provide for a cultural landscape that is maintained throughout time.

Non-consumptive Users (sport divers and wildlife viewers)

Since marine reserves will continue to allow non-consumptive activities, these user groups are potential beneficiaries. Over time it would be expected that the closed areas will increase in resource quality and there also may be reduced conflicts with consumptive users. This will attract additional non-consumptive users, which will increase demand for services and have impacts on the local economies. In addition, the resource quality increase would be expected to increase the net user value (Consumer's Surplus) per unit of use (measured as person-days). Consumer's Surplus or net user value by non-consumptive users is also sometimes referred to as non-market economic use value. Below is a list of potential benefits to non-consumptive users:

- Increased sales and income to businesses directly providing goods and services to non-consumptive users.
- Secondary increases in sales/output, income, jobs and tax revenues in the local economies (through economic multiplier impacts).

- Increase in Consumer's Surplus or net economic user value (non-market economic use value).

Nonusers or Passive Users

Economists have long recognized a special class of non-market economic values for natural resources and the environment referred to generally as nonuse or passive use economic value. These values are widely accepted as legitimate values to include in benefit-cost analyses of environmental regulations and in damage assessment cases. The term passive use, instead of nonuse, has become more popular because it is recognized that for people to have value for something they must have some knowledge about what they are valuing. People learn about natural resources or the environment they are asked to value through books, newspapers, magazines, newsletters, radio, television and other media sources. The people don't actually visit the sites and directly use the resources protected themselves, they use them passively through the many indirect sources. The values have been referred to in the literature as option value, bequest value and existence value to clarify people's underlying motives for their willingness to pay.

For non-consumptive users and passive users, the conditions of the ecosystem are important for determining the benefits of marine reserves. Marine reserves are known to change the status of the habitats protected and often result in changes in community structure and increase biodiversity. Also, one of the main benefits is the possibility of protecting a different functioning ecosystem (i.e., a more natural system with minimum influence by man). These may be conditions for which these user groups would be willing to pay for.

Commercial Fishing and Kelp Harvesting

Commercial fishing and kelp harvesting are displaced activities from marine reserves and so these user groups would be expected to suffer losses and can therefore be placed under potential costs. However, if marine reserves result in benefits to surrounding unprotected sites, i.e., increases in biomass and aggregate harvests, the commercial fishing industry will be a beneficiary. The benefits of marine reserves are usually stated as long-term benefits given the time frames necessary for habitats and fish stocks to improve. Below is a list of expected long-term benefits to commercial fishing:

- Long-term increases in harvest revenue and income to fishermen.
- Long-term increases in secondary output/sales, income, jobs and tax revenues in local economies. (through economic multiplier impacts).

- Long-term increases in Consumer's Surplus to consumers of commercial fishing products (if prices to consumers decline with increased harvests).
- Long-term increases in Economic Rents* (may or may not exist in open access fisheries). *Economic Rent is a return on an investment over and above a normal rate of return on investment. A normal rate of return on investment is that rate of return in which incentives are such that capital will neither outflow or inflow into the industry.

Recreational Fishing and Consumptive Diving

Just as with commercial fishing, recreational fishing and consumptive diving are displaced activities from marine reserves, and so these user groups would also be expected to suffer losses and therefore can be placed under potential costs. However, if marine reserves result in benefits to surrounding unprotected sites, i.e., increases in biomass and aggregate harvests, the recreational fishermen and consumptive divers, and supporting industries will be beneficiaries. The basis for these benefits is the potential increase in quality of the experience including the number and size of catch and possibly reduced conflicts with other users. The benefits of marine reserves are usually stated as long-term benefits given the time frames necessary for fish stocks to improve. Below is a list of expected long-term benefits to recreational fishing and consumptive diving:

- Long-term increases in sales and income to businesses that directly provide goods and services to recreational fishermen and consumptive divers.
- Long-term increases in secondary output/sales, income, jobs and tax revenues in local economies (through economic multiplier impacts).
- Long-term increase in Consumer's Surplus.
- Long-term increases in Economic Rent (may or may not exist in open access fishery).

Scientific and Education Values

Marine reserves provide a multitude of scientific and educational values. Sobel (1996) provides a list of these benefits. Scientific and education values were categorized by Sobel into those things reserves provide that increase knowledge and understanding of marine systems. Sobel provided the following list of benefits:

Scientific

- Provides long-term monitoring sites
- Provides focus for study

- Provides continuity of knowledge in undisturbed sites
- Provides opportunity to restore or maintain natural behaviors
- Reduces risk to long-term experiments
- Provides controlled natural areas for assessing anthropogenic impacts, including fishing and other impacts

Education

- Provides sites for enhanced primary and adult education
- Provides sites for high-level graduate education

Potential Costs

Trophic Cascades

It has been suggested that MPAs may alter the trophic structure within and near marine protected areas. Salomon et al. (2002) modeled the trophic effects of a variety of different zoning policies for marine protected areas within the proposed Gwaii Haanas National Marine Conservation Area. They used an ECOSPACE model which is a spatially explicit, ecosystem modeling tool that illustrates biomass dynamics in two-dimensional space over a grid (Walters et al. 1999). The model was constructed with 22 ecosystem components, including marine mammals, seabirds, fishes, invertebrates, plankton and detritus. Each component was described in terms of biomass, diet composition, consumption per biomass, and production per biomass ratios based on published data. These numbers represent "best guesses" of the actual parameters. Physical and transport processes and temporal variation in biomass, production, and diet were not represented in the model.

The model predicted a gradient in density at the edges of marine reserves due to the effects of edge fishing depleting populations that live near the boundaries of marine reserves.

The modeling effort (Salomon et al. 2002) demonstrates that large marine reserves provide greater protection than smaller reserves surrounded by a limited-take buffer zone. This illustrates that buffer zones can effectively reduce the size of the core "no-take" zone and therefore reduce the protection afforded to low-dispersing species. The ecological cost of reducing the "no-take" area to establish a buffer zone is greater than the ecological benefits of a reduction in edge effect due to the buffer.

Three small MPAs, in which the total surface area protected was equivalent to the single large MPA, resulted in smaller biomass of low-dispersing species (Salomon et al. 2002). Large MPAs minimize the edge effects,

include more species and more populations, and can encompass species with larger dispersal patterns (Salomon et al. 2002).

Modeling limited take by aboriginal people in the core area reduced the ecological benefits of the MPA by causing a decline in lingcod, rockfish, shallow infauna and avian predators (Salomon et al. 2002). The ecological consequence of aboriginal fishing within the core "no-take" zone greatly reduces the benefits of the reserve for aboriginal and other fishermen.

Large-scale reduction in fishing pressure and establishment of a large MPA was the only policy that resulted in an increase in biomass of widely dispersing organisms such as pinnipeds, baleen and toothed whales, hake, pollock, and planktivorous fish (Salomon et al. 2002).

Salomon et al. (2002) cautioned that MPAs should not be judged as ineffective if high densities of organisms are not observed within their boundaries. The model suggests that trophic cascades are likely to occur in reserves as the biomass, abundance, and diversity of organisms increase (Salomon et al. 2002). An increase in top predators may result in the local depletion of particular prey species. However, an increase in predation on a competitive dominant species may cause a local increase in species diversity by reducing competition for resources or the grazing pressure of a herbivore.

Empirical studies suggest that trophic cascades may occur when areas are protected from fishing, particularly when top predators have been reduced in numbers (e.g. sea otters and California sheephead), allowing exceptional growth of prey populations (e.g. sea urchins). One consequence of reserve establishment may be to offset the exceptional growth of prey populations with increased numbers of top predators. In this circumstance, declines are expected and desired from the perspective of ecosystem management.

Although a few examples of trophic cascades in marine reserves have been documented in Kenya, Chile, and the Mediterranean (Castilla and Duran 1985; Duran and Castilla 1989; McClanahan and Muthiga 1988; McClanahan and Shafir 1990; Watson and Ormond 1994; McClanahan 1994, 1995, 1997; Sala et al. 1998a), evidence from over 80 marine reserves in temperate and tropical waters suggests that populations at all trophic levels of the food web benefit from protection in reserves (Halpern, in press). For carnivorous fishes, 66 percent of reserves had higher density, 84 percent of reserves had higher biomass, 83 percent of reserves had larger organisms, and 74 percent of reserves had higher diversity (Halpern, in press). If trophic cascades impacted communities in marine reserves, then one would expect an increase in carnivorous fishes, and a decrease in planktivorous fishes and invertebrates consumed by those predators. However, this effect is not demonstrated for over the majority of communities studied in existing marine

reserve areas. In contrast, planktivorous fish and invertebrate populations increase proportionally with populations of carnivorous fishes. For planktivorous fishes and those that consume invertebrates, 62 percent of reserves had higher density, 55 percent of reserves had higher biomass, 55 percent of reserves had higher diversity, and 89 percent of reserves had larger organisms (Halpern, in press). For herbivorous fishes, 53 percent of reserves had higher density and 63 percent of reserves had higher biomass (Halpern, in press). For invertebrates, 50 percent of the reserves had higher density and 83 percent of the reserves had larger organisms (Halpern, in press). The relative impact of reserves on all biological measures in each functional group was significantly positive. Thus, marine reserves are unlikely to perpetrate radical changes in trophic structure unless the system already is highly disturbed (with exaggerated growth of low to mid-trophic level species and severely reduced populations of mid-trophic level or top predators).

Commercial Fishing and Kelp Harvesting

As mentioned above, commercial fishing is one of the displaced activities from marine reserves. Sanchirico and Wilen (2001) discuss the ecological/biological and socioeconomic conditions under which commercial fisheries might benefit or suffer costs from marine reserves. There are sets of conditions under which they predict would result in short-term and/or long-term costs.

- Lost harvest revenue and income to fishermen.
- Secondary losses in output/sales, income, jobs and tax revenues in local economies (through economic multiplier process).
- No loss in harvest but increased cost of harvesting resulting in lost income to fishermen.
- Losses in Consumer's Surplus to consumers of commercial seafood products (if prices rise for fishery products due to reductions in harvests).
- Overcrowding, user conflicts, possible overfishing or habitat destruction in remaining open areas due to displacement. This could raise costs and/or lower harvests.
- Displacement may result in loss of harvest knowledge that may support sustainable fishing practices.
- Social disruptions from losses in incomes and jobs.

Whether any of the above costs are short-term or long-term depends greatly on the off-site impacts of the protected areas as listed in Figure 1-2, but also on the status of the fish stocks with fishery management regulations (are current harvest levels sustainable?), and the behavioral responses and economic conditions of the fishing industry. It is not always true that there will even be short-term losses (Leeworthy and Wiley 2001).

Recreational Fishing and Consumptive Diving

As mentioned above, recreational fishing and consumptive diving would be displaced from marine reserves. Sanchirico and Wilen (2001) discuss the ecological/biological and socioeconomic conditions under which these user groups might benefit or suffer costs from marine reserves. There are sets of conditions under which they predict would result in short-term and/or long-term costs.

- Lost sales revenue and income to businesses that directly provide goods and services to recreational fishermen and consumptive divers.
- Secondary losses in output/sales, income, jobs and tax revenues in local economies (through economic multiplier impacts).
- Losses in Consumer's Surplus (if consumptive users are forced to substitute to less valued locations or if they are crowded into remaining open areas where they experience congestion effects or if it costs more to relocate to other areas).
- Losses in Economic Rent (may or may not exist in open access environment).

As with commercial fisheries, whether any of the above costs are short-term or long-term depends greatly on the off-site impacts of the protected areas as listed in Figure 1-2, but also status of the fish stocks under fishery management regulations (are current harvest levels sustainable?), and on the behavioral responses and economic conditions of the consumptive recreational industry. It is not always true that there will even be short-term losses if there are adequate substitute sites.

Ports and Harbors

Those involved in managing ports and harbors have expressed concern with respect to the issue that if marine reserves in the Sanctuary result in decreases in business volume they may have a negative impact on ports and harbors. The concern goes beyond the impacts described above and is focused on the issue of how the Federal government (the U.S. Army Corps of Engineers and Congress) make decisions about funding for dredging to maintain ports and harbors. The economic impact estimates do provide some details on ports and harbors and can be used to assess these indirect effects. As with the above, there might be short-term gains and losses in business volume (gains to non-consumptive users and losses to consumptive users) and there might be long-term gains for all users. Thus, there is a possibility of both benefits and costs to ports and harbors.

1.5 Conclusion

The Department feels that a network of Marine Protected Areas in State waters in the Sanctuary will best help address the issues raised during the Channel Islands MRWG process. The proposed project is intended to respond to the MRWG Problem Statement and attempts to address the MRWG goals and objectives for MPAs. The proposed project also attempts to address the goals and requirements of the Marine Life Protection Act within the Channel Islands region.

The nature of Marine Protected Areas helps ensure that at least a portion of populations in the project area will be sustained over time. Because of Marine Protected Areas' protective nature and potential to enhance marine ecosystems along with changes to existing management in the area of the proposed project and recent and proposed changes to existing management measures in other concurrent projects (such as the Nearshore Fisheries Management Plan), the proposed project is not only expected to have no adverse impacts on the State's marine resources and ecosystems, but will ultimately result in positive net impacts.

The following chapters describe the proposed project and alternatives in detail. Chapter 2 contains background information on the Environmental Document and public process. Chapter 3 contains the description of the proposed project and each alternative. Chapter 4 describes the environmental settings of the project area. This includes descriptions of the physical environment, biological environment, and human environment. Chapter 5 describes the potential environmental impacts of the proposed project. Chapter 6 describes the potential environmental impacts of each alternative to the proposed project. Chapter 7 describes consultation undertaken with other agencies prior to and during development of the proposed project.

Chapter 2. THE ENVIRONMENTAL DOCUMENT

2.1 Proposed Project

For purposes of the California Environmental Quality Act (CEQA) and this Environmental Document (ED), the proposed project consists of the creation of a network of marine protected areas within the Channel Islands National Marine Sanctuary (Sanctuary). The network consists of ten State Marine Reserves (no take allowed) and two State Marine Conservation Areas (limited recreational and/or commercial take allowed). The total area protected within marine reserves in the proposed project is approximately 114 square nautical miles, or 19 percent of State waters within the Channel Islands National Marine Sanctuary. The cumulative area which includes a potential Federal waters phase is approximately 279 square nautical miles, or 25 percent of the Sanctuary. The specific proposal is detailed in Chapter 3.

The project proposes a network approach to meet goals established by the Marine Reserves Working Group, and attempts to address State policies and laws (Appendix 1). Detailed analyses of the types of habitats found in each reserve are provided in Chapter 5. The approach of using a network of marine protected areas allows for management of whole ecosystems, including a variety of representative habitats and the species that depend on them. This approach differs from species-specific management and moves towards a more ecosystem based comprehensive management strategy.

2.2 California Environmental Quality Act

This document is intended to fulfill the Commission's obligation to comply with CEQA Pub. Resources Code, Section 21000 et seq.) in considering and adopting regulations for marine protected areas in the project area. In general, public agencies in California must comply with CEQA whenever they propose to approve or carry out a discretionary project that may have a potentially significant adverse impact on the environment. Where approval of such a project may result in such an impact, CEQA generally requires the lead public agency to prepare an Environmental Impact Report (EIR). In contrast, where no potentially significant impacts could result with project approval, a lead agency may prepare what is commonly known as a negative declaration. Where an EIR is required, however, the document must identify all reasonably foreseeable, potentially significant, adverse environmental impacts that may result from approval of the proposed project, as well as potentially feasible mitigation measures and alternatives to reduce or avoid such impacts. Because the lead agency must also subject the EIR to public review and comment, and because the agency must respond in writing to any public comments raising significant environmental issues, compliance with CEQA serves to protect the environment and to foster informed public decision-making.

The Legislature enacted CEQA in 1970 to serve primarily as a means to require public agency decision makers to document and consider the environmental implications of their actions. In so doing, CEQA is premised on a number of Legislative findings and declarations, including a finding that it is "necessary to provide a high-quality environment that at all times is healthful and pleasing to the senses and intellect of man" (Public Resources Code Section 21000 subd. (b)). CEQA also codifies State policy to, among other things, "[p]revent the elimination of fish or wildlife species due to man's activities, insure that fish and wildlife populations do not drop below self perpetuating levels, and preserve for future generations representations of all plant and animal communities and examples of the major periods of California history." (Id., Section 21001, subd. c). A similar provision in the Fish and Game Code also declares: "It is hereby declared to be the policy of the State to encourage the conservation, maintenance, and utilization of the living resources of the ocean and other waters under the jurisdiction and influence of the State for the benefit of all the citizens of the State and to promote the development of local fisheries and distant-water fisheries based in California in harmony with international law respecting fishing and the conservation of the living resources of the oceans and other waters under the jurisdiction and influence of the State" (Fish and Game Code Section 1700).

CEQA applies to all "governmental agencies at all levels" in California, including "State agencies, boards, and commissions." (Pub. Resources Code, Section 21000, subd. (g), 21001, subds. (f), (g)). Public agencies, in turn, must comply with CEQA whenever they propose to approve or carry out a discretionary project that may have a significant effect on the environment. (See generally Id., Section 21080). For purposes of CEQA, a project includes "an activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment," that is, like the proposed project, "directly undertaken by any public agency." (Id., Section 21065, subd. a). Moreover, as mandated by the Legislature, "it is the policy of the State that projects to be carried out by public agencies be subject to the same level of review and consideration under [CEQA] as that of project projects required to be approved by public agencies." (Id., Section 21001.1).

CEQA also provides an alternative to preparation of an EIR or negative declaration in limited circumstances. Under CEQA, the Secretary of Resources is authorized to certify that a State regulatory program meeting certain environmental standards provides functionally equivalent environmental review to that required by CEQA (Pub. Resources Code, Section 21080.5; see also CEQA Guidelines, Section15250-15253; the "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000). As noted by the California Supreme Court, "[c]ertain State agencies, operating under their own regulatory programs, generate a plan or other environmental review document that serves as the functional equivalent of an EIR. Because the plan or document is generally narrower in scope than an EIR, environmental review can be completed more expeditiously. To qualify, the agency's regulatory program must be certified by the Secretary of the Resources Agency. An agency operating pursuant to a certified regulatory program must comply with all of

CEQA other requirements." [Mountain Lion Foundation v. Fish and Game Comm. (1997) 16 Cal.4th 105, 113-114 (internal citations omitted)].

The Commission's CEQA compliance with respect to the marine protected area regulations is governed by a regulatory program certified by the Secretary of Resources [CEQA Guidelines, Section 15251, subd. (b)]. The specific requirements of the program are set forth in Title 14 of the California Code of Regulations in the section governing the Commission's adoption of new or amended regulations, as recommended by the Department (Cal. Code Regs., tit. 14, Section 781.5). Pursuant to section 781.5, this Environmental Document (ED) contains and addresses the proposed marine protected areas and associated implementing regulations, reasonable alternatives to the proposed areas, and potentially feasible mitigation measures to avoid or minimize any significant adverse impacts associated with adoption and implementation of these marine protected areas [Id., Section 781.5, subd. (a)(1)-(3)]. In so doing, the ED portion of the present document is intended to serve as the functional equivalent of an EIR under CEQA. As noted above, however, preparation of the ED is not a "blanket exemption" from all of CEQA's requirements [Environmental Protection Information Center v. Johnson (1985) 170 Cal.App.3d 604, 616-618; see also Wildlife Alive v. Chickering (1976) 18 Cal.3d 190]. Instead, the Commission must adhere to and comply with the requirements of its certified program, as well as "those provisions of CEQA from which it has not been specifically exempted by the Legislature" [Sierra Club v. State Board of Forestry (1994) 7 Cal.4th 1215, 1228].

Unlike its "procedural" Federal counterpart, the National Environmental Policy Act (NEPA) (42 U.S.C. Section 4321 et seq.), CEQA contains a "substantive mandate" that public agencies refrain from approving projects with significant environmental effects if there are not feasible mitigation measures or alternatives that can substantially lessen or avoid those effects. (Mountain Lion Foundation, supra, 16 Cal.4th at p. 134; Pub. Resources Code, Section 21002). CEQA, as a result, "compels government first to identify the [significant] environmental effects of projects, and then to mitigate those adverse effects through the imposition of feasible mitigation measures or through the selection of feasible alternatives." (Sierra Club v. State Board of Forestry (1994) 7 Cal.4th 1215, 1233; see also Sierra Club v. Gilroy City Council (1990) 222 Cal.App.3d 30, 41).

Public agencies fulfill CEQA's mandate through required consultation with other interested public agencies and the public; preparation of EIRs, functional equivalent documents, or other appropriate CEQA analysis; subjecting their environmental analyses to public review and comment, and preparing responses to public comments concerning the environmental impacts associated with their proposed projects; and ultimately adopting findings detailing compliance with CEQA's substantive mandate. In this respect, the CEQA process "protects not only the environment but also informed self-government." (Citizens of Goleta Valley v. Board of Supervisors (1990) 52 Cal.3d 553, 564 (internal quotation marks deleted)). Indeed, as recently underscored by the California Supreme Court, compliance with these requirements, even in the context of a

certified regulatory program, "ensures that members of the [governmental decision making body] will fully consider the information necessary to render decisions that intelligently take into account the environmental consequences. Its also promotes the policy of citizen input underlying CEQA." (Mountain Lion Foundation, supra 16 Cal.4th at p. 133 (internal citations omitted)).

2.3 Functional Equivalent

CEQA requires all public agencies in the State to evaluate the environmental impacts of projects that they approve or carry out. If there are potentially significant environmental impacts, most agencies satisfy this requirement by preparing an Environmental Impact Report (EIR). If no potentially significant impacts exist, a Negative Declaration (ND) is prepared. However, an alternative to the EIR/ND requirement exists for State agencies with activities that include protection of the environment as part of their regulatory program. Under this alternative, an agency may request certification of its regulatory program from the Secretary for Resources. With certification, an agency may prepare functional equivalent Environmental Documents in lieu of EIRs or NDs. The regulatory program of the Fish and Game Commission has been certified by the Secretary for Resources. Therefore, the Commission is eligible to submit an Environmental Document in lieu of an EIR (CEQA Guidelines Section 15252).

The Department and the Commission hold the public trust for managing the State's fish and wildlife populations. That responsibility is fulfilled by staff including experts in marine resources management and enforcement issues. The knowledge and training represented by that expertise qualifies them to perform the review and analysis of the proposed project contained in this document.

2.4 Scope and Intended Use of Environmental Document

This Environmental Document contains a description of the proposed project and its environmental setting, potential effects of the proposed project, and reasonable alternatives to the project. It has been prepared pursuant to the California Environmental Quality Act (CEQA, Public Resources Code Section 21080.5) and the CEQA Guidelines (Title 14, Sections 750 - 781.5, California Code of Regulations). The document fully discloses potential cumulative impacts and provides a discussion of mitigation of adverse environmental effects related to the proposed project and the alternatives. In addition, it considers relevant policies of the Legislature and Commission.

This Environmental Document presents information to allow a comparison of the potential effects of reasonable alternatives. Analyses included in this document are split to include both the impacts of the proposed project (or State waters phase) and the cumulative impacts of this project and subsequent potential phases by other governing

authorities. In particular, a potential Federal waters MPA phase is analyzed for its cumulative biological and economic impacts, although the implementation of a Federal waters phase is not guaranteed. Other processes that may alter these impacts (e.g., fisheries management plans, and the Marine Life Protection Act) are also discussed where applicable.

All alternatives may not achieve the project's objectives equally well. They are presented to provide the Commission and the public with additional information related to the options available. The alternatives take the form of amendment, or change to an existing body of regulations (Section 27.82, 630, and 632 Title 14, CCR). The no action alternative is also considered as required by CEQA (Section 15126, Public Resources Code).

2.5 Authorities and Responsibilities

The Commission has the authority to designate, delete, or modify State Marine Reserves and State Marine Conservation Areas (Sections 1590, 1591, Fish and Game Code) (Appendix 1). The Commission may also regulate commercial and recreational fishing and other taking of marine life within MPAs (Section 2860, Fish and Game Code) (Appendix 1). The Legislature has provided direction for the establishment of Marine Protected Area Networks in Fish and Game Code Sections 2851 and 2853 (Appendix 1). This direction includes the use of no-take marine reserves for the purpose of protecting the natural diversity of marine life and the structure, function, and integrity of marine ecosystems.

2.5.1 Jurisdictions of Coastal and Ocean Waters

The waters along and off the California coast include local, State, Federal, and international jurisdictions, including the State Tidelands and Submerged Lands (State Tidelands), the Outer Continental Shelf (OCS), the territorial sea, the contiguous zone, the exclusive economic zone, and high seas. The jurisdictions are used to describe areas of offshore ownership, sovereignty, various forms of mineral, fishery, national security rights, or regulatory controls. State Tidelands are owned, managed, and regulated by California. The Federal government has authority in the waters beyond State Tidelands, but this authority can be limited by international regimes.

State Tidelands Submerged Lands (mean high tide line to 3 nm offshore)

The Federal Submerged Lands Act of 1953 granted ownership of lands and resources within this body of water to coastal states such as California. This authority provides for State control and regulation of the development of resources such as oil and gas, and fisheries within this area.

Outer Continental Shelf (seaward of 3 nm from shore)

The Outer Continental Shelf Lands Act of 1953, passed in coordination with the Submerged Lands Act, confirmed Federal jurisdiction over the resources beyond 3 nm from shore and created a legal process for developing those resources.

Territorial Sea (shoreline to 12 nm offshore)

Pursuant to a 1988 presidential proclamation, the United States now asserts sovereign rights over the lands and waters out to 12 nm from shore. The previous territorial sea designation was coextensive with State Tidelands in California. This proclamation does not disturb the rights of states in the waters out to 3 nm established under the Submerged Lands Act.

Contiguous Zone (12 to 24 nm offshore)

Within the 12 to 24 nm area the United States can exercise control over customs, fiscal, immigration, and sanitary matters.

Exclusive Economic Zone (3 to 200 nm offshore)

Pursuant to a 1983 presidential proclamation, the United States asserts jurisdiction over the living and non-living resources within the exclusive economic zone (EEZ). While coastal states have primary jurisdiction and control over the first 3 miles of the EEZ, the Federal government has primary jurisdiction over and controls the remaining 197 miles. The Coastal Zone Management Act (CZMA), however, provides coastal states with substantial authority to influence Federal actions beyond 3 nm.

High Seas (beyond 12 nm from shore)

This designation includes all portions of the sea not included in the territorial sea of any nation. High seas are partially co-extensive with the contiguous zone (not formally adopted in the United States) and the EEZ. The primary characteristic of high seas is a nation's right to freely navigate its vessels (including war vessels) with this area.

The proposed reserves are located within waters that are under the jurisdiction of the State of California as granted in the Submerged Lands Act of 1953 (sections 1301-1315, Title 43, United States Code). The California Department of Fish and Game, within the Resources Agency, is the lead State agency responsible for managing living marine resources. The Fish and Game Commission has authority to designate, delete, or modify State marine recreational management areas established by the Commission for hunting purposes, State marine reserves , and State marine conservation areas, as delineated in Public Resources Code Section 36725(a), and to incorporate by reference the provisions of the Marine Managed Areas Improvement Act (Sections 1590 and 159, Fish and Game Code).

2.5.2 Resource Based Agencies and Commissions

There are a number of State and Federal agencies and Commissions that have jurisdictional and regulatory responsibility over California coastal marine and ocean resources. Ocean resource management in California falls under the authority of two executive branch agencies, the Resources Agency (Department of Fish and Game, 2.5.1) and the California Environmental Protection Agency (Cal EPA). While the authority to manage the majority of ocean management issues rest with the California Resources Agency, Cal EPA oversees development of ocean water quality standards and regulation of waste discharges to the marine environment. Federal jurisdiction over ocean resources is divided among seven large departments, including the Departments of Agriculture, Commerce, Defense, the Interior, and Transportation; the Food and Drug Administration; and the U.S. EPA. Many of these have some jurisdiction or responsibilities within the project area.

California Coastal Commission

The Coastal Commission is responsible for administering the California Coastal Act and the federally approved California Coastal Management Program pursuant to the Coastal Zone Management Act. Coastal Act policies implemented by the Coastal Commission address issues such as public access and recreation, natural resource protection, agricultural operation, coastal development projects, port activities, and energy production. Jurisdiction is within the 1,100-mile-long coastal zone, which encompasses 1.5 million acres of land and extends 3 nautical miles out to sea and up to 5 miles inland from the mean high tide line.

State Lands Commission

The California State Lands Commission (SLC) has jurisdiction over all of California's tide and submerged lands, and the beds of naturally navigable rivers and lakes each of which are sovereign lands, swamp, and overflow lands, and school lands (proprietary lands). Management responsibilities of the SLC extend to activities within submerged land and those within 3 nautical miles of shore. Pursuant to SLC administrative actions and recent legislative leasing restrictions, the SLC currently has no program for offshore oil and gas leasing in State tidelands. However, the SLC carefully monitors existing offshore oil and gas activities to ensure revenue accountability, efficient resource recovery, and protection of the environment.

State Parks and Recreation Commission

The State Parks and Recreation Commission has authority to designate, delete, or modify State Marine Reserves, State Marine Parks, and State Marine Conservation Areas.

State Water Resources Control Board

The SWRCB and the nine RWQCBs establish California's water quality standards pursuant to the requirements of the state's Porter-Cologne Water Quality Control Act and the Federal Clean Water Act. The SWRCB has enveloped a series of statewide water quality control plans to set water quality standards for California. These include the Enclosed Bays and Estuaries Plan, the Thermal Water Quality Control Plan, and the California Ocean Plan (Ocean Plan). The Ocean Plan presents water quality objectives and establishes the basis for the regulation of waste discharges under the National Pollutant Discharge Elimination System (NPDES) program and permitting process. The SWRCB is responsible for adopting the Ocean Plan and the RWQCBs are responsible for interpretation and implementation of the Plan through issuance of NPDES permits and follow-up enforcement activity. The SWRCB has authority to designate, delete, or modify State Water Quality Protection Areas (previously known as Areas of Special Biological Significance, ASBS). The waters off San Miguel, Santa Rosa, ans Santa Cruz Islands are designated as ASBSs.

The Ocean Plan identifies beneficial uses of marine waters that can be maintained through water quality control and establishes a set of narrative and numerical water quality objectives to protect these uses. Examples of such uses include marine life habitat, fish migration, fish spawning, shellfish harvesting, rare and endangered species habitat, recreation, industrial water supply, commercial and sport fishing, mariculture, aesthetics, and navigation.

National Oceanic and Atmospheric Administration (Department of Commerce)

The National Oceanic and Atmospheric Administration's (NOAA) ocean related responsibilities includes conducting a comprehensive and integrated program of marine policy, ocean, atmosphere, and Earth data collection and resource management, and providing grants for research, education, and advisory services. The five divisions within the NOAA are the National Environmental Satellite, Data, and Information Service; National Marine Fisheries Service; National Ocean Service; National Weather Service; and Office of Oceanic and Atmospheric Research.

National Marine Sanctuaries Program

Within NOAA is the National Marine Sanctuaries Program. This program designates and manages activities in marine sanctuaries. The Sanctuaries Program is responsible for administrating four National Marine Sanctuaries offshore California: the Monterey Bay, Gulf of the Farallons, Channel Islands, and Cordell Bank Sanctuaries. These sites were selected because they possess conservational, recreational, ecological, historical, research, educational, archaeological, cultural, and/or aesthetic qualities which give them special national, or in some instances international, significance.

The proposed project is within the boundaries of the Channel Islands National Marine Sanctuary. The primary purpose of the National Marine Sanctuary program is resource protection (16 U.S.C. Section 1431(b)). The Sanctuary conducts and facilitates resource management and protection, coordinates and participates in oceanographic and marine biological research and promotes education and public outreach.

National Marine Fisheries Service

Also within NOAA is the National Marine Fisheries Service (NMFS), which manages the sea's living resources between 3 and 200 miles seaward of the U.S. coast. NMFS has lead management responsibility for all marine mammals except sea otters, walrus, manatee/dugongs, and polar bears, all of which come under the authority of the U.S. Fish and Wildlife Service (USFWS). Sea turtles (at sea) are under the Federal ESA authority of NMFS, while seabirds are within the purview of the USFWS.

Pacific Fishery Management Council

The Pacific Fishery Management Council (Council) and seven other regional councils were created by the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) in 1976 with the primary role of developing, monitoring and revising management plans for fisheries conducted within 3 to 200 miles (the Exclusive Economic Zone) of the U.S. coast. The Council develops plans for ocean fisheries off California, Oregon and Washington in need of regional management. The Council is not a Federal agency, but is a regional body funded through the Department of Commerce (DOC). To date the Council has adopted and implemented a Pacific Coast Groundfish Fishery Management Plan, Pacific Coast Salmon Fishery Management Plan, and Coastal Pelagic Species Fishery Management Plan. They are in the process of adopting a West Coast Highly Migratory Species Fishery Management Plan.

National Park Service

The National Park Service (NPS) was established to conserve the natural scenery, wildlife, and natural and historic objects of the area. In addition, the NPS provides for the management of these resources for future generation. The agency manages national parks, monuments, historic sites, and recreation areas by developing and implementing park management plans. While their responsibilities are not specifically ocean or coastal oriented, NPS manages four coastal and recreational parks in California including the Channel Islands National Park. The jurisdiction for this park extends one nautical mile out from the shoreline of the islands. Additionally, to effectively manage the park system, the NPS conducts research to improve resource management, including for example, issuing permits for research on natural resources and archaeology, and monitoring resources and ecosystems within managed areas.

U.S. Fish and Wildlife Service

The US Fish and Wildlife Service (USFWS) is responsible for protecting and conserving fresh water and anadromous fisheries, wildlife (birds and most mammals) and their habitats for the benefit of the public. The USFWS monitors and implements programs for managing migratory birds and fish, national wildlife refuges and national fish hatcheries; restoration programs; listing, protection, and development of recovery programs under the Federal ESA for candidate species; the agency also comments on Federal proposals and federally permitted projects. The USFWS also provides research and support for international negotiation regarding fisheries, migratory wildlife, and protected species.

The USFWS has jurisdiction over freshwater and estuarine fishes and a regulatory role concerning Federal activities with potential impact on certain marine mammals (Southern sea otter, manatee/dugong, polar bear, walrus), migratory birds, sea turtles on shore, freshwater fishes, and endangered species onshore or within National Wildlife Refuges. Concerning jurisdiction over threatened or endangered marine species, the NMFS holds jurisdiction over most marine mammals (whales, seals, and seal lions), anadromous (salmon) and marine fisheries, while the USFWS holds jurisdiction on inland and freshwater species, and seabirds.

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (U.S. EPA) was established to perform basically two functions: (1) research and development; and (2) abatement and control of pollution through a combination of research, monitoring, standard-setting, and enforcement activities. Although the U.S. EPA has no direct ocean resource management responsibilities, it administers and enforces various environmental protection statutes of general application, including the Federal Insecticide, Fungicide, and Rodenticide Act, under which it registers and regulates the use of pesticides or approves State plans for that purpose. The products regulated include tributyltin, a component of ship bottom antifoulant paints, which has an adverse effect on nontarget marine life.

2.6 Public Input

The California Environmental Quality Act (CEQA) encourages public input. One of the primary purposes of the Environmental Document review process is to obtain public comment, as well as to inform the public and decision makers. The Department, in partnership with the Sanctuary, has encouraged and sponsored extensive public participation in considering marine reserves in the Sanctuary. It is the Department's intent to continue public participation in the formal environmental review process.

Prior to preparing this environment document (ED), the Department issued a Notice of Preparation (NOP). The NOP was provided to the State Clearinghouse for distribution as well as to affected agencies, interested organizations, and individuals.

CEQA encourages an early consultation, or scoping process to help identify the range of actions, alternatives, and significant effects to be analyzed in depth in an Environmental Document, and to help resolve concerns of affected agencies and individuals. The issue of Marine Protected Areas in the project area was initially discussed in public meetings of the Fish and Game Commission from 1998 through 1999. In addition to the NOP, the Department conducted and participated in as a cosponsor of 24 public meetings of the Channel Islands National Marine Sanctuary Marine Reserves Working Group (MRWG). This constituent group consisted of 17 members representing State and Federal Agencies, Conservation Interests, Consumptive Recreational and Commercial groups, the Public at Large, and California Sea Grant and discussed the issue of establishing new Marine Reserves in the Channel Islands area. MRWG meetings were held between July 1999 and June 2001 in Santa Barbara. Four informational and discussion forums were held to inform the public of MRWG decisions and gather input on potential Marine Protected Area networks. The forums were conducted on January 20, 2000 in Oxnard, October 12, 2000 in Goleta, March 21, 2001 in Santa Barbara, and May 23, 2001 in Santa Barbara. Written comments were also received during the MRWG process, these are summarized in Appendix 3. After this process the topic was again discussed in the Fish and Game Commission forum, with comments heard in late 2001 through 2002.

2.6.1 Marine Reserves Working Group Process

In 1999, the California Fish and Game Commission received a recommendation to set aside 20 percent of the shoreline and waters out to one mile in no-take marine reserves around the northern Channel Islands (Santa Barbara, Anacapa, Santa Cruz, Santa Rosa and San Miguel Islands). In response to this proposal and at the direction of the Commission in responce to the need for a process, the Channel Islands National Marine Sanctuary and the California Department of Fish and Game developed a joint Federal and State partnership to consider establishing marine reserves in the Sanctuary. In July 1999, the Channel Islands National Marine Sanctuary Advisory Council (SAC), an advisory body to the Sanctuary manager, created a stakeholder based community group called the Marine Reserves Working Group (MRWG). This constituent group consisted of 17 members representing State and Federal Agencies, Conservation Interests, Consumptive Recreational and Commercial groups, the Public at Large, and California Sea Grant.

The SAC also created a Science Advisory Panel and a Socio-Economic Panel to provide technical expertise and guidance. The MRWG collaborated for over 22 months between July 1999 and June 2001 to seek agreement on a recommendation to

the SAC regarding the establishment of marine reserves within the Channel Islands National Marine Sanctuary.

The Department and Sanctuary jointly sponsored the Channel Islands Marine Reserves process, by hosting and chairing monthly meetings, providing funds for facilitation services and contract staff, contributing data and the full time services of agency personnel. Several offices within NOAA's National Ocean Service provided technical expertise, including the Special Projects Office and the Coastal Services Center. The Channel Islands National Park provided additional funds for facilitation services, invaluable data and the support from several staff members. MRWG and Science Panel members volunteered their time and effort.

The Working Group was established in response to:

- California Department Fish and Game and Channel Islands National Marine Sanctuary legislative purposes and mandates;
- A proposal to the California Fish and Game Commission for "no take" marine reserves in the Channel Islands National Marine Sanctuary area; and,
- The need to establish a community and stakeholder process for considering marine reserves in the Channel Islands National Marine Sanctuary for the California Fish and Game Commission.

MRWG deliberations were based on a consensus approach which required that the legitimate concerns of all members be satisfactorily addressed before the group as a whole could reach agreement. The MRWG's definition of consensus was that each member could state "whether or not I prefer this decision above all others, I will support it because it was reached fairly and openly." Through this approach the MRWG attempted to develop a recommendation and receive, weigh and integrate advice from its technical advisors (Science Advisory Panel and Socioeconomic Panel) and the general public.

The MRWG reached consensus on a Problem Statement, Mission Statement, Goals and objectives. These products were critical in guiding their discussions of Marine Protected Areas. The full text of each is found in Appendix 3.

The Sanctuary Advisory Council and MRWG established four primary tasks of the Science Advisory Panel (SAP). First, the SAP reviewed the literature on marine reserves and provided MRWG with potential natural resource consequences of reserves. They defined scientific criteria to achieve the objectives for biodiversity and fisheries defined by the MRWG. The SAP identified and evaluated existing data sets for GIS-based ecological characterization. Finally, the SAP evaluated the scientific merit of different reserve scenarios provided by the MRWG. The scientific evaluation of reserve designs is expanded in Chapters 5 for the Preferred Alternative and Chapter 6 for other alternatives.

The MRWG provided the framework for the scientific discussion of marine reserves by establishing goals for biodiversity conservation and fisheries management (Appendix 3). The MRWG determined that marine reserves should be used to protect representative and unique marine habitats, ecological processes, and populations of interest in the Sanctuary. The Science Advisory Panel provided a marine habitat classification to define "marine habitats" in the biodiversity goal. Further, the MRWG developed a list of 119 "species of interest", including plants, invertebrates, fish, seabirds, and marine mammals (Appendix 4). The Science Advisory Panel provided information on the distribution, status, preferred habitats, diet, and reproductive behavior of all species of interest. To achieve the goal of biodiversity conservation, the MRWG asked the Science Advisory Panel to develop criteria for design of reserves that would protect (1) representative and unique marine habitats in all biogeographical regions of the Sanctuary, (2) populations of interest, and (3) ecosystem services provided by physical, biological, or chemical processes.

A Socioeconomic Panel (Panel) was asked to provide baseline information and analyses on the use values associated with the project area, the potential costs, and where possible, benefits of the establishment of reserves. The Socioeconomic Panel was formed to provide information and analyses to the Marine Reserve Working Group (MRWG) of the Sanctuary Advisory Council (SAC) of the CINMS. An overview of the data analyzed by this Panel is described in the following text. The report completed by this Panel is referenced as Leeworthy and Wiley (2002).

A tremendous amount of information was collected and generated from 1999-2002 by the Socioeconomic Panel. Chapter 5 provides a general overview of the data collection and methods used in the socio-economic assessment. A more detailed overview of methods and data collective used in the socioeconomic analysis is found in Leeworthy and Wiley (2002).

2.6.2 Outcome of the Marine Reserves Working Group Process

Over the course of the nearly two year process the MRWG developed more than forty potential marine reserves maps. They were unable to reach consensus on a single map to recommend to the SAC. Instead the MRWG delivered a composite map that depicts two different reserve network options (Figure 2-1). This Composite Map depicts the best effort that each representative could propose and remain true to their constituencies. As directed by the ground rules, the MRWG forwarded all areas of consensus, non-agreement and the composite map to the Sanctuary Advisory Council.

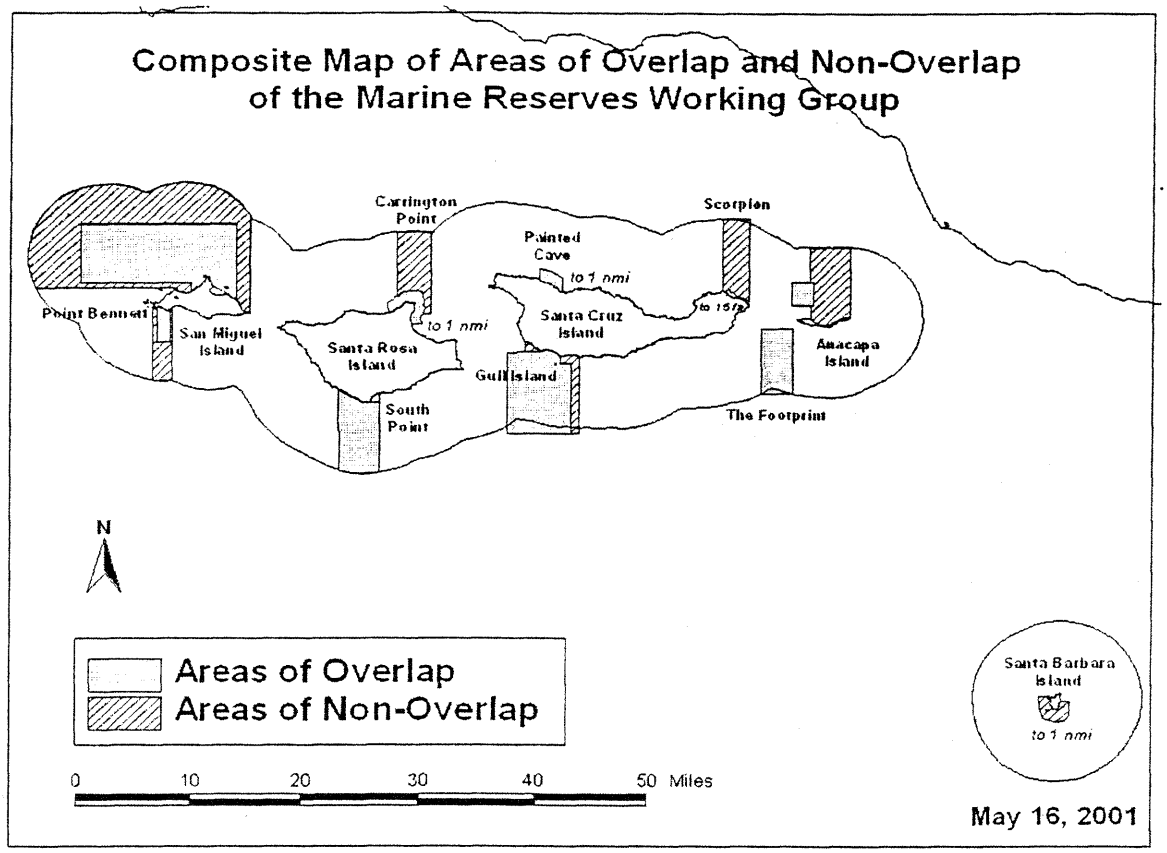

Figure 2-1 Composite Map of Areas of Overlap and Non-Overlap.

The SAC evaluated the MRWG's work and progress, deliberated over two meetings, hosted a public forum on the issue, and forwarded a recommendation to the Sanctuary Manager:

> The Channel Islands National Marine Sanctuary Advisory Council (SAC) commends the CINMS staff, Department of Fish and Game (DFG) and all participants of the MRWG, Science and Socio-Economic Panels on their efforts over the past two years. The SAC finds that the MRWG, in seeking consensus on marine reserves, developed scientific and socio-economic data that should be used and built upon in future consideration of such issues. The SAC finds that the MRWG process was open, inclusive and community based.

By a vote of 17-1-1, the Sanctuary Advisory Council agreed to:

- Formally transmit the full public record of the MRWG and the SAC regarding the development of reserves in the CINMS to the Sanctuary Manager;

- Charge the Sanctuary Manager and Department of Fish and Game staff to craft a final recommendation consistent with the Marine Reserve Working Group's consensus agreements for delivery to the Fish and Game Commission in August 2001;
- Request that the Sanctuary Manager and Department of Fish and Game work with the community to the maximum extent feasible in crafting this recommendation.

With this guidance, the Department and Sanctuary crafted a draft reserve network, and sent it out to the SAC, former MRWG, Science Panel, Socio-Economic Panel members and public seeking further input. Several meetings were held with constituent groups, including the SAC Conservation Working Group, Fishing Group and Ports and Harbors Working Group. The Department and Sanctuary also met with former MRWG members and written comments were received and considered.

In preparing a recommendation for the Fish and Game Commission, the Department and Sanctuary used the MRWG consensus agreements as well as the MRWG Composite Map of Areas of Overlap and Non-Overlap as a foundation. The recommendation proposed a network of Marine Protected Areas in the same general locations as the MRWG Composite Map. This recommendation became the proposed project.

2.6.3 CEQA Process

Section 15087 of the CEQA guidelines requires that the draft document be available for public review no less than 45 days. During this review period, the public is encouraged to provide written comments regarding the draft document to the Department of Fish and Game, 1933 Cliff Drive, Suite 9, Santa Barbara, CA 93109. Additionally, oral testimony will be accepted by the Commission at the June 20, 2002 meeting located in South Lake Tahoe, California.

The Draft Environmental Document (DED) will be sent to the State Clearinghouse and circulated for a 45-day comment period. During the comment period, public hearings will be held to provide the public with the opportunity to give oral comments on the DED. The DED evaluates the important social, economic, and environmental effects that may result from the proposed action. It focuses on cause and effect relationships, providing sufficient evidence and analysis for determining the magnitude of effects and ways to minimize harm to the environment. After the close of the comment period, the DED will be revised based upon comments received. A Final ED (FED) will be prepared and circulated for a 45-day review period. Comments received on the FED are collected and considered by the Commission prior to making a final decision. The Commission will certify the FED after the close of the comment period. At that point, a Notice of Completion will be sent to the State Clearinghouse.

2.7 Areas of Concern

The public comments received throughout the MRWG process and during the public information and discussion forums have raised the following concerns:

General Concerns

- Do reserves allow use of public trust resources?
- Proximity of MPAs to ports or major access points may cause problems if users are required to travel over greater distances, or in dangerous conditions.
- Transit through and anchoring in reserves should be allowed to maintain safe navigation and shelter from storms.
- Are other management alternatives for protection more appropriate? (i.e., use of limited take areas, size, length, season and bag limits).
- Boundaries need to be clear and easily recognizable.

Science Concerns

- What is the status of empirical versus theoretical literature and science of reserves?
- Is there a scientific method to determine appropriate reserve sizes and locations?
- Will the extra pressure on non-reserve areas create crowding or congestion of fishing effort?
- Is it more appropriate to take a species specific versus a habitat or ecosystem management approach?
- Do Reserves act as insurance against fishery management uncertainty, human threats (oil spills) and environmental events (El Nino)?
- What are the long-term environmental and economic benefits versus short term economic costs?
- What are the effects of reserves on highly migratory or pelagic species?

Administrative Concerns

- Is there adequate funding for administration, monitoring and evaluation and enforcement of reserves?
- Reserves create a need for Biological and socio-economic monitoring.
- Cooperation between State and Federal resource management agencies is critical to the success of reserves.
- Adaptive management should be used, including reviewing the efficacy and impacts of reserves.
- Reserves must be integrated into existing harvest management.
- It is critical to keep the community involved after reserves are established.

Economic Concerns

Many fishermen, especially commercial fishermen, expressed concerns about the many outside forces and internal forces that they believe are affecting their ability to maintain sustainable fisheries. Many issues were obtained from the ethnographic data survey conducted for the Sanctuary (Kronman, et al. 2001). These issues are summarized below:

Outside Forces

- Poor Asian economy is affecting the ability to sell fish overseas.
- Strong U.S. dollar
- International competition may eliminate markets if U.S. fishermen can not supply during closed seasons.
- Increased cost-of-living in coastal areas creates a need for more income.
- El Niño events create natural fluctuations that decrease catch and income.
- Pollution and habitat destruction from coastal development has as much or greater an effect than fishing.
- Conflicts over environmental allocations (sea otters, seals and sea lions, birds) need to be addressed.
- Conflicts among user groups should be dealt with prior to creating new regulations.

Internal forces

- Aging workforce will not be replaced if new participants are not allowed in to the fisheries.
- Industrial organization (buyers and processors with monopoly power over fishermen) leaves little ability to maintain price structures.
- Open access and overcapitalization and biological and/or economic overfishing has lead to economically unsustainable fisheries.
- Will there be financial mitigation to displaced commercial fisheries.

2.8 Issue to be Resolved

The decision before the Commission is whether or not new Marine Protected Areas should be established in State Waters within the Sanctuary. If these Marine Protected Areas are authorized, decisions are needed to specify the locations, sizes, levels of protection and overall extent of the network, and determine the process for its implementation.

Chapter 3. PROJECT DESCRIPTION

3.1 Proposed Project

The proposed project is the amendment of the regulations for Marine Protected Areas in State Waters within the Channel Islands National Marine Sanctuary (Sanctuary) established under the State's jurisdiction (Figure 3-1). The regulations are being considered for inclusion in the California Code of Regulations (CCR) to implement the State's policies for management of marine resources. Specifically, the Department of Fish and Game (Department) is recommending that the Fish and Game Commission (Commission) establish new regulations (§632 Title 14, CCR, Appendix 2) regarding Marine Protected Areas, amend existing regulations (§27.82(a) Title 14, CCR, Appendix 2) regarding the boundaries of the Cowcod Conservation Area, and repeal existing regulations (§630(b)(5), §630(b)(101), and §630(b)(102) Title 14, CCR, Appendix 2) regarding ecological reserves with the following changes (Table 3-1):

1) A new system of Marine Protected Areas should be established consisting of ten State Marine Reserves where it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes; one State Marine Conservation Area where only the recreational take of spiny lobster (*Panulirus interruptus*) and pelagic finfish is allowed; and one State Marine Conservation Area where only the commercial and recreational take of spiny lobster and the recreational take of pelagic finfish is allowed;
2) The boundaries of the Cowcod Conservation Area should be amended to allow fishing in waters deeper than 20 fathoms in a specific area on the northeast side of the island;
3) The existing regulations for ecological reserves at Anacapa, Santa Barbara, and San Miguel Islands should be repealed to avoid duplication of the proposed new regulations below;

In general, existing regulations for the Marine Protected Areas in State waters within the Sanctuary provide the following:

Under existing law, three ecological reserves are established in the Sanctuary surrounding Santa Barbara, Anacapa, and San Miguel Islands. Special regulations on take are minimal in these areas and are limited to a small no-take "natural area" at Anacapa Island, invertebrate closures on Anacapa and Santa Barbara Islands, and seasonal prohibitions on access to protect breeding marine mammals and nesting, breeding and fledgling seabirds on Anacapa and San Miguel Islands. Further regulations denote the boundaries and take restrictions of the Cowcod Conservation Area (CCA), including the waters surround Santa Barbara Island. In the CCA the take of certain species in waters greater than 20 fathoms in depth is prohibited. Table 3-1 summarizes the existing regulations and proposed amendments.

Table 3-1. Summary of existing regulations and proposed amendments.

Existing Regulations	Proposed Amendments
Anacapa Island Ecological Reserve - Establishes a Natural Area, where no take is allowed, in waters shallower than 10 fathoms on the north east side of East Anacapa Island - Establishes two invertebrate closures. These closures are in waters shallower than 20 feet on portions of the south side of West Anacapa Island and the north side of Middle Anacapa Island. -Prohibits the use of nets or traps shallower than 20 feet around Anacapa Island. -Establishes a brown pelican fledgling area, where no entry is permitted between January 1 and October 31, on the north side of West Anacapa Island.	**Anacapa Island State Marine Reserve and Anacapa Island State Marine Conservation Area** - Establishes a State Marine Reserve, where no take is allowed, on the north side of East Anacapa and Middle Anacapa Islands. - Repeals the existing invertebrate closures. - Maintains the trap prohibition in waters shallower than 20 feet around Anacapa Island. - Maintains the brown pelican fledgling area seasonal closure. - Establishes a State Marine Conservation Area, where only the recreational take of lobster and pelagic finfish and the commercial take of lobster is allowed, on the north side of West Anacapa Island.
Santa Barbara Island Ecological Reserve - Establishes an invertebrate closure in waters shallower than 20 feet on the east side of the island from Arch Rock to the southernmost point. -Prohibits the use of nets or traps shallower than 20 feet on the east side of the island from Arch Rock to the southernmost point.	**Santa Barbara Island State Marine Reserve** - Repeals the existing invertebrate closure. - Repeals the existing net and trap prohibition. - Establishes a State Marine Reserve, where no take is allowed, in the vicinity of southeast Santa Barbara Island.
San Miguel Island Ecological Reserve -Establishes seasonal and year- round closures to boating on various parts of the island and offshore rocks.	**Harris Point State Marine Reserve, Judith Rock State Marine Reserve, and Richardson Rock State Marine Reserve** -Maintains the seasonal and year-round boating closures. -Establishes State Marine Reserves, where no take is allowed, in the vicinity of: Harris Point, Judith Rock, and Richardson Rock.
Cowcod Conservation Area -Establishes two areas where fishing for rockfish, lingcod, CA scorpionfish, cabezon, greenling, CA sheephead, and ocean whitefish is prohibited in waters deeper than 20 fathoms	**Cowcod Conservation Area** -Amends the existing area to establish an exemption from the fishing prohibitions on the northeast side of Santa Barbara Island.
No Other Specific Marine Protected Areas are established in the project Area	**The proposed project also establishes the following new Marine Protected Areas:** -Scorpion (Santa Cruz Island) State Marine Reserve. No take allowed. - Painted Cave (Santa Cruz Island) State Marine Conservation Area. Only recreational take of lobster and pelagic finfish is allowed. - Gull Island (Santa Cruz Island) Sate Marine Reserve. No take is allowed. -Carrington Point (Santa Rosa Island) State Marine Reserve. No take is allowed. - Skunk Point (Santa Rosa Island) State Marine Reserve. No take is allowed. - South Point (Santa Rosa Island) State Marine Reserve. No take is allowed.

Amendments

The modification of existing Marine Protected Area regulations and the addition of regulations establishing new Marine Projected Area may provide for continuation and improvement of effective management of California's marine resources in the project area. The Marine Reserve Working Group proposed a network of protected areas off-shore of the Channel Islands, in both state and federal waters. This project that is before the Fish and Game Commission proposed to achieve the goals of the Marine Reserves Working Group by implementing a network of marine reserves and marine conservation areas within the waters in the jurisdiction of the State of California (from the mean high tide line to a distance of three nautical miles offshore). Separate from this project, it is anticipated that the federal government will propose and adopt a complementary network of resources within federal waters. It is important to note, however, that the federal project is not guaranteed to be implemented, and that state project is not contingent on the federal project being approved. Therefore, the primary focus of this environmental document rests on the direct impacts of the state project only. However, the overall impacts of both projects are described in Chapter 5, to analyze the potential cumulative effects of both the state phase and the federal phase.

The proposed regulatory changes listed here represent the State waters portion of the project. These proposed Changes establish ten State Marine Reserves, where it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes, and two State Marine Conservation Areas, where the recreational and/or commercial take of certain species would be permitted (Figure 3-1).

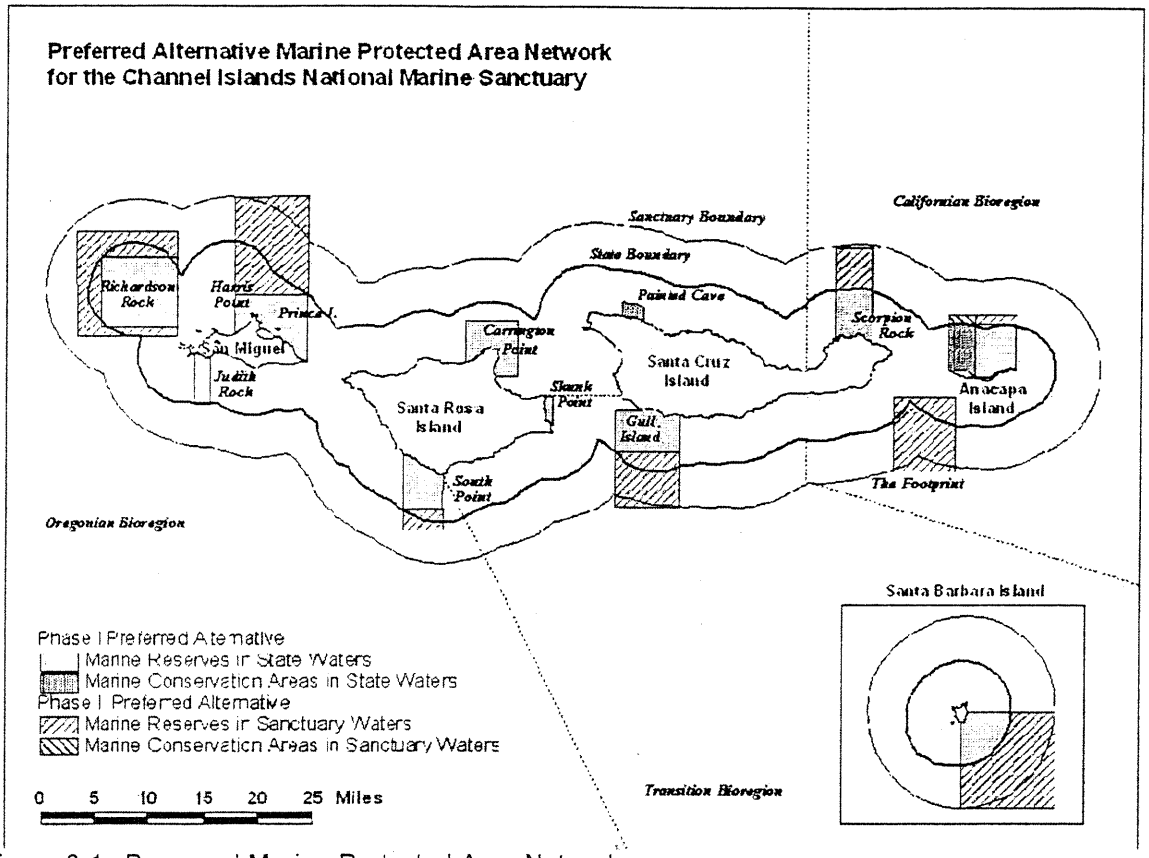

Figure 3-1. Proposed Marine Protected Area Network.

The State water area within the proposed project is approximately 114 square nautical miles, or 19 percent of State waters within the project area. The total area within the proposed project and subsequent Federal waters phase is approximately 279 square nautical miles, or 25 percent of the Channel Islands National Marine Sanctuary.

1. Santa Barbara Island State Marine Reserve

In this area it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes.

Proposed boundaries:

- The southern tip of the Island (33° 27.9' N. lat., 119° 02.2' W. long.) northward along the mean high tide line to
- The eastern point of the Island (33° 28.5' N. lat., 119° 01.7' W. long.).
- From that point extending due east offshore to latitude 33° 28.5' N., longitude 118° 58.2' W.,

- Then along the 3 nautical mile offshore boundary to a point at 33° 24.9' N. lat. 119° 02.2' W. long.
- Then due north to the southern tip of the island

2. Anacapa Island State Marine Reserve

In this area it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes.

Proposed boundaries:

- Arch Rock (34° 01.2' N. lat., 119° 21' W. long.) westward along the mean high water line to
- the western point of Middle Island (Frenchys Cove, 34° 00.6' N. lat., 119° 24.6' W. long.).
- From that point extending due north to a line approximately three miles offshore at latitude 34° 04' N, 119° 24.6' W. long.
- Then east to 34° 04' N. lat. 119° 21' W. long. Then due south to the origin at Arch Rock.

3. Anacapa Island State Marine Conservation Area.

In this area all take of marine species is prohibited except the commercial take of lobster and the recreational take of lobster and pelagic finfish.

Proposed boundaries:

- The eastern point of West Island (Frenchy's Cove, 34° 00.6' N. lat., 119° 24.6' W. long.)
- westward along the mean high water line to the western point of West Island (34° 00.8' N. lat., 119° 26.7' W. long.).
- From that point extending due north to a line approximately three miles offshore at latitude 34° 04' N , 119° 26.7' W. long.
- Then east to 34° 04' N. lat., 119° 24.6' W. long. Then due south to the origin.

Additional regulations:

- No net or trap may be used in waters less than 20 feet deep off the Anacapa Islands commonly referred to as Anacapa Island.
- A brown pelican fledgling area is designated from the mean high tide mark seaward to a water depth of 20 fathoms (120 feet) on the north side of West Anacapa Island between a line extending 345° magnetic off Portuguese Rock to a line extending 345° magnetic off the western edge of Frenchy's Cove, a distance of approximately 4,000 feet. No person except department employees or employees of the National Park Service in the performance of

their official duties shall enter this area during the period January 1 to October 31.

4. Scorpion Anchorage, Santa Cruz Island, State Marine Reserve

In this area it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes.

Proposed boundaries:

- The point inshore of Little Scorpion Rock (34° 02.8' N. lat., 119° 32.8' W. long.)
- Westward along the mean high water line to the northeast side of Potato Harbor (34° 02.9' N. lat., 119° 35.5' W. long.).
- From that point extending due north to a line approximately three miles offshore at latitude 34° 06.2' N , 119° 35.3' W. long.
- Then east to 34.06° N. lat., 119° 32.8' W. long.
- Then due south to the origin.

5. Painted Cave, Santa Cruz Island, State Marine Conservation Area

In this area all take of marine species is prohibited except the recreational take of lobster and pelagic finfish.

Proposed boundaries:

- A point approximately one mile east of Painted Cave (34° 04' N. lat., 119° 51' W. long.)
- westward along the mean high water line
- To a point approximately one mile west of Painted Cave (34° 04.5' N. lat., 119° 53' W. long.)
- From that point extending due north to a line one mile offshore at 34° 05.2'N.lat, 119° 53' W. long.
- Then east to 34° 05 N. lat, 119° 51 W. long.
- Then due south to the origin.

6. Gull Island, Santa Cruz Island, State Marine Reserve

In this area it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes.

Proposed boundaries:

- Morse Point (33° 58' N. lat., 119° 51' W. long.) eastward along the mean high water line
- To an unnamed point at 33° 57.7' N. lat., 119° 48' W.

- From that point extending due south to a line approximately three miles offshore at latitude 33° 55.2' N
- Due west off Morse point to a line at longitude 119° 53' W, 119° 53' W. long.
- Then due north to 33° 58'N. lat., 119° 53' W. long.
- Then due east to the origin at Morse Pt.

7. Carrington Point, Santa Rosa Island, State Marine Reserve

In this area it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes.

Proposed boundaries:

- The pier in Bechers Bay (34° 00.5' N. lat., 120° 02.8' W. long.) extending due east to a line at longitude 120° 01' W.
- The reserve extends due north along longitude 120° 01' W. To a line approximately one and one half miles offshore of Carrington Point at latitude 34° 04' N., 120° 01' W. long.
- Then due north along longitude 120° 01' W. To a line approximately one and one half miles offshore of Carrington Point at latitude 34° 04' N., 120° 01' W. long.
- Then west to 34° 04' N. lat,, 120° 05.2' W. long.
- Then south to the shoreline at 34° 01.3N. lat., 120° 05.2' W. long.

8. Skunk Point, Santa Rosa Island, State Marine Reserve

In this area it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes.

Proposed boundaries:

- Skunk point (33° 59' N. lat., 119° 58.8' W. long.) southward along the mean high water line to
- Abalone Rocks (33° 57.1' N. lat., 119° 58.2' W. long.).
- From that point extending due east offshore to a line at longitude 119° 58' W
- Then north to 33° 50' N. lat., 119° 58.8' W. long.
- Then west to the origin at Skunk Pt.

9. South Point, Santa Rosa Island, State Marine Reserve

In this area it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes.

Proposed boundaries:

- South Point (33° 53.8' N. lat., 120° 06.5' W. long.) westward along the mean high water line to
- An unnamed point at 33° 55' N. lat., 120° 10' W.
- From that point extending due south approximately three miles offshore to a line at latitude 33° 51.4' N
- Then east to 33° 51.4' N. lat., 120° 06.5' W. long.
- Then due north to the origin at South Pt.

10. Harris Point, San Miguel Island, State Marine Reserve

In this area it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes.

Proposed boundaries::

- Cardwell Point (34° 01.8' N. lat., 120° 18.4' W. long.) westward along the mean high water line to
- The east corner of Cuyler Harbor (34° 02.9' N. lat., 120° 20.2' W. long.).
- From that point directly to the northwest corner of Cuyler Harbor (34° 03.5' N. lat., 120° 21.3' W. long.), leaving Cuyler Harbor open to fishing.
- From that point northward and westward along the mean high water line to the Marker Poles in Simonton Cove (34° 03.1' N. lat., 120° 23.3' W. long.).
- From that point extending due north approximately three miles offshore to a line at latitude 34° 06' N
- Then east to 34° 06'N. lat., 120° 18.4' W. long.
- Then due south to the origin.

Additional regulations:

- Boating is permitted at San Miguel Island except west of a line drawn between Judith Rock and Castle Rock where boats are prohibited closer than 300 yards from shore. Boats may be anchored overnight only at Tyler Bight and Cuyler Harbor. Boats traveling within 300 yards of shoreline or anchorages shall operate with a minimum amount of noise and shall not exceed speeds of five miles per hour. Landing is allowed on San Miguel Island by permit only at the designated landing beach in Cuyler Harbor. No person shall have access to all other offshore rocks and islands in the reserve.

  1. Notwithstanding the 300-yard boating closure between Judith Rock and Castle Rock, the following shall apply:

  a. Boats may approach San Miguel Island no nearer than 100 yards from shore during the period(s) from March 15 through April 30, and October 1 through December 15; and

b. Boats operated by commercial sea urchin boat operators who have been issued permits by the department to take sea urchins from the Point Bennett area of San Miguel Island may enter any waters of the 300-yard area between Judith Rock and Castle Rock for the purpose of fishing sea urchins during the period(s) March 15 through April 30, and October 1 through December 15.

2. The department may rescind permission for boats to enter waters within 300 yards between Judith Rock and Castle Rock upon finding that impairment to the island marine mammal resource is imminent. Immediately following such closure, the department will request the commission to hear, at its regularly scheduled meeting, presentation of documentation supporting the need for such closure.

11. Richardson Rock, San Miguel Island, State Marine Reserve

In this area it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes.

Proposed boundaries are straight lines connecting the following points:

- 34° 08.4' N. lat., 120° 34.2' W. long.,
- 34° 08.4' N. lat., 120° 28.2' W. long.,
- 34° 03.6' N. lat., 120° 28.2' W. long.,
- 34° 03.6' N. lat., 120° 34.2' W. long

12. Judith Rock, San Miguel Island, State Marine Reserve

In this area it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes.

Proposed boundaries:

- Judith Rock (34° 01.5' N. lat., 120° 25.3' W. long.)
- westward along the mean high water line to a point inshore of the wash rock in Adams Cove (34° 01.9' N. lat., 120° 26.5' W. long.).
- From that point extending due south approximately three miles offshore to a line at latitude 33° 58.5' N
- Then east to 33.5° 08.5' W. long., 120° 25.3' W. long.
- Then due north to the origin at Judith Rock.

13. Cowcod Conservation Area Boundary Alteration

The Thirteenth regulation change alters the boundaries of the Cowcod Conservation Area to allow fishing in waters deeper than 20 fathoms in the vicinity of northeast Santa Barbara Island. The regulation change would create an exemption area, known as Area 1A, where fishing is allowed.

Area 1A would located within the Cowcod Consevation Area 1 and would have the same sport fishing regulations as the general southern rockfish and lingcod management area. Area 1A would be a small area northeast of Santa Barbara Island within State waters bound by the mean high tide line, the three nautical mile offshore boundary, and the following points:

- 33°32.2' N. lat., 119°02' W. long.;
- 33°28.5' N. lat., 118° 58' W. long.;
- 33°29.2' N. lat., 119°02' W. long.;
- 33°28.5' N. lat., 119° 01.7' W. long.

14. Repeal Existing Ecological Reserves

The Final regulation change repeals the existing Ecological Reserves at Santa Barbara, Anacapa, and San Miguel islands. These areas were originally established to provide added protection to certain species. The proposed project includes the same or similar habitats with increased restrictions on take and thus the existing regulations would be an unnecessary duplication. Where necessary, specific existing regulations (such as a seasonal closure to protect the brown pelican fledgling area on Anacapa Island) are included in the proposed project as part of the new Marine Protected Area (MPA) network (Table 3-1). This change is intended to simplify the overall network, facilitate understanding of the new regulations, and eliminate unnecessary duplication.

3.2 Alternatives

In addition to the proposed project, five spatial alternatives are provided. These alternatives are described in detail in Appendix 5. The alternatives are also split into an initial State waters phase and subsequent Federal phase. The alternatives are reviewed and evaluated in Chapter 6. Recommendations for the changes to the boundaries of the Cowcod Conservation Area are provided as sub-alternatives.

3.2.1 Alternative 1

Alternative 1 establishes a smaller network of Marine Protected Areas than the proposed project. This alternative uses the "areas of overlap" developed as possible MPA sites by the Marine Reserves Working Group. It establishes nine State Marine Reserves where it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes. The State water area in Alternative 1 is approximately 69 square nautical miles, or 12 percent of State waters within the Sanctuary. The proposed MPAs in both the State and Federal waters phase encompass approximately 12 percent, or 141 square nautical miles, of the Sanctuary (Figure 3-2). This alternative attempts to limit potential impacts to consumptive users.

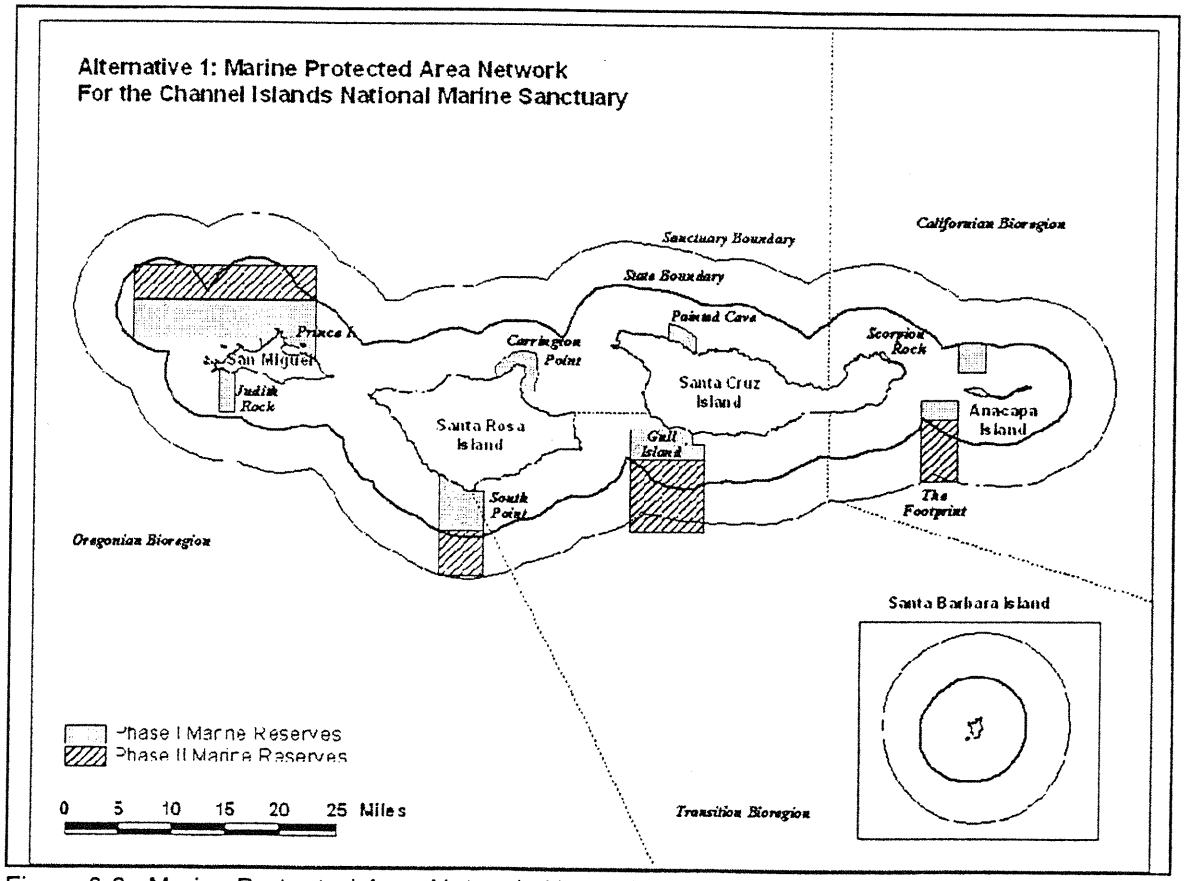

Figure 3-2. Marine Protected Area Network Alternative 1.

3.2.2 Alternative 2

Alternative 2 uses a reserve system developed by sectors of the Santa Barbara commercial fishing community. It establishes eight State Marine Reserves where it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes and three State Marine Conservation Areas where the recreational and/or commercial take of certain species is permitted. The State water area in Alternative 2 is approximately 72 square nautical miles, or 12 percent of State waters within the Sanctuary. The combined State waters and Federal Waters phase encompasses approximately 14 percent, or 161 square nautical miles, of the Sanctuary (Figure 3-3). This alternative attempts to limit immediate and potential impacts to consumptive users. It also uses more State Marine Conservation Areas to provide some protection to key species while still allowing take of others.

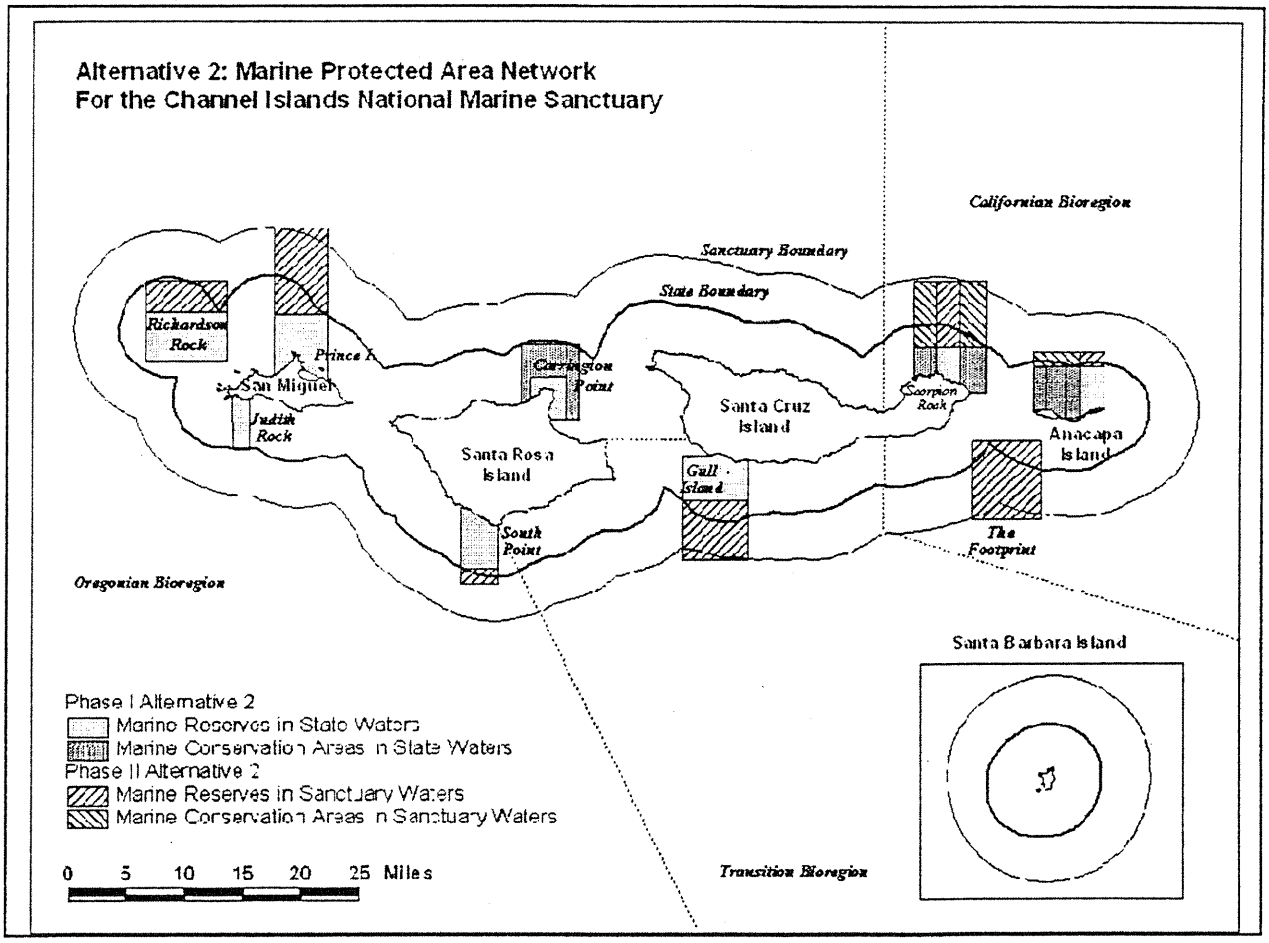

Figure 3-3. Marine Protected Area Network Alternative 2.

3.2.3 Alternative 3

Alternative 3 was developed as a potential reserve network during the Marine Reserves Working Group planning process, but the MRWG did not reach full consensus. It establishes eight State Marine Reserves where it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes. The State water area in Alternative 3 is approximately 89 square nautical miles, or 15 percent of State waters within the Sanctuary. The proposed MPAs in the State and Federal phases combined encompass approximately 21 percent, or 231 square nautical miles, of the Sanctuary (Figure 3-4). This alternative attempts to limit potential impacts to consumptive users.

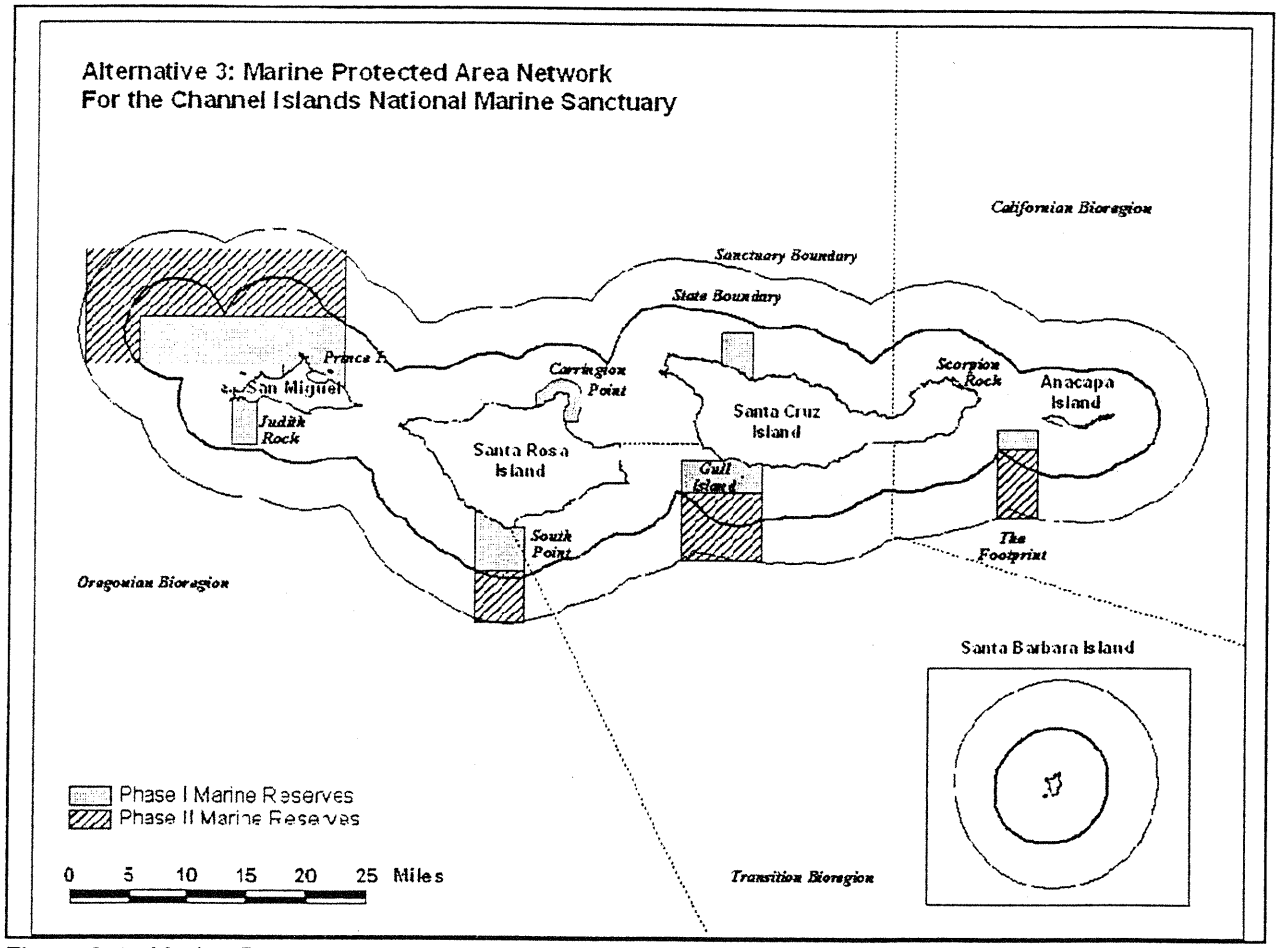

Figure 3-4. Marine Protected Area Network Alternative 3.

3.2.4 Alternative 4

Alternative 4 establishes a larger network of Marine Protected Areas than the proposed project. This alternative uses the "areas of overlap" developed as possible MPA sites by the Marine Reserves Working Group with the addition of areas suggested by some members to complete a network. It establishes ten State Marine Reserves where it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes. The State water area in Alternative 4 is approximately 120 square nautical miles, or 20 percent of State waters within the Sanctuary. The proposed MPAs in the combined State and Federal waters phases encompass approximately 29 percent or 340 square nautical miles of the Sanctuary (Figure 3-5). This alternative attempts to increase the overall protection of various habitats compared to the proposed project.

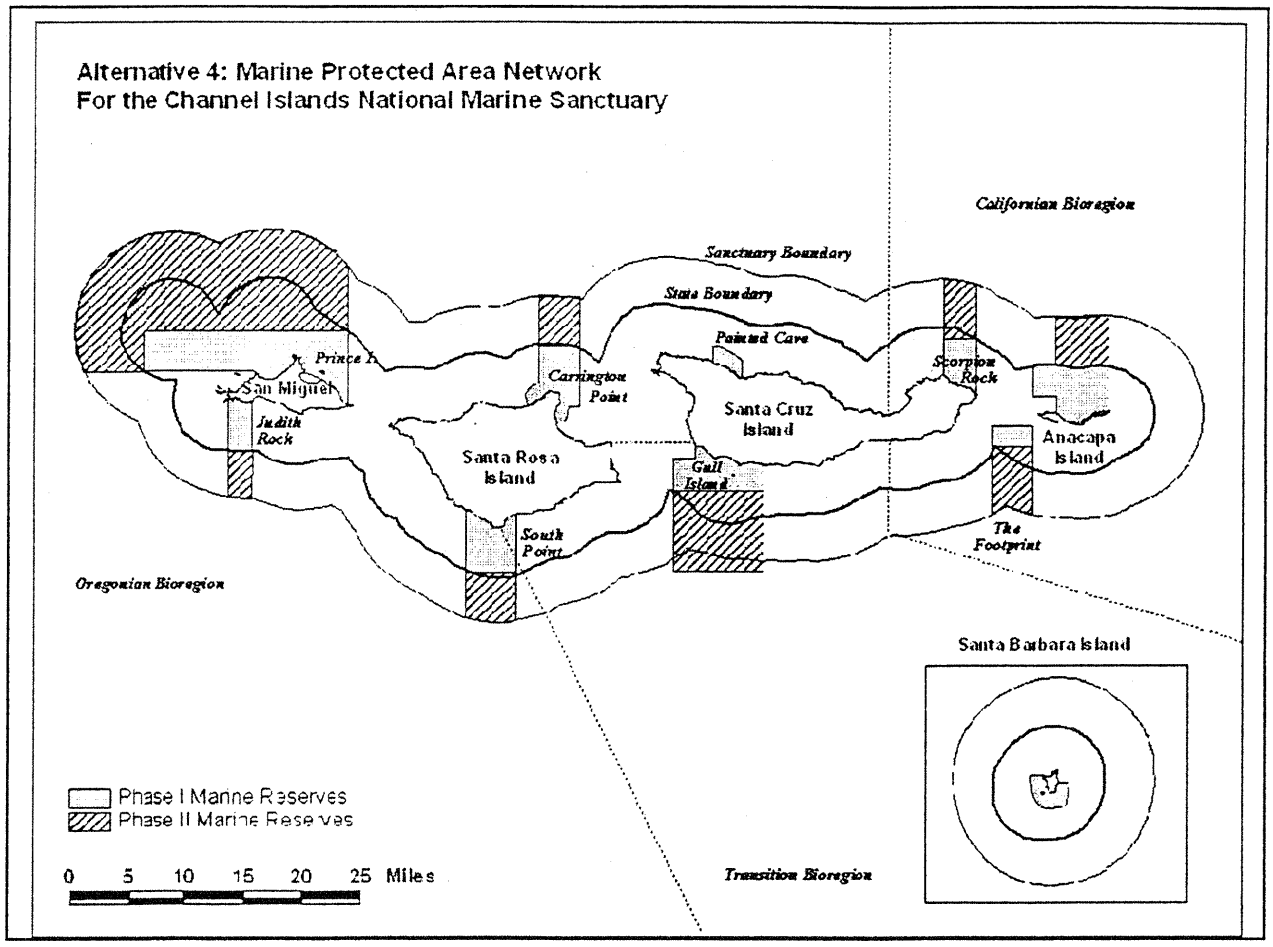

Figure 3-5. Marine Protected Area Network Alternative 4.

3.2.5 Alternative 5

Alternative 5 uses a network of reserves developed during the Marine Reserves Working Group planning process altered after the process to reduce the overall area. It establishes ten State Marine Reserves where it is unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes. The State water area in Alternative 5 is approximately 137 square nautical miles, or 23 percent of State waters within the Sanctuary. The proposed MPAs in the combined State and Federal waters phases encompass approximately 34 percent, or 390 square nautical miles of the Sanctuary (Figure 3-6). It attempts to increase the overall protection of various habitats compared to the proposed project.

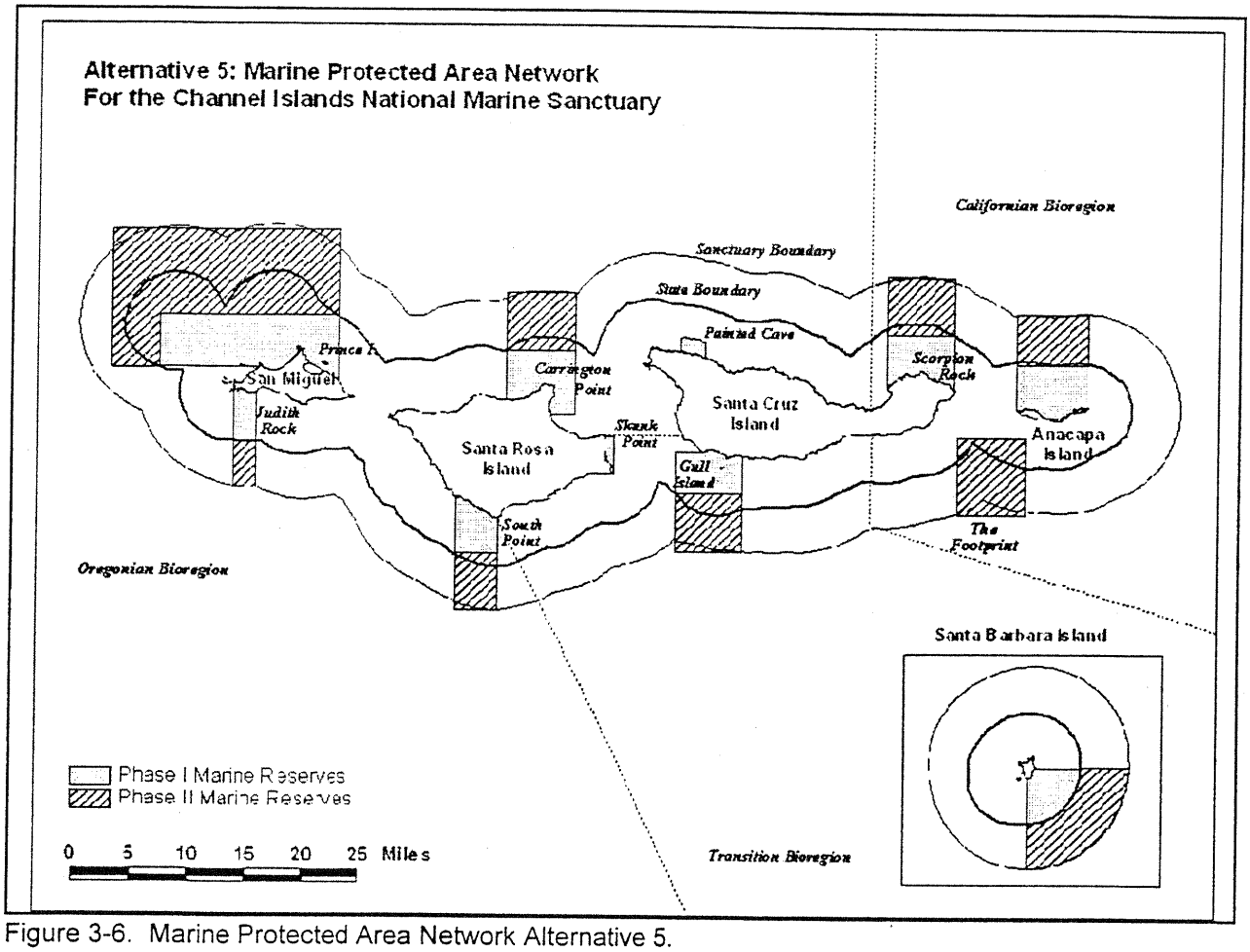

Figure 3-6. Marine Protected Area Network Alternative 5.

3.2.6 Alternative 6 Defer Decision

Alternative 6 would defer decision on MPAs within the Sanctuary to the Marine Life Protection Act (Chap. 1015, Stats. 1999) (MLPA) public process. The MLPA requires the Department to draft a master plan for MPAs, including, but not limited to, recommendations for alternative networks of MPAs. These recommendations must include a preferred siting alternative based on specific goals. The master plan is due to the Commission on or before January 1, 2003 (Appendix 1).

3.2.7 Alternative 7 No Action

The no-action alternative would continue the existing Marine Protected areas in the Sanctuary with no modifications (Appendix 1).

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Sections 27.82(a) and 630
and
Adopt Section 632
Title 14, California Code of Regulations
Re: Marine Protected Areas

I. Date of Initial Statement of Reasons: January 9, 2002

II. Dates and Locations of Scheduled Hearings

(a) Notice Hearing:
Date: August 24, 2001
Location: Santa Barbara, California

(b) Discussion Hearings:
Date: February 8, 2002
Location: Sacramento, California

Date: March 7, 2002
Location: San Diego, California

Date: April 4, 2002
Location: Long Beach, California

(c) Adoption Hearing:
Date: August 2, 2002
Location: San Luis Obispo, California

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

California's population has increased from about 7 million people in the 1940's to 20 million in 1970 and 35 million today. Eighty percent of this population lives within 50 miles of the coast. Human population increases have led to not only higher demands on natural resources, but larger impacts through runoff, pollution, and habitat alteration.

Increases in California's human population have coincided with shifts in recreational and commercial fishing activity, growth in consumer demand for live fish, and innovations in fishing gear and technology. In recent years, landings and value of live finfish in California have shown a twenty-fold increase. Landings of live finfish increased from less than 50,000

pounds with a value of $100,000 in 1993 to more than 1 million pounds with a value of nearly $4 million in 2001.

At the same time, warm water oceanic conditions and disease have led to poor reproduction and recruitment of many marine species. This combination of increased use, poor conditions and disease have contributed to declines in marine resources. Popular finfish species like bocaccio, canary, widow, and cowcod rockfishes, Pacific ocean perch, and lingcod are federally listed as overfished, meaning their populations are below 25% of their unfished levels. Abalone, a once important commercial and recreational species group, are now the subject of a moratorium in California south of San Francisco and one species, white abalone, has become the first marine invertebrate to be listed as endangered by the Federal government. Finally, the scientific data used to manage many of these resources, while the best available at the time, has since shown to be inadequate. It is now known, for example, that some rockfish species have life spans approaching 100 years and reproduce at much lower rates than other finfish.

All of these factors have caused California's fisheries management agencies and the State Legislature to seek new solutions for protecting and sustaining resources. The Marine Life Management Act (Stats. 1998, ch. 1052) created a broad programmatic framework for managing fisheries through a variety of conservation measures, including Marine Protected Areas (MPAs). The Marine Life Protection Act (Stats. 1999, ch. 1015) established a programmatic framework for designative such MPAs. AB 2800 (Stats. 2000, ch. 385) enacted the Marine Managed Areas Improvement Act, among other things, to standardize the designation of Marine Managed Areas, which include MPAs, proposed after January 1, 2002. The overriding goal of these acts is to ensure the conservation, sustainable use, and restoration of California's marine resources. Unlike previous laws, which focused on individual species, the acts focus on maintaining the health of marine ecosystems and biodiversity in order to sustain resources.

In conformance with the policies and objectives of these acts the Department of Fish and Game (Department) is pursuing an ecosystem approach to resource management that will protect species as well as critical interactions between species and habitats. The proposed regulations address this approach within the National Oceanic and Atmospheric Administration's (NOAA) Channel Islands National Marine Sanctuary (Sanctuary) by establishing a network of Marine Protected Areas (MPAs). The Sanctuary encompasses 1,252 square nautical miles from the mean high tide line to 6 nautical miles offshore the northern Channel Islands (Anacapa, Santa Cruz, Santa Rosa and San Miguel Islands) and Santa Barbara Island.

(1) Authority for Commission to Establish Marine Protected Areas (MPAs).

AB 2800 also enacted Fish and Game Code Sections 1590 and 1591, to authorize the Fish and Game Commission (Commission) to designate, delete, or modify State marine recreational management areas established by the Commission for hunting purposes, State marine reserves , and State marine conservation areas, as delineated in Public Resources Code Section 36725(a), and to incorporate by reference the provisions of the Marine Managed Areas Improvement Act.

The State's boundaries extend to a distance of three (3) nautical miles oceanward of the outermost islands adjacent to the mainland. The proposed regulations were developed jointly by the Department and Sanctuary and each alternative includes some MPAs outside State waters. The areas within State waters are addressed in this proposal as an initial phase. For the areas outside State waters, NOAA has indicated its intent to pursue establishment of MPAs under the National Marine Sanctuaries Act. Their goal is to complement the proposed State action by completing the MPA network within the Sanctuary in federal waters (3-200 miles offshore).

The proposed regulations are intended to meet the following goals described in the Marine Life Protection Act [Fish and Game Code section 2853(b)]:

- To protect the natural diversity and abundance of marine life, and the structure, function, and integrity of marine ecosystems.

- To help sustain, conserve, and protect marine life populations, including those of economic value, and rebuild those that are depleted.

- To improve recreational, educational, and study opportunities provided by marine ecosystems that are subject to minimal human disturbance, and to manage these uses in a manner consistent with protecting biodiversity.

- To protect marine natural heritage, including protection of representative and unique marine life habitats in California waters for their intrinsic value.

- To ensure that California's MPAs have clearly defined objectives, effective management measures, and adequate

enforcement, and are based on sound scientific guidelines.

- To ensure that the State's MPAs are designed and managed, to the extent possible, as a network.

As one type of fisheries management tool, MPAs may help support fished populations by providing areas free from fishing mortality. MPAs may also act as insurance for uncertainty in the effectiveness of other management measures such as seasons, size limits, bag limits, quotas, time closures and gear restrictions. MPAs, by their nature, ensure that at least a portion of targeted populations is protected, which helps ensure these populations will be sustained over time. Finally, MPAs allow species to function in an ecosystem less disrupted by the effects of extractive uses.

(A) Ecosystem Based Resource Management Concept.

As indicated above, language in both the Marine Life Management Act (MLMA) of 1998 and the Marine Life Protection Act (MLPA) of 1999 support the concept of ecosystem based resource management. The MLMA specifically states that long term resource health shall not be sacrificed for short term benefits, and that habitat should be maintained, restored, and enhanced [Fish and Game Code Section 7056 (a) and (b)]. The MLPA requires that the Commission adopt a Marine Life Protection Program that in part contains an improved marine reserve component [Fish and Game Code Section 2853 (c)(1)] and protects the natural diversity of marine life and the structure, function, and integrity of marine ecosystems [Fish and Game Code Section 2853 (b)(1)]. This protection may help provide sustainable resources as well as enhance functioning ecosystems that provide benefits to both consumptive and non-consumptive user groups. A growing body of scientific literature reviewing benefits to marine species inside reserves (including increases in size, number, and diversity of species) and to a lesser degree outside reserves (through spillover, larval transport, and protected spawning populations) also supports these concepts (Attachment 1).

In 1998 the Channel Islands Marine Resources Restoration Committee, a local citizens group, brought a proposal for new Channel Islands MPAs to the Commission. In response to significant public comment on this proposal the Commission approved a joint State and Federal Process proposed by the Department and Sanctuary to consider the establishment of new MPAs in the Sanctuary. As a part of

this process the Sanctuary Advisory Council, a constituent group that advises the Sanctuary manager, convened the Marine Reserves Working Group (MRWG). This constituent panel contained 17 members representing State and federal agencies, conservation interests, consumptive recreational and commercial groups, the public at large, and the California Sea Grant program. The MRWG met 24 times between July 1999 and June 2001 to discuss issues surrounding the potential establishment of new MPAs and try to come to consensus on a recommendation.

The Sanctuary Advisory Council also convened a Science Advisory Panel and a Socioeconomic Panel to support the MRWG process. The Science Advisory Panel consisted of 16 members with expertise in MPA science who were selected using the following criteria: (1) local knowledge, (2) no published "agenda" on reserves, (3) breadth of disciplines, (4) geographic and institutional balance, (5) participation in the National Center for Ecological Analysis and Synthesis Reserve Theory Working Group, and (6) time available. The panel reviewed a large body of scientific literature and MPA data.

The Science Advisory Panel's findings support the concept of ecosystem protection through the use of marine reserves (Attachment 1). In order to meet specific ecological and fisheries management goals, they recommended placing at least one marine reserve in each biological region of the Sanctuary; setting aside between 30% and 50% of representative habitats; and including some but not all existing monitoring sites inside reserves.

The Socioeconomic Panel consisted of five members with expertise in fisheries socioeconomics. They collected and synthesized existing studies, records of catch or harvest, and other public information sources, as well as new socioeconomic data. The Socioeconomic Panel used this information to develop impact analyses of each regulatory alternative. This analysis substantiates potential impacts to local and statewide economies and activities (Attachments 2 and 3). These data were also used in attempts to address economic goals for marine reserves. By avoiding high use areas, or areas of large economic value, various alternatives lessen immediate impacts to consumptive user groups.

While the MRWG did not reach consensus on a specific MPA network alternative, they did agree on a Problem

Statement, Goals and Objectives, and implementation recommendations (Attachment 4). The proposed regulation attempts to address these consensus-developed products. The Problem Statement was an important part of the MRWG process and states the following:

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

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

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

(B) The Network Concept

Important in the development of the proposed regulation was the consideration that reserves form a network. The network concept calls for connectivity between MPAs through adult movements and larval transport of the Species of Interest (Attachment 5). This approach is consistent with MRWG

discussions, the Science Advisory Panel recommendations and the guidance provided in the MLPA [Fish and Game Code Section 2853 (b)(6)].

The proposed regulation establishes a network of MPAs designed to include all representative habitats and major oceanic conditions (Attachment 6). Unique and critical habitats were considered separately to guarantee both representation and protection.

From an ecological perspective, the proposed regulation creates a network of MPAs consistent with the intent of the Legislature, and the goals developed by the MRWG. From an economic and social perspective the proposed regulation attempts to minimize potential short-term losses to consumptive users, a goal of the MRWG.

Allowing access into reserves for such non-consumptive uses as boating, diving, swimming, and kayaking was an important concern of many MRWG members as well as other stakeholders. These uses are consistent with the goals of the Marine Life Protection Act and are not expected to have adverse affects on the marine ecosystem. Except in the case of existing restrictions or potential resource impacts (such as marine mammal breeding and seabird nesting and fledgling areas), public access into MPAs for non-consumptive activities is assured in each alternative.

The ability to transit through or anchor in reserves with catch onboard were also major concerns. If these activities are not allowed a concern for safety in bad weather and for small vessels required to traverse larger distances arises. Since transit through reserves does not directly affect resources these activities are consistent with the intent of the proposed regulations. While anchoring can disturb bottom habitats, most anchorages are in soft bottom areas that are minimally disturbed by anchoring and vessel safety in emergencies and foul weather is critical. Because of this, authority to transit through and anchor in MPAs with catch onboard, provided that fishing gear is stowed and not in use, is included in each alternative.

(2) Alternatives

A range of alternatives is provided to meet the purposes of the proposed regulation. Each alternative meets at least some of the goals of the MRWG and MLPA, though none to the same extent as the preferred alternative.

(A) The Department's Preferred Alternative.

The Department recommended preferred alternative establishes eleven (11) new State Marine Reserves, one (1) State Marine Conservation Area where only spiny lobster (*Panulirus interruptus*) and pelagic finfish may be taken by recreational anglers, and one (1) State Marine Conservation Area where the commercial and recreational take of spiny lobster and the recreational take of pelagic finfish is allowed. These areas comprise approximately 25% of Sanctuary waters (Attachment 7). The initial State phase proposed here comprises approximately 22% of State waters within the Sanctuary.

The existing regulation of section 27.82(a), Title 14 CCR, defines the cowcod closure areas where the take of certain deepwater rockfish and associated species is prohibited. The proposed regulation alters the boundaries of that area to allow deep water fishing in the vicinity of the northeast corner of Santa Barbara Island.

The Department preferred alternative changes the boundaries of the Cowcod Conservation Area because additional savings for cowcod and associated species provided by the proposed regulation. The proposed regulation maintains the desired amount of protection for cowcod, which is required by the rebuilding plan for this overfished species, due to the added protection of the no take areas in the Department preferred alternative. Recreational fishing opportunities lost in other areas would be replaced by allowing fishing in deepwater habitats around Santa Barbara Island.

Existing regulations (sections 630(b)(5), (101), and (102), Title 14, CCR) designate three ecological reserves at Anacapa, San Miguel and Santa Barbara Islands, respectively, and prohibit the take of invertebrates from the mean high tide mark to a water depth of 20 feet in the following areas: 1) on the south side of West Anacapa Island between a line extending 345 magnetic off the National Park Service monument at the southernmost point, adjacent to and excluding Cat Rock, and a line extending 220 magnetic off the National Park Service Monument at the easternmost point near Frenchy's Cove, 2) on the north side of Middle Anacapa Island between a line extending 345 magnetic off the National Park Service Monument at Key Hole Arch Point

to a line extending 345 magnetic off the westernmost point of East Anacapa Island at the western boundary of the natural area off Anacapa Island, and 3) on the eastern side of Santa Barbara Island between a line extending 345 magnetic off the northernmost point of Arch Rock and a line extending 165 magnetic off the southernmost point of the island.

These areas were originally established to provide added protection to certain species. In addition, the existing regulations do not meet the goals of the Marine Life Protection Act and Marine Life Management Act. The proposed regulations include the same or similar habitats with increased restrictions and would thus unnecessarily duplicate the existing regulations. Where necessary, existing specific regulations (such as the brown pelican fledgling area on Anacapa Island) are included in the proposed regulation as part of the new MPA network. The proposed regulation repeals the existing ecological reserves at Anacapa, San Miguel, and Santa Barbara Islands in order to simplify the overall network, facilitate understanding of the new regulations, and eliminate unnecessary duplication.

(B) Other Alternatives

Alternative 1 - This alternative establishes nine (9) State Marine Reserves comprising approximately 12% of the Sanctuary waters (Attachment 7). The alternative uses areas agreed to as possible MPA sites by all members of the Marine Reserves Working Group. The initial State phase proposed here comprises approximately 12% of State waters within the Sanctuary. Changes to the ecological reserves on Anacapa, San Miguel and Santa Barbara Islands and the Cowcod Conservation Area are sub-options to this alternative.

Alternative 2 - This alternative establishes eight (8) State Marine Reserves and three (3) State Marine Conservation Areas comprising approximately 14% of the Sanctuary waters (Attachment 7). The alternative uses a reserve system developed by sectors of the Santa Barbara commercial fishing community (Attachment 8). State Marine Conservation Areas in this alternative allow for commercial and recreational take of various species depending on the area. The initial State phase proposed here comprises approximately 12% of State waters within the Sanctuary. Changes to the ecological reserves on Anacapa, San Miguel and Santa Barbara Islands and the Cowcod Conservation

Area are sub-options to this alternative. As a second sub-option to Alternative 2 phasing may be used to minimize short-term impacts and require certain criteria to be met (Attachment 8). These criteria may contain requirements for performance of MPAs as well as administrative contingencies.

Alternative 3 - This alternative establishes eight (8) State Marine Reserves comprising approximately 21% of the Sanctuary waters (Attachment 7). The alternative uses a reserve network developed by the Marine Reserves Working Group as an alternative in the planning process. The initial State phase proposed here comprises approximately 15% of State waters within the Sanctuary. Changes to the ecological reserves on Anacapa, San Miguel and Santa Barbara Islands and the Cowcod Conservation Area are sub-options to this alternative.

Alternative 4 - This alternative establishes ten (10) State Marine Reserves comprising approximately 29% of the Sanctuary waters (Attachment 7). This alternative uses the areas agreed to as possible MPA sites by all members of the Marine Reserves Working Group with the addition of areas suggested by some members to complete a network. The initial State phase proposed here comprises approximately 20% of State waters within the Sanctuary. Changes to the ecological reserves on Anacapa, San Miguel and Santa Barbara Islands and the Cowcod Conservation Area are sub-options to this alternative.

Alternative 5 - This alternative establishes nine (9) State Marine Reserves comprising approximately 34% of the Sanctuary Waters (Attachment 7). This alternative uses a network of reserves developed in the Marine Reserves Working Group process and altered to reduce the overall area to 34%. The initial State phase proposed here comprises approximately 23% of State waters within the Sanctuary. Changes to the ecological reserves on Anacapa, San Miguel and Santa Barbara Islands and the Cowcod Conservation Area are sub-options to this alternative.

Alternative 6 - This alternative defers decision on MPAs at the Channel Islands to the Marine Life Protection Act process. If adopted, this alternative suggests combining discussion on a reserve network at the Channel Islands with discussions for the rest of the State under the programmatic framework established by the Marine Life Protection Act.

This alternative would have no immediate effect on existing regulations.

(b) Authority and Reference Sections from Fish and Game Code for Regulation.

Authority: Sections 200, 203.1, 205(c), 219, 220, 1590, 1591 and 2860 Fish and Game Code.

Reference: Sections 200, 203.1, 205(c), 219 and 220, Fish and Game Code. Sections 36725(a) and 36725(e), Public Resources Code.

(c) Specific Technology or Equipment Required by Regulatory Change.

None.

(d) Identification of Reports or Documents Supporting Regulation Change.

Attachment 1:	Scientific Advisory Panel Recommendation
Attachment 2:	Socioeconomic Data Collection Methods, Overview, Analysis methods, and Data Distributions
Attachment 3:	Socioeconomic Analyses of Alternatives
Attachment 4:	A Recommendation for Marine Protected Areas in the Channel Islands National Marine Sanctuary
Attachment 5:	Species of Interest
Attachment 6:	Ecological Analysis of Alternatives
Attachment 7:	Maps of Alternatives
Attachment 8:	The Proactive Fishermen's Plan for Marine Protected Areas

PUBLIC DISCUSSIONS OF PROPOSED REGULATIONS PRIOR TO NOTICE OF PUBLICATION

Meeting Dates	Location	Major Topics
Dec 6, 2001	Long Beach, CA	Fish and Game Commission meeting with public comment on proposed alternatives
Oct 4, 2001	San Diego, CA	Fish and Game Commission meeting with public comment on proposed alternatives
Aug 24, 2001	Santa Barbara, CA	Presented Department preferred alternative to Fish and Game Commission and received public comments
Jun 19, 2001	Santa Barbara, CA	Sanctuary Advisory Council deliberation – forwarded advice to Sanctuary Manager
May 23, 2001	Santa Barbara, CA	Transmission of MRWG work to Sanctuary Advisory Council
May 23, 2001	Santa Barbara, CA	Public Forum - Approximately 300 attendance
May 16, 2001	Santa Barbara, CA	Review of preferred option and recommendation to Sanctuary Advisory Council
Apr 18, 2001	Santa Barbara, CA	Developing a Preferred Reserve network option
Mar 21, 2001	Santa Barbara, CA	Presentations from Science and Economic Panels
Mar 21, 2001	Santa Barbara, CA	Public Forum – Approximately 300 in attendance
Feb 21, 2001	Santa Barbara, CA	Developed Marine Reserve Scenarios
Feb 15, 2001	Santa Barbara, CA	Dealt with Unresolved Issues
Jan 12, 2001	Santa Barbara, CA	Discussion with Science and Socioeconomic Panels
Dec 14, 2000	Santa Barbara, CA	Closure on Goals and Objectives, developed questions for the Science Advisory and Socio-economic Panels
Nov 15, 2000	Santa Barbara, CA	Worked on Goals and Objectives
Oct 18, 2000	Santa Barbara, CA	Worked on Goals and objectives
Oct 12, 2000	Goleta, CA	Public Forum – Approximately 300 in attendance
Sep 26-27, 2000	Santa Barbara, CA	Received Socio-economic and Science panel data and recommendations / Crafted Preliminary reserve scenarios
Aug 22, 2000	Santa Barbara, CA	Discussed data, worked on Goals and Objectives
Jul 18, 2000	Santa Barbara, CA	Re-worked Goals and objectives, Science panel progress, refined overall process
Jun 22, 2000	Santa Barbara, CA	Adopted Goals and Objectives / Discussed data
Jun 8, 2000	Santa Barbara, CA	Worked on Goals and Objectives
Apr 13, 2000	Santa Barbara, CA	Data discussion, set future meeting dates
Mar 16, 2000	Santa Barbara, CA	Task groups, Goals and Objectives
Feb 23, 2000	Santa Barbara, CA	Response to Science Panel, worked on goals and objectives
Jan 20, 2000	Oxnard, CA	Public Forum – Approximately 200 in attendance

Meeting Dates	Location	Major Topics
Jan 10-11, 2000	Santa Barbara, CA	Joint meeting with Science and Socio economic panels, crafted goals & objectives
Dec 9, 1999	Santa Barbara, CA	Presentation from MWRG members regarding major issues and concerns
Nov 10, 1999	Santa Barbara, CA	Discussed revisions and finalized ground rules
Oct 21, 1999	Santa Barbara, CA	Adopted draft ground rules
Jul 7, 1999	Santa Barbara, CA	Introduction to MWRG process

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

A proposal was made to include an alternative representing approximately 39% of the Channel Islands National Marine Sanctuary area. This alternative included 9 State Marine Reserves, each extending to the seaward boundary of the Channel Islands National Marine Sanctuary. The alternative was rejected for consideration due to high initial economic impacts and its similarity to Alternative 5.

An initial proposal was made to the Commission to close approximately 23% of the Channel Islands, including San Nicolas Island. This proposal included 6 State Marine Reserves extending from the shoreline to a distance of 1 nautical mile offshore. This alternative was rejected due to its similarity in protection to the preferred alternative and Alternative 3.

A proposal was made to complete the State waters portion of the MPA network in a single phase. In this alternative, reserves proposed to extend into federal waters would initially be bounded by the three nautical mile offshore boundary, rather than a line of latitude or longitude. This alternative would change the initial economics impacts (Attachment 3), but would negate the need for a second regulatory process in State waters to connect to the Federal waters phase. This proposal is provided as a sub-alternative to each alternative discussed in section III(a).

(b) No Change Alternative:

The no change alternative would continue existing resource and fisheries management measures such as bag, season, and size limits as the sole protection of marine resources. The no change alternative would leave existing MPAs in the Channel Islands National Marine Sanctuary unchanged. This would provide no additional protection to resources or ecosystem-based protection of entire habitats. The no change alternative would not address the problem statement developed by consensus of the Marine Reserves Working Group, nor the goals of the Marine Life Protection Act.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purposes for which the regulation is proposed or would be as effective and less burdensome to the affected private persons than the proposed regulation.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action would have no negative impact on the environment; therefore, no mitigation measures are needed. MPAs pose a potential for redirection of fishing effort into open areas. This potential impact is reduced by specific decisions on areas to include and through careful examination of socioeconomic data (Attachment 2). These data provide a baseline for estimating which areas are currently used both in economic value and person days of activity. By avoiding high use areas (with large numbers of person days), or areas of large economic value, various alternatives lessen immediate impacts to consumptive user groups. In addition, while multiple users access the same areas on an annual basis, on a daily basis there is less congestion. Various fisheries management plans, when completed and implemented, will also help address the issue of overall capacity in a variety of affected fisheries. Specifically the nearshore and market squid fishery management plans will contain management options to limit effort and are likely to significantly reduce fleet capacity. These plans are scheduled for adoption in 2002.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

Each alternative may have negative short-term impacts on commercial and recreational fishing businesses. The impacts presented here do not represent a complete socioeconomic impact analysis, but rather what is generally referred to as a Step 1 analysis or "maximum potential loss." This analysis simply sums up the activity that currently takes place within a given alternative and translates these activities into corresponding economic values. Maximum potential loss does not take into account other management strategies/regulations and human behavioral changes, such as moving to other areas or changing fishing gear, that may mitigate, offset, or make matters better or worse. In addition, maximum potential loss does not consider possible future benefits. Comparisons of maximum potential loss to commercial fish landings, income derived from

recreational fisheries, and maximum impact to non-consumptive user derived income were computed for each alternative (Tables 1, 2 and 3), as well as expansions of the direct impacts of commercial fish landings to local economies (Table 4). It is important to note that non-consumptive users are considered beneficiaries of MPAs and thus impact to non-consumptive income is positive.

These calculations represent the loss and value in the initial State water phase of each alternative. Full comparisons of maximum potential loss and values for both State and federal phases have also been computed (Attachment 3).

The potential impacts of the Department's recommended preferred alternative are detailed here and compared to the other alternatives. The maximum potential loss to commercial fish landings would vary between 1.7% and 16.5% of annual ex-vessel value generated in Sanctuary waters in the Department preferred alternative (Table 1). This reflects a combined maximum potential annual ex-vessel loss of $3,222,810 (1996 - 1999 average ex-vessel value) to commercial fisheries (Table 1). This loss can be expanded to include losses in total income including processors, fish buyers and other related business. This maximum potential loss in income from commercial activities to all counties is estimated at $9,910,520 per year (Table 4).

The maximum potential loss to income derived from recreational fishing varies between 9.9% and 26.2% annually in the Department preferred alternative (Table 2). This represents a maximum potential loss in income of $5,720,077 generated by recreational fishing annually (Table 2).

Maximum potential impact to income derived from non-consumptive activities (diving, whale watching, kayaking, sightseeing, and sailing) ranges between 10.8% and 29.1% annually in the Department preferred alternative (Table 3). This represents a maximum potential annual income of $1,385,756 generated by non-consumptive activities annually (Table 3). Non-consumptive income is that supported by existing activities. This income is expected to increase over time by some unknown amount based on expected improvements in site quality.

In the long term, the potential negative impacts are expected to be balanced by the positive impacts of sustainable fisheries, non-consumptive benefits, and ecosystem function in the reserve areas. In addition potential benefits may be realized through adult fish spillover to areas adjacent marine reserves and larval transport to distant fished sites.

Table 1: MAXIMUM POTENTIAL LOSS IN ANNUAL EX-VESSEL VALUE TO COMMERCIAL FISHERIES BY SPECIES GROUP[1] (1996-1999 AVERAGE VALUES) FOR THE INITIAL STATE WATERS PHASE

Species Group	Preferred Alternative		Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Squid	$1,643,642	12.60	$636,109	4.88	$695,877	5.33	$670,263	5.14	$1,686,334	12.93	$1,985,178	15.22
Kelp	$332,794	5.55	$265,568	4.43	$332,794	5.55	$298,241	4.98	$467,886	7.81	$730,650	12.20
Urchins	$830,464	15.77	$735,214	13.96	$704,761	13.39	$753,956	14.32	$1,045,387	19.85	$1,338,737	25.43
Spiny Lobster	$147,867	16.04	$77,829	8.44	$82,159	8.91	$93,605	10.15	$145,269	15.75	$199,036	21.59
Prawn	$21,436	3.05	$25,602	3.64	$22,988	3.27	$25,602	3.64	$36,290	5.16	$26,092	3.71
Rockfish	$70,994	12.92	$70,862	12.90	$64,985	11.83	$71,256	12.97	$92,693	16.87	$117,331	21.36
Crab	$50,101	14.58	$26,157	7.61	$26,837	7.81	$26,104	7.60	$48,222	14.03	$51,087	14.87
Tuna	$5,081	1.66	$1,765	0.58	$2,618	0.86	$1,956	0.64	$3,415	1.12	$5,243	1.72
Wetfish	$22,408	7.43	$3,641	1.21	$6,304	2.09	$3,725	1.24	$10,799	3.58	$25,986	8.62
CA Sheephead	$38,326	16.24	$23,432	9.93	$43,966	18.64	$25,582	10.84	$44,558	18.89	$62,802	26.62
Flatfishes	$21,677	11.79	$7,987	4.34	$19,177	10.43	$7,987	4.34	$18,371	9.99	$25,558	13.90
Sea Cucumber	$27,731	16.54	$21,406	12.76	$28,667	17.09	$23,361	13.93	$31,951	19.05	$43,477	25.93
Sculpin & Bass	$5,644	9.36	$2,797	4.64	$4,990	8.27	$2,933	4.86	$4,642	7.69	$6,633	11.00
Shark	$4,645	13.37	$2,680	7.71	$1,539	4.43	$2,528	7.27	$4,799	13.81	$5,973	17.19
Total	$3,222,810	11.46	$1,901,049	6.76	$2,037,662	7.25	$2,007,099	7.14	$3,640,616	12.95	$4,623,782	16.45

[1] Species groups are defined in Attachment 2.

TABLE 2: MAXIMUM POTENTIAL LOSS IN ANNUAL INCOME GENERATED BY CONSUMPTIVE RECREATIONAL ACTIVITIES FOR THE INITIAL STATE WATERS PHASE

Activity Type	Preferred Alternative		Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5	
	Income	%	Income	%	Income	%	Income	%	Income	%	Income	%
Charter/Party Boat Fishing	$2,810,774	9.9	$1,775,955	6.2	$2,581,027	9.1	$1,796,516	6.3	$2,846,229	10.0	$3,516,847	12.4
Charter/Party Boat Diving	$661,153	18.3	$231,618	6.4	$753,710	20.8	$250,358	6.9	$621,212	17.1	$893,752	24.7
Private Boat Fishing	$1,801,449	13.0	$930,825	6.7	$1,714,098	12.4	$970,650	7.0	$1,913,470	13.8	$2,305,631	16.6
Private Boat Diving	$446,701	26.2	$73,102	4.3	$448,020	26.3	$78,281	4.6	$411,048	24.1	$522,969	30.7
Total	$5,720,077	12.0	$3,011,500	6.3	$5,496,855	11.5	$3,095,804	6.5	$5,791,959	12.2	$7,239,199	15.2

TABLE 3: MAXIMUM POTENTIAL IMPACT[1] IN ANNUAL INCOME GENERATED BY NON-CONSUMPTIVE ACTIVITIES FOR THE INITIAL STATE WATERS PHASE

	Preferred Alternative		Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5	
Activity Type	Income	%	Income	%	Income	%	Income	%	Income	%	Income	%
Whale Watching	$793,694	15.2	$253,197	4.9	$884,605	17.0	$216,278	4.1	$849,942	16.3	$928,341	17.8
Non-Consumptive Diving	$409,694	18.2	$144,195	6.4	$399,787	17.8	$147,854	6.6	$390,537	17.4	$483,254	21.5
Sailing	$88,420	10.8	$35,421	4.3	$95,631	11.7	$42,604	5.2	$99,626	12.2	$119,687	14.7
Kayaking / Island Sightseeing	$93,949	29.1	$33,288	10.3	$34,391	10.6	$35,759	11.1	$45,251	14.0	$100,966	31.2
Total	$1,385,756	16.1	$466,101	5.4	$1,414,414	16.4	$442,496	5.1	$1,385,357	16.1	$1,632,248	19.0

[1]Non-consumptive users are considered beneficiaries of MPAs. Therefore impact, in this case, is positive.

TABLE 4: MAXIMUM POTENTIAL LOSS IN ANNUAL INCOME GENERATED BY COMMERCIAL FISHERIES BY COUNTY[1] FOR THE INITIAL STATE WATERS PHASE

County	Preferred Alternative	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	Income	Income	Income	Income	Income	Income
Monterey	$1,195,421	$462,638	$506,109	$487,478	$1,226,462	$1,443,819
San Luis Obispo	$14,664	$13,961	$12,964	$14,061	$18,827	$23,768
Santa Barbara	$2,060,862	$1,659,512	$1,621,738	$1,725,409	$2,470,534	$3,153,709
Ventura	$4,957,217	$2,049,847	$2,268,893	$2,155,876	$5,109,331	$6,088,433
Los Angeles	$1,147,229	$448,130	$497,162	$472,303	$1,166,533	$1,390,029
Orange	$17	$6	$8	$7	$14	$19
San Diego	$535,111	$427,870	$533,492	$479,618	$750,738	$1,168,698
All Affected Counties	$9,910,520	$5,061,964	$5,440,366	$5,334,752	$10,742,440	$13,268,476

[1]Counties listed are those where fish are landed and/or processed.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California:

Each alternative has potential impacts on the creation and elimination of jobs related to commercial and recreational fishing and non-consumptive activities. As with economic impacts, the impacts listed here are a Step 1 or "maximum potential loss" analysis. This analysis simply sums up the activity that currently takes place within a given alternative and translates these activities into corresponding economic values. Maximum potential loss does not take into account other management strategies/regulations and human behavioral changes that may mitigate, offset, or make matters better or worse. In addition, maximum potential loss does not consider possible future benefits.

The maximum potential numbers of jobs lost relating to commercial and recreational fishing activities is estimated to be 435 and the existing jobs supported by non-consumptive activities is estimated to be 37 under the preferred alternative. This represents the potential elimination of jobs in the initial State water phase. The range in job losses for the other alternatives is from 224 (Alternative 1) to 564 (Alternative 5). The range of jobs supported by non-consumptive activities for the other alternatives is from 12 (Alternative 3) to 44 (Alternative 5). Non-consumptive jobs are the current jobs supported by existing activities. These jobs would be expected to increase over time by some unknown factor based on expected improvements in site quality.

TABLE 5: MAXIMUM POTENTIAL NUMBERS OF JOBS[1] ELIMINATED OR SUPPORTED BY JOB SOURCE FOR THE INITIAL STATE WATERS PHASE

	Preferred Alternative	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Source	Jobs	Jobs	Jobs	Jobs	Jobs	Jobs
Commercial Industry jobs eliminated	289	147	156	154	311	380
Consumptive Recreational Industry jobs eliminated	146	77	140	79	147	184
Non-Consumptive jobs[2]	37	13	38	12	38	44

[1] Jobs are listed in total employment (direct and indirect).

[2] Non-Consumptive Jobs are the current jobs supported by existing activities. These jobs would be expected to increase over time by some unknown factor based on expected improvements in site quality.

(c) Cost Impacts on a Representative Private Person or Business:

The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

Any additional costs to State agencies for enforcement, monitoring, and management of MPAs are difficult to estimate and depend on not only the impacts of the proposed regulation but other regulations and processes as well. Current cooperative efforts with the Sanctuary and Channel Islands National Park provide funding for some existing costs and are expected to increase with the adoption of these regulations. While changes in enforcement, monitoring, and management may occur, these changes are not expected to create significant changes to funding or costs to State agencies.

Enforcement Efforts

The Department's Marine Region currently deploys 57 law enforcement officers statewide. In the Santa Barbara and Ventura county area 3 lieutenants and 4 wardens/boarding officers positions are funded and would form the baseline of MPA enforcement. One 54 ft (16.5 m) patrol boat will be stationed in Ventura in the coming year. A second 54 ft patrol boat is presently stationed in Dana Point and assists with enforcement in the Channel Islands. Marine Region wardens currently enforce a range of regulations around the Channel Islands. The proposed regulations may change the specific enforcement duties, but not the level of effort.

The Sanctuary contributes funds directly to the Department to enhance enforcement capabilities in Sanctuary waters. This funding is estimated to continue at a rate of $30,000 per year. In addition the Sanctuary conducts aerial surveys which add to the enforcement coverage.

The Channel Islands National Park employs six full time rangers stationed on the islands. These rangers are deputized to enforce all federal, state, and county laws and regulations within one nautical mile of the shoreline. The National Park has three patrol boats stationed at the islands and primarily used for the enforcement of marine laws and regulations as well as public safety.

Research and Monitoring Efforts

Fishery-dependent information refers to data collected from fishing harvest, either from a commercial or recreational fishery. Fishery-

dependent monitoring and data collection are concerned with activities that remove fish from the resource (extractive uses). These assessments will continue regardless of MPA establishment.

The Department has assessed a variety of fisheries and species through independent methods including dive, trawl, hydroacoustic, and other surveys. These efforts are expected to increase with the establishment of MPAs, however much of this may be completed by grant funded university and other researchers. The proposed regulations do not specifically require increases in Department costs.

The Sanctuary conducts a variety of ongoing monitoring programs at the Channel Islands. These include a collaborative research program, which links fishermen with scientists, aerial monitoring, habitat mapping, seabird research, kelp forest monitoring (in conjunction with the National Park), oceanographic sampling, intertidal monitoring (in conjunction with the National Park), and acoustic tracking of giant seabass. These activities are expected to continue with additional funds designated towards monitoring new MPAs.

The Channel Islands National Park also conducts a variety of monitoring programs. These include seabird monitoring, rocky intertidal monitoring, kelp forest monitoring, and ecological research. The continuation of these long-term programs not only provides a baseline of data on resource status but will allow examinations of the effectiveness of MPAs. The proposed network of reserves contains existing monitoring both within and outside MPAs.

(e) Nondiscretionary Costs/Savings to Local Agencies:

None

(f) Programs mandated on Local Agencies or School Districts:

None

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4:

None

(h) Effect on Housing Costs:

None

Informative Digest / Policy Statement Overview

The following alternatives establish new Marine Protected Areas (MPAs) in the area within NOAA's Channel Islands National Marine Sanctuary. This area includes the northern Channel Islands (Anacapa, Santa Cruz, Santa Rosa, and San Miguel) and Santa Barbara Island from the shoreline to a distance of 6 nautical miles offshore. Each alternative includes some areas outside state waters (from 0 to 3 nautical miles offshore). The areas within state waters are addressed in this proposal as an initial phase. For the areas outside state waters, NOAA has indicated its intent to pursue establishment of marine reserves under the National Marine Sanctuaries Act. The goal is to complement the proposed State action by completing the marine reserve network in the Sanctuary. These new areas constitute the addition of a new Section 632 to Title 14, California Code of Regulations.

The Department's recommended preferred alternative establishes eleven (11) new State Marine Reserves where it is unlawful to injure, damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the Commission for research, restoration, or monitoring purposes, one (1) State Marine Conservation Area where only the recreational take of spiny lobster (*Panulirus interruptus*) and pelagic finfish is allowed, and one (1) State Marine Conservation Area where the commercial and recreational take of spiny lobster and the recreational take of pelagic finfish is allowed. These areas comprise approximately 25% of the waters within the Channel Islands National Marine Sanctuary. For the purposes of these regulations, pelagic finfish is defined as: anchovy, barracuda, blue shark, dolphinfish, herring, mackerels, mako shark, marlin*, salmon, sardine, swordfish, thresher shark, tunas, and yellowtail (*marlin is not allowed for commercial take).

Five alternatives to the recommended preferred alternative establish between 7 and 11 State Marine Reserves covering a range of 12% to 34% of the Channel Islands National Marine Sanctuary. The alternatives vary in specific locations and sizes of MPAs. An alternative to delay decision on the matter to the Marine Life Protection Act process is provided along with a no change alternative.

In addition, the proposed regulations remove three existing invertebrate closures on Anacapa and Santa Barbara islands found in sections 630 (b)(5)(C) and 630 (b)(102)(B), Title 14, California Code of Regulations, and three ecological reserves at Anacapa, San Miguel, and Santa Barbara islands. The proposed regulations would re-designate these under the new MPA Section (632, Title 14, California Code of Regulations). Existing regulations on activities in the ecological reserves other than the invertebrate closures would be maintained in the new designations. The proposed regulations also alter the boundaries of the Cowcod Conservation Area around Santa Barbara Island found in Section 27.82(a), Title 14, California Code of Regulations.

Should none of the above MPA alternatives be chosen, the existing MPAs would remain unchanged. At present, this includes the no-take area and two invertebrate closures at Anacapa Island, an invertebrate closure at Santa Barbara Island, and seasonal marine mammal and sea bird protective closures at San Miguel, Anacapa, and Santa Barbara islands.

REVIEW OF PROPOSAL FOR MARINE RESERVES IN STATE WATERS OF THE CHANNEL ISLANDS NATIONAL MARINE SANCTUARY (CINMS)

Situation: At its April 2002 meeting, the Council further considered the process for Council review of the proposal to create no-take marine reserves in state waters of the CINMS. In response to the delay in receiving the California Environmental Quality Act (CEQA) analysis documents, the Council adopted the following process keyed to the receipt and distribution of the CEQA documents by May 15:

- Distribution of the CEQA documents to the SSC and advisory body chairs by May 15.
- Scientific and Statistical Committee (SSC) Marine Reserves Subcommitee meeting to review the CEQA documents in early June.
- Full SSC consideration of the marine reserves subcommittee report on Sunday of the June Council meeting week.
- Advisory body consideration of the SSC report at the June Council meeting.
- Establishing a small policy committee to meet between the June and September meetings.
- Council consideration of advisory body comments and tasking the small policy committee at the June Council meeting.
- Final consideration of the recommendations of the small policy committee, advisory bodies, and the public and the Council at the September meeting.

The Council tasked the Executive Director with sending a letter to the California Department of Fish and Game (CFGC) communicating the intended process and identifying the key constraint of the scheduled CFGC final decision on August 2, 2002 Exhibit F.1, Attachment 1.

A meeting date of June 10-11 was established for the SSC marine reserves subcommitee. The CDFG noticed the Council the CEQA documents would be finalized prior to the May 15 time frame, and indicated the collective document would be relatively large (approximately 1500 pages). The CDFG agreed to mail the document directly to the SSC in order to provide the most time possible for SSC review. Some of the critical excerpts from the CEQA document are provided as an attachment (Exhibit F.1, Attachment 2). The full document is provided in the briefing materials on a CD ROM. Hard copies will be made available to Council members at the Council meeting.

The CFGC has delayed its final decision until December 6, 2002 (Exhibit F.1, Attachment 2).

The SSC received the document May 29. The SSC will proceed with its June 10-11 subcommittee meeting to make as much progress as is possible towards the review of the document; the full SSC will also meet on Sunday June 16 to work on the review. At this point, due to the loss of two weeks of review time for a large document, the SSC comments may not be ready before Tuesday of the Council meeting. The Council should have a completed SSC report or schedule for completing the review by the time it addresses this issue on Thursday. Advisory bodies will be asked to develop statements for the Council without the benefit of the SSC review, noting that they will have the opportunity at the September Council meeting to consider both the SSC report and the recommendations of the small policy committee.

Council Action:

1. **Appoint an ad hoc policy review committee and schedule a meeting well in advance of the September Briefing Book deadline (August 21).**
2. **Consider guidance to the ad hoc policy review committee for development and finalization of comments on the proposal for marine reserves in state waters of the CINMS.**

Reference Materials:

1. Letter from Dr. McIsaac to Mr. Robert Treanor dated April 29, 2002 (Exhibit F.1, Attachment 1).
2. Excerpts from CEQA Document and CD ROM (Exhibit F.1, Attachment 2).
3. Letter from Mr. Robert Treanor to Dr. Donald McIsaac dated May 16, 2002 (Exhibit F.1.b, CFGC Letter).
4. Public Comment (Exhibit F.1.d, Public Comment).

Groundfish Fishery Strategic Plan (GFSP) Consistency Analysis

The GFSP calls for the Council 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."

Agenda Order:

a. Agendum Overview — Jim Seger
b. Status of the California Department of Fish and Game Process — LB Boydstun
c. Reports and Comments of Advisory Bodies
d. Public Comment
e. **Council Action:** Develop a Response to the California Fish and Game Commission

PFMC
06/04/02

GROUNDFISH ADVISORY SUBPANEL STATEMENT ON THE UPDATE ON OTHER MARINE RESERVES PROCESSES

The Groundfish Advisory Subpanel (GAP) reviewed the various activities occurring in California, Washington, and Oregon in regard to marine reserves.

In the case of California, the GAP notes that California's "Marine Life Protection Act" (MLPA) has established an elaborate process to seek public input and scientific evaluation of potential marine reserves. Since these reserves may have an impact on management decisions, the GAP believes it is important for the Council to keep abreast of MLPA activities. This could be done by designating one or more liaisons between the Council and California.

The GAP also offers the following comments in regard to marine reserves in general.

There is an unprecedented level of concern by all West Coast fishery participants regarding the preliminary groundfish management measures being proposed for 2003 by the Council. The message is clear and sobering. In effect, the Council may be required to close nearly all the continental shelf to all fishing by both commercial and recreational fisheries. Even the most liberal management measures will create widespread economic hardship and bankruptcy for many participants and sectors of our traditional fisheries. In a worst case scenario there will be an economic disaster in coastal communities from San Diego, California to Bellingham, Washington which will dwarf that experienced by the collapse of the East Coast fishing industry and support infrastructure. It is a foregone conclusion at this point in time that, at a minimum, there will be large closure areas coast wide which will eclipse any of those proposed thus far by proponents of no-take marine reserves. With respect to the effect on the currently depressed economy, it doesn't take much imagination to conclude what the outcome of fishery closures of this magnitude will wreak on our future coastal economy.

The prospect of imposing no-take marine reserves on top of or along side of the pending areas closed to fishing is intolerable and is absolutely void of one shred of scientific or economic justification at this time. There is virtually no add-on benefit of marine reserves to our marine environment which can be scientifically quantified at this time in the face of these pending closure areas. It is also a foregone conclusion that implementation of no-take reserves will exacerbate impacts on some species by concentrating fishing effort on what few areas which may remain open to fishing. As a final point of concern, many respected scientists agree the use of no-take reserves have dubious value as a management tool when that area has existing conservation driven management in place. This point is particularly relevant to most of our West Coast managed groundfish species and the current gear regulations which minimize the effect of bottom contact by participants in those fisheries.

Is there need for no-take marine reserves in the future? Many of us involved in the fishery management arena agree that a case may be made for some limited reserves, given credible scientific rationale and justification. Do we need to rush into implementation of marine reserves without science based qualifying criteria predicated on the fact that it makes some folks feel good? Absolutely not! The GAP recommends in the strongest terms possible the Council not recommend establishment of any additional marine reserves at this point in time. The GAP believes this should be the Council's policy until clearly defined criteria and science based justification for implementation of marine reserves can be identified at an appropriate place and time in the future.

Finally, the GAP strongly recommends the authority of NMFS to regulate fisheries within national marine sanctuaries not be compromised by any marine reserve designation or changes in sanctuary management plans.

PFMC
06/20/02

Jim Seger

Exhibit F.2.b
Supplemental GMT Report
June 2002

GROUNDFISH MANAGEMENT TEAM STATEMENT ON UPDATE ON OTHER MARINE RESERVES PROCESSES

The Groundfish Management Team (GMT) received a report from Dr. Richard Parrish, National Marine Fisheries Service, on a proposal to evaluate and site a series of Marine Protected Areas (MPAs) along the California coast in federal waters. The California Department of Fish and Game held ten highly contentious public hearings last year as part of its Marine Life Protection Act (MLPA) process. A revised process and timeline for the MLPA effort has been established with the potential adoption of MPAs sometime in 2005. The current vision for this effort is to undertake a process with increased, and more formal public involvement at the regional level to evaluate a series of MPAs in state waters. While the MLPA process is focused upon MPAs in state waters, Dr. Parrish's proposal is to coordinate the MLPA process with the Council process and extend some of the state MPAs into federal waters to provide protection for groundfish habitat.

The question Dr. Parrish posed to the GMT was with respect to possible coordination of the state and federal processes. If this effort is initially undertaken only at the state level, this may result in redundant, or perhaps conflicting efforts, if the results of the state endeavor were to be considered for expansion into federal waters. The GMT was sensitive to this question and believes that the Council's essential fish habitat (EFH) environmental impact statement (EIS) scoping process may provide an opportunity for coordination.

The GMT recognizes that providing opportunity for public involvement and comment early in the process is key to the success of any effort to employ MPAs. The extension of some of the California state MPAs into federal waters to provide habitat protection for groundfish could be a reasonable EFH alternative for analysis. If the Council believes that this is an appropriate approach, Dr. Parrish could provide a presentation to the Council's EFH EIS coordinating committee (either the Ad Hoc Groundfish EIS Oversight Committee or Habitat Committee).

PFMC
06/20/02

Exhibit F.2.b
Supplemental HC Report
June 2002

HABITAT COMMITTEE STATEMENT ON UPDATE ON OTHER MARINE RESERVES PROCESSES

The Habitat Committee (HC) discussed the Oregon Ocean Policy Advisory Council (OPAC) process and recommendations regarding marine protected areas in Oregon. Among other things, the HC discussed the importance of involving the public in the marine reserves planning process. The HC will continue to track the OPAC process and will report back to the Council in November.

Mark Powell

PFMC
06/20/02

Subject: Fwd: Shipp report
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Fri, 19 Apr 2002 13:34:06 -0700
To: jim.seger@noaa.gov
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GUU14U00.ESZ for <jim.seger@noaa.gov>; Fri, 19 Apr 2002 13:34:06 -0700
Message-ID: <10f16c111761.11176110f16c@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--5dae759b5fa51764"

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384
Phone: 503-326-6352
Fax: 503-326-6831
On the web at: http://www.pcouncil.org

Subject: Fwd: Shipp report
From: <Sedwa4@aol.com>
Date: Fri, 19 Apr 2002 14:16:07 EDT
To: pfmc.comments@noaa.gov
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GUU14U00.ESZ for <jim.seger@noaa.gov>; Fri, 19 Apr 2002 13:34:06 -0700
Message-ID: <10f16c111761.11176110f16c@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--5dae759b5fa51764"

There is a growing body of scientific opinion that MPAs are not as effective as they have been represented - here is one more in that vein. Could it be that we are all being sold a "pig in a poke" as far as MPA's? I have heard no one identify any tests or benchmarks that would indicate whether these things are effective or not once they are initiated.

Subject: Shipp report
From: SwordsTuna@aol.com

Exhibit F.2
Attachment 1
June 2002

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

RECEIVED
MAY 7 2002
PFMC

APR 26 2002

Dr. D.O. McIsaac
Executive Director
Pacific Fishery Management Council
2130 SW Fifth Avenue
Portland, Oregon 97201

Dear Dr. McIsaac:

Thank you for your letter inquiring about funding support from the National Marine Protected Area (MPA) Center for the Pacific Fisheries Management Council's (Pacific Council) marine reserves initiative.

We apologize for our late formal response. When we received your letter, we had informally discussed the National MPA Center's inability to respond to the Pacific Council's needs due to its lack of an annual budget. Using funds from the Center's FY 2002 appropriation of $3 million, we are seeking partnerships to develop MPA tools, education, and science that can be shared with the entire community of MPA stakeholder groups. For example, the Center is working with the National Marine Fisheries Service (NMFS) and the South Atlantic Fishery Management Council to develop education workshops on MPA science for fishers. Similar possibilities for partnership projects may exist within the Pacific Council's larger proposal.

We are interested in collaborating with the Pacific Council on its plans to evaluate marine reserves as a management tool. Representatives from the National Oceanic and Atmospheric Administration (NOAA) and the Department of Interior (DOI) will be attending the Annual Council Chair and Executive Directors' meeting in Sitka, Alaska, in May 2002, to provide a presentation on the National MPA Center and its activities. Joseph Uravitch, the Acting Director of the National MPA Center, and Rebecca Lent, the Deputy Assistant Administrator for Fisheries will be contacting you to set up an evening meeting in Sitka to discuss strategies of mutual benefit.

We look forward to continuing to work with the Councils, as well as other stakeholders, to develop additional information, tools, and strategies for effective use of MPAs.

We appreciate your continued interest in promoting the sustainable use of our Nation's valuable marine resources.

Sincerely,

for William T. Hogarth, Ph.D.
Assistant Administrator
for Fisheries

for Margaret A. Davidson
Acting Assistant Administrator
for Ocean Services and Coastal
Zone Management

No Take Marine Protected Areas (nMPAs) as a fishery management tool, a pragmatic perspective

A Report to the FishAmerica Foundation

By Robert L. Shipp, Ph.D.

Executive Summary

Marine Protected Areas (MPAs) are portions of the marine environment which are protected from some or all human activity. Often these are proposed as a safeguard against collapse of fish stocks, although there are numerous other suggested purposes for their establishment. "No take" MPAs (hereafter referenced as nMPAs) are those from which no harvest is allowed. Other types include those where certain types of harvest are prohibited, which are reserved for certain user groups, or which are protected from other human activities such as drilling or dredging.

Establishment of nMPAs may have numerous beneficial purposes. However, as a tool for fisheries management, where optimal and/or maximum sustainable yield is the objective, nMPAs are generally not as effective as traditional management measures, and are not appropriate for the vast majority of marine species. This is because most marine species are far too mobile to remain within an nMPA and/or are not overfished. For those few species that could receive benefit, creation of nMPAs would have an adverse effect on optimal management of sympatric forms.

Eight percent of US fish stocks of the Exclusive Economic Zone (EEZ) are reported to be experiencing overfishing. The finfish stocks included in this number are primarily pelagic or highly mobile species, movement patterns that don't lend themselves to benefit from nMPAs. Thus a very small percentage, something less than 2 %, depending on mobility potentials, is likely to benefit from creation of these no-take zones. However, many of these species have come under management within the last decade, employing more traditional fishery management measures, and are experiencing recovery.

MPAs (both "no take" and other types) can serve a positive function as a management tool in protecting breeding aggregations, in helping recovery of severely overfished and unmanaged insular fish populations with little connectivity to adjacent stocks, and in protecting critical habitat which can be damaged by certain fishing methods.

Introduction

Concept of MPAs

In recent years, a great deal of interest has been expressed in the establishment of Marine Protected Areas (MPAs), marine "no take" areas, or marine sanctuaries (e.g. National Research Council: "Marine Protected Areas: Tools for Sustaining Ocean Ecosystems, 2001; National Resource Defense Council: "Keeping Oceans Wild: How marine reserves protect our living seas, 2001") This interest has been spurred by the frequent references to depleted fish stocks, and continued decline in marine fishery resources.

Proponents of so called "no take" Marine Protected Areas (nMPAs) have described the benefits to include potential as a fishery management tool as well as several other related advantages, specifically, conserving biodiversity, protecting (coastal) ecosystem integrity, preserving cultural heritage, providing educational and recreational opportunities, and establishing sites for scientific research (Houde et al., 2001). In addition, other benefits suggested include enhancing ecotourism, and reducing user group conflict (e.g. divers and harvesters).

The concept of nMPAs is initially attractive, and will no doubt elicit a great deal of support and discussion among various groups interested in protecting marine habitats. However, the many offered benefits described above often overlap, and become intertwined in the discussions that ensue. A fishery management tool is one that sustains and/or increases through time the yield of a fish stock, or several sympatric stocks of an ecosystem. If nMPAs are to be considered as a management tool, then that goal or objective, sustained and/or increased yield, needs to be clearly stated, and distinguished from other, more theoretical goals.

Traditional Management Tools

Traditional management tools generally focus on reducing effort, enhancing stocks from hatchery operations, and protecting critical habitat. Effort reduction includes bag and size limits (including sometimes slot limits), quotas, seasonal and/or areal closures, gear restrictions, and by-catch reduction. These have been successful for more than a century in freshwater environments. Their use in marine habitats has only become widespread in the United States in recent decades, especially since passage of the Fishery Conservation and Management Act in 1976. Hatchery operations and stocking have also been primarily a freshwater endeavor, although recent efforts to stock some marine species have been attempted and yet to be evaluated over the long term. Protection of critical marine habitats has become an issue of extreme concern and is the focus of current efforts on the part of all Fishery Management Councils, as required in the most recent reauthorization of the Sustainable Fisheries Act. Use of MPAs for this purpose is discussed later in this paper.

Purposes of MPAs

In order for nMPAs to function as a management tool for marine fisheries, there needs to be an examination in specific instances and with specific stocks to determine the potential benefits. This is especially true when stakeholders are currently so involved in management decisions that impact their livelihood. In their work on no-take reserves (Murray et al., 1999), the authors list guidelines for these reserves, including first:

1. Reserves should have clearly identified goals, objectives, and expectations.

a) Clearly identify and describe the purposes of each reserve.
b) Clearly identify the species, communities, and habitats to be protected.
c) Clearly identify the projected role and contribution of each reserve to the network.

I am in total agreement with these guidelines. For this reason, a systematic approach, detailing the potential benefits or lack thereof of nMPAs on managed stocks is justified, and is the intent of this paper. It is not the intent of this paper to pass judgment on the benefits of MPAs ("no take" or MPAs of other design) on any of the other stated objectives (e.g. conserving biodiversity, study sites for ecosystem research, ecotourism sites, protection of habitat from destructive fishing methods, protection of habitats from other harmful anthropogenic activities such as drilling, coastal development etc.). These are socioeconomic or scientific questions that may have socioeconomic and/or scientific consequences, but are distinct from evaluating scientifically nMPAs as a fishery management tool.

Methodology

The procedure followed here is to develop a comprehensive list of economically (commercial and recreational) important finfish from the mid to south Atlantic, the Gulf of Mexico, and Pacific US coasts (shellfish are excluded here because of the radical differences in their life history, harvest methods, etc.). For each species in the list, determine the status of the stocks (underutilized, fully utilized, over utilized, unknown). Then review their life histories, especially movement and/or migratory patterns, and make a judgment as to the possible benefits that may be conferred by establishment of an nMPA.

Determination of nMPA impacts

NMPAs are predicated on two fundamental components: keeping harvesters out and keeping the species in. The first of these is primarily an enforcement, compliance, and education issue and not to be discussed herein. The second is wholly a scientific issue, that is, whether the biology of the species is such that they will remain within an nMPA for a period of their life long enough to accrue the protection desired.

Studies assessing the management potentials of nMPAs recognize this, and the "keeping species in" component is critical in modeling efforts. For example, Nowlis and Roberts (1998) state that their models "**included the key assumptions that adults did not cross reserve boundaries and that larvae mixed thoroughly across the boundary but were retained sufficiently to produce a stock-recruitment relationship for the management area.**"

In addition, for an nMPA to be an effective management tool, the clear implication is that management is needed. Thus, the stocks must be overfished, or overfishing is occurring or likely to occur, and the stocks may be approaching an overfished condition. There are formal and legal definitions for these terms, but briefly, an "overfished stock" is one whose current biomass is below that needed to maintain current harvest rates, and "overfishing" refers to a **rate** of fishing pressure that will lead to the overfished condition, even though current biomass of that stock is adequate to sustain maximum sustainable yield (MSY) if properly managed.

If the stocks are healthy, and projected to remain so, that is they are neither overfished nor is overfishing occurring, the need for nMPAs as a management tool is nil. This is also true if the preferred but complex ecosystem management strategy is employed, and no species within the complex is overfished or experiencing overfishing. In fact the literature is clear on this point, that if the stocks are healthy, nMPAs at best are yield neutral or will reduce harvest in some ratio to the size of the nMPAs (e.g. Polachek, 1990; DeMartini, 1993; Holland and Brazee, 1996; Sladik and Roberts, 1997; Botsford et al., 1999; Hastings and Botsford, 1999; R. Hilborn, U. of Wash. pers. com.).

Current status of fisheries

So it is first important to gain some perspective on the extent of overfishing in U.S. waters before we can assess the possible benefits of nMPAs. In the latest Report to Congress (NMFS 2001), 905 fish stocks in the EEZ were addressed, including both finfish and shellfish. Ninety-two stocks (10%) were determined to be overfished; seventy-two stocks (8%) were found to have overfishing occurring. Of these, 57 stocks (6.3%) were found to be both overfished and are experiencing overfishing. These percentages are somewhat misleading in that there were a large number of stocks for which the stock status was undetermined. However most of these were economically less important and less targeted species.

Determination of Potential Benefits

In determining possible benefits for each species, while movement patterns and stock condition are primary considerations, additional parameters include any that may impact the management of the species. Examples include utility and effectiveness of alternative management measures, presence of critical habitat, by-catch mortality, release mortality, and recruitment (i.e. larval dispersal) characteristics.

The species movement patterns of course relate to the proposed dimensions of an nMPA, but in most discussions, vast area nMPAs, covering extents within which a migratory species or all life history stages of sedentary species would be contained, are not proposed. Exceptions exist in dire cases, such as the major areas established off the upper western North Atlantic shelf, where an attempt is being made to recover the depleted ground fish stocks (NOAA, 1999). In fact, these can also be interpreted as a proxy for effort reduction on a collapsed fishery.

There have been suggestions that certain areas which serve as major migratory pathways or important spawning areas for pelagic species be considered as nMPAs (e.g. NOAA, 1999). These in fact will be discussed as critical habitat parameters, but are not what are generally considered as an nMPA, as these may be seasonal, or even variable in locale, depending on certain physical conditions.

The basic document employed for this list determination is the aforementioned "Report on the Status of US Living Resources" published by the US Dept of Commerce for the year 1999 (NOAA, 1999) and "The Report to Congress. Status of Fisheries of the United States" (NMFS, 2001). These reports provide species lists for each of the coasts, and their current stock status. This is supplemented by including additional species that may fall under individual state management, or have some economic importance external to the parameters of the federal documents. Where these species have been added, a brief commentary on the rationale to do so is included.

Thus the concern often expressed is for troubled species, and the purpose of this report is to determine if those species are potential beneficiaries of nMPAs.

Mid to south Atlantic species

Anadromous Species

NOAA (1999) lists five managed anadromous species of the Atlantic Coast: Striped bass, American shad, alewife/blueback, sturgeons, and Atlantic salmon. All these stocks are considered overfished except striped bass.

Striped bass *(Morone saxatilis)* suffered severe recruitment failures in the 1970s, but restrictive management measures implemented in the 1980s and some good recruitment levels have restored the stocks. For the other species, agricultural and industrial development and damming of rivers are cited as the major impediments to rebuilding. And while improvements of these riverine habitats may be necessary for recovery of these stocks, none of these species can be considered as potential beneficiaries of an nMPA.

Atlantic Highly Migratory Species.

NOAA (1999) lists 10 categories of highly migratory fish stocks: yellowfin tuna, bigeye tuna, albacore, skipjack tuna, bluefin tuna, "other" tunas, swordfish, blue marlin, white marlin and sailfish. Of these, all are considered over exploited, except yellowfin (fully exploited), skipjack (possibly fully exploited) and other tunas (unknown). While there is grave concern for the future of these severely overfished stocks, their highly migratory nature and requirements for international quota regulations preclude them from receiving significant benefit from an nMPA. However, identification of critical spawning areas may justify seasonal/areal closures in the future.

Atlantic Shark Fishery.

There are thirty-four species of sharks listed in the Atlantic shark fishery by NOAA (1999), however these are grouped into only three categories: large coastal, small coastal, and pelagic. The large coastal species as a group are considered overfished, although lack of knowledge of the individual species status is a concern. Small coastal sharks are thought to be fully utilized, and their stock levels above that necessary to maintain a long-term potential maximum yield. The exploitation status of the highly pelagic grouping is unknown. But practically all shark species for which tagging studies have been implemented show extensive movement patterns, and as a result, are unlikely to benefit from nMPAs. However, recent information on critical nursery areas for some species may warrant seasonal/areal closures or other measures to protect critical habitat of juveniles.

Summer Flounder.

Along the New England and mid Atlantic coast, summer flounder (*Paralichthys dentatus*) of the mid Atlantic states is a heavily exploited species, both commercially and recreationally. The species undergoes an offshore spawning migration from late summer to mid-winter, and the larvae and post-larvae drift inshore, where metamorphosis is completed, and the juveniles utilize eelgrass beds or similar habitats. The extensive migratory patterns minimize potential benefit to the species by nMPAs, however, consideration should be given to protection and even expansion of the required juvenile habitat.

Other south Atlantic and Gulf of Mexico stocks

Atlantic and Gulf of Mexico Migratory Pelagic Fisheries.

Because of their migratory patterns which ingress between both the Gulf and south Atlantic, Gulf and Atlantic migratory species are included together. The species listed include dolphinfish, king mackerel, Spanish mackerel, cobia, and cero mackerel. To this list is added wahoo, because both Management Councils (the South Atlantic Fishery Management Council [SAFMC] and the Gulf of Mexico Fishery Management Council [GOMFMC]) have recently begun an assessment and management plan for this species.

Of these seven species, only the Gulf stock king mackerel have been considered overfished, although the most recent stock assessment has concluded that this stock has now recovered to the fully utilized level (Dr. Will Patterson, chair GOMFMC Coastal Migratory Stock Assessment Panel, pers. com). Dolphinfish, cobia, cero, and wahoo fishery utilization levels are unknown. But in any case, these species are so migratory that none could be considered to benefit by an nMPA.

Atlantic and Gulf of Mexico Reef Fisheries.

About 60 species of reef fishes are managed in the South Atlantic and Gulf EEZ. For the vast majority of these, stock assessments have not been performed and life history data, including movement patterns, are also unknown. Thus any consideration of nMPA benefits for these species is pre mature. However, in recent decades, great concern has been expressed for several of the more valuable species, and more is known of their stocks and life history than the lesser known forms. These will form the analytical basis for the potential benefits of nMPAs, and for the present, can be considered as reasonable proxies for the other less studied species.

The species included in this discussion are: jewfish (= goliath grouper), Nassau grouper, gag grouper, red grouper, red snapper, vermilion snapper, mutton snapper, greater amberjack, red porgy, and gray triggerfish. Each of these is treated individually in regard to their stock status and current trends, life history parameters, and potential benefits of nMPAs.

Goliath grouper (*Epinephelus itajara*) has been a species of great concern for more than a decade. In fact, a total harvest prohibition was placed on this species in the late 1980s. Since then, the population has experienced significant recovery (A. E. Eklund, NMFS, pers.comm.), and has led many commercial and recreational fishermen to express concern that its predatory behavior may negatively impact populations of sympatric reef species, especially spiny lobsters. At the recent (January 2002) meeting of the Reef Fish Advisory Panel (RFAP) of the GOMFMC,

several members noted that these stocks have rebounded so strongly and are impacting their prey species so heavily that the Panel voted unanimously to request that the Council consider a controlled harvest to determine the status of the stocks.

Nassau groupers (*Epinephelus striatus*) are found only in the most extreme southern US, primarily the Florida Keys (Sadovy and Eklund, 1999). The status of their stocks has also been of great concern, especially because of their well-documented spawning aggregations (Colin, 1992) that make them vulnerable to intense harvest at that time. For this reason, protection of these sites during spawning is certainly a positive function of an nMPA. Whether these sites should be so designated permanently would require additional studies to determine if habitat requirements were threatened by harvest activities during other times. In addition, designation of areas other than the spawning sites as nMPAs for protection of Nassau would not be beneficial, since they would leave those areas during spawning, and thus become vulnerable to capture (Bolden, 2000).

Gag grouper (*Mycteroperca microlepis*) is an extremely important commercial and recreational species, occurring along the entire mid- Atlantic and Gulf coasts. There has been a great deal of study on this species (see Turner et al., 2001) because of its economic importance, fears for the condition of the stock, the formation of spawning aggregations, its protogynous life cycle, and the possibility of a major shift in sex ratios (fewer males) due to overfishing and the extremely aggressive habits of the males during this period (Coleman et al., 1996). Several regions off the big bend area of Florida were proposed as nMPAs by the GOMFMC for this species during the spawning period (late winter-early spring), but prevented from implementation by subsequent litigation. However, the occurrence of spawning aggregations and concern over sex ratios does argue for protection in those areas well documented as spawning sites. Although the current stock assessment indicates that the stocks are not overfished (GOMFMC, Stock Assessment Panel [SAP], 2001), gag is definitely a potential candidate for protection at aggregate spawning sites and during spawning periods.

Red grouper (*Epinephelus morio*) range from Massachusetts to Brazil, and are most abundant on the west Florida and Yucatan shelves. They're found from coastal estuaries to the outer continental shelf (Robins et al., 1986; Shipp, 2000) and will likely be declared overfished during the year 2002 (Dr. Jim Cowan, chair, GOMFMC, SAP), although there continues to be a great deal of uncertainty regarding the status of the stocks, due in large part to historical catch by the Cuban fleet through the 1960s. In addition, little is known about the migratory patterns of this species. But there is no indication that they are any more sedentary than other groupers, and the juveniles occur in nearshore waters, moving offshore as they approach maturity. It is possible that adults form small breeding aggregations (Coleman et al., 1996), but whether these occur in well-defined areas is not known. If such areas are located, they could possibly be designated as an nMPA during spawning periods.

Red snapper (*Lutjanus campechanus*) has doubtlessly become the most controversial finfish species in the Gulf of Mexico, less so in the south Atlantic. It's high market value, favor by recreational fisherman, and the vulnerability of juveniles to shrimp trawls, has resulted in stakeholder conflicts on many fronts. The species was declared as severely overfished in the late 1980s and early 1990s (Goodyear, 1995; Schirripa and Legault, 1999). This resulted in numerous harvest restrictions, including minimum size limits, seasonal closures, trip limits for commercial fishermen, bag limits for recreational fishermen, and mandates for by-catch reduction devices by the shrimp fleet.

Because of these factors, and the fact that it's a reef species thought to have relatively sedentary habits, several recent papers on red snapper have cited the species as one that might be benefited by nMPAs (Bohnsack, 1996; Fogarty et al. 2000, Houde, 2001). However, on closer examination, red snapper would likely not benefit. Recent papers describing results of tagging studies (Watterson et al., 1998; Patterson et al. 2001) demonstrate that while strongly reef associated, red snappers exhibit slow movement away from tagging sites under normal conditions, and extensive movement as a result of tropical cyclones, a very frequent occurrence throughout the entire range of the species Figure 1). Thus, a "permanent" red snapper stock in an nMPA would be largely relocated to other areas with each of these events.

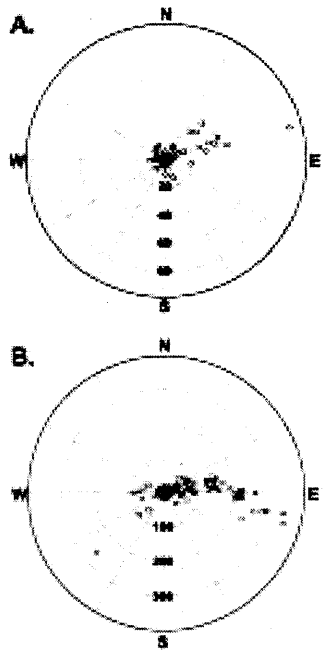

Figure 1. Polar diagrams of red snapper movement for (A) fish not at liberty during Hurricanes Opal and Georges and (B) fish at liberty during those hurricanes. Note scaler differences, in kilometers. From Patterson et al, 2001

In addition, recent model projections of snapper recovery (Goodyear, 1995; Schirripa and Legault, 1999) cite the need for very substantial (40%-80%) shrimp trawl by-catch reduction of age 0 and 1 juveniles. Red snapper larvae remain in the plankton for two weeks or more. Thus any potential contribution of larvae to the overall population from and nMPA stock would be subjected to the same mortality over most of its range. But despite the stresses experienced by the stock, red snapper appear to have begun to recover. With the implementation of the traditional management measures described above, quotas and CPUE have increased consistently during the last decade.

Vermilion snapper (*Rhomboplites aurorubens*) is a moderately important reef species of the Gulf and south Atlantic. The stock assessment panels have not been able with certainty to evaluate stock status. However, in the Gulf, it is likely that this species may be heading toward an overfished condition (J. Cowan, chair, GOMFMC Stock Assessment Panel, pers. comm.), although the most recent assessment contained so many uncertainties that the GOMFMC Reef Fish Advisory Panel in 2002 recommended "status quo" on setting a quota until a more reliable assessment could be developed. The species has been managed primarily by a minimum size limitation. There is little information as to its migratory or movement patterns, so the benefits of an nMPA for this species cannot be determined.

Mutton snapper (*Lutjanus analis*) is known to form distinct spawning aggregations. One of the best known is the Riley's hump area near the Dry Tortugas in the Florida Keys. This area is protected during the spawning season, and except for some occasional violations and attendant enforcement problems, the protection will likely benefit the species.

Greater amberjack (*Seriola dumerili*), though listed as a reef species, is better considered a coastal pelagic. Although frequenting reef areas, this active species is very mobile, and its movements, though not extensive long range migrations, do traverse hundreds of kilometers on a regular basis (Ingram, et al., in press), and thus is an unlikely candidate to benefit from any but the most expansive nMPAs.

Red porgy (*Pagrus pagrus*) ranges on both sides of the Atlantic in temperate and tropical seas. It favors live bottom habitats. It is a species of some concern regarding the health of the stocks, especially in the south Atlantic US coast. Recent increases in fishing pressure have resulted in a greatly reduced stock, and a call for reduced fishing mortality. Earlier tagging studies did not indicate extensive migrations. The species is currently under management by the SAFMC, and effort restrictions have been put in place to reduce harvest. Contingent on the results of this management and additional data on population movements, the red porgy is a species that could possibly benefit from an nMPA until stocks are returned to a level more manageable by traditional fishery methods. However, the population appears to be experiencing a substantial rebound (Dr. Robert Mahood, Exec. Dir. SAFMC, pers. com.), and a new stock assessment will be completed in June of 2002.

Gray triggerfish (*Balistes capriscus*) is a temperate-tropical species found on both sides of the Atlantic. The species has received additional fishing pressure in recent years, probably resulting from more stringent management regulations on co-occurring species, especially red snappers and groupers. However, the stocks are not considered overfished, but as a precautionary move, a 12" minimum TL size limit has been implemented by most management agencies. Recent studies (Ingram, 2001) suggest that gray triggerfish are more sedentary than previously thought, more so than red snapper, but nevertheless do display some limited movement. Should future fishing pressures indicate additional limitations on harvest, this species might be the best candidate among the fishes discussed here to benefit from an nMPA, especially given that recent stock assessment data indicate that gray triggerfish may be experiencing local overfishing in some locations in the Gulf of Mexico (J. Cowan, chair, GOMFMC Stock Assessment Panel, pers. comm.).

Other Snapper/Grouper Species.

In the south Atlantic, there are nine species of snappers and groupers (gag grouper, red snapper, speckled hind, snowy grouper, Warsaw grouper, golden tilefish, yellowtail snapper, red grouper, and black grouper) that are considered overfished and overfishing is occurring. The SAFMC has initiated rebuilding plans by imposing catch restrictions on all these species. These plans are generally 10-15 year plans, and most are about five years away from completion. If these traditional management measures fail, nMPAs might be appropriate for some or all of these species. However, migratory patterns of these forms are at present poorly understood. Therefore, establishment of nMPAs at this time is pre mature.

There are an additional 19 snapper/grouper species in the South Atlantic, as well as scores of sympatric species under management (e.g. grunts, porgies), for which the stock status is unknown.

Southeast Drum and Croaker Fisheries.

Black drum, Atlantic croaker, spot, red drum, seatrouts, and kingfishes (whitings) are included in this grouping. Atlantic croaker and red drum are considered overfished, while the other species' status is considered unknown. All these species spawn in higher salinity waters or offshore, and the young enter estuaries where they reside until reaching sexual maturity.

Of the two overfished stocks, management plans are in place for the recovery of both. Croaker (*Micropogonias undulatus*) stocks suffer greatly from by-catch discards, which include about 7.5 billion individuals killed annually (NOAA 1999). Improvement in gear designs will likely reduce this mortality and lead to recovery of the species.

A total harvest ban in federal waters by the South Atlantic and Gulf of Mexico Councils has been put in place for red drum (*Sciaenops ocellatus*). In addition, the states have implemented various restrictive harvest measures. The results suggest that these conservation measures have substantially increased the escapement of juveniles, and the offshore adult stocks are increasing.

Thus there appears no benefit of nMPAs as a management tool for the southeast drum and croaker fisheries.

Other Gulf and south Atlantic species under some form of management include striped mullet, tarpon, and snook. Only regional assessments exist for these species, but none is considered overfished on a range-wide basis, and all have moderate to long range migratory patterns, and would not benefit from traditional nMPAs. However, the juvenile phase of tarpon may benefit from some nursery area protection (Shipp, 1986).

Pacific Coast fisheries (excluding Alaska)

Pacific Coast Pelagic Species.

There are five species included within the Pacific pelagic group (northern anchovy, Pacific sardine, jack mackerel, chub mackerel, and Pacific herring, NOAA, 1999). All are listed as under or fully utilized, none overfished. Therefore, because of their healthy stock conditions and pelagic life history, they would receive no benefits from creation of nMPAs.

Pacific Coast Groundfish Fisheries.

The Pacific groundfish assemblage is a diverse group of species, principally flatfishes and rockfishes. These are mainly long-lived, slow growing species, subject to harvest by both commercial and recreational fishers. Included are about 60 species of rockfishes, principally *Sebastes* and several species of thornyheads (Genus *Sebastolobus*), several cods, the sablefish (*Anolopoma fimbria*) and the lingcod (*Ophiodon elongatus*). Recently, life history data were provided to the Pacific States Marine Fisheries Commission of the nearshore fishes of California (Cailliet, 2000). This, along with several supplementary references, and combined with the NOAA document (1999) and the Report to Congress NMFS 2001) provide the background for determination of the possible impacts of nMPAs on these species.

The Pacific whiting (=Pacific hake, *Merluccius productus*), is a mid to moderate depth species, with relatively extensive movement patterns. It is considered fully but not over exploited, and with extremely variable year class strengths. Because of these factors the species is not likely to benefit from establishment of an nMPA.

The sablefish (*Anaplopoma fimbria*) is an important commercial species, ranging from Japan and the Bering Sea to Baja. The stock status is considered fully exploited, and stock levels are below optimum. However, it is a deep water, often migratory species, thus not likely to benefit from an nMPA.

The lingcod (*Ophiodon elongatus*) is a large member of the greenling family, ranging from Kodiak Island to southern California, but is most abundant in the northern part of its range. It is an extremely important recreational and commercial species, with a high food value, although representing only about 2 % of the Pacific Coast groundfish catch. This species is considered to be over exploited, with stock levels well below that necessary to maintain the long-term projected yield. The species is relatively sedentary, usually in rocky reefs at depths of 10 to 100 m. It is a nest building species, and the males become extremely aggressive during this time, particularly vulnerable to attack by marine mammals. The species is also cannibalistic.

The life history and stock condition indicate that this species could benefit by an nMPA in the more northern part of its range. However, other management measures have been put in place, including protection of spawning and nesting sites during spawning season, minimum size requirements to ensure at least one spawn before subject to harvest, and restricted catch limits through recreational bag limits and commercial quotas. Though recovery is likely to be slow because this is a long-lived species (up to 25 years), these measures are thought to be sufficient to effect recovery (Alaska Dept. of Fish and Game, 1994).

Pacific cod (*Gadus macrocephalus)* is a wide ranging, highly migratory species of commercial importance in the North Pacific. It is considered underutilized, although stock status and long term potential yield are unknown. Therefore, the species would not benefit from establishment of an nMPA.

Pacific Flatfishes.

Pacific halibut (*Hippoglossus stenolepis*) is a carefully managed species, with its center of abundance in the Gulf of Alaska. Landings from the US Pacific Coast (excluding Alaska) average about 570 metric tons, representing a little more than 1% of the total harvest (NOAA, 1999). The species is well managed throughout its range by traditional methods, and recent harvest has been near record. Thus the species would not likely benefit from establishment of an nMPA.

The status of four other US Pacific Coast flatfish species (arrowtooth flounder [*Atheresthes stomias*], Dover sole [*Microstomas pacificus*] , English sole [*Pleuronectes vetulus*] , and petrale sole [*Eopsetta jordani*]) are considered individually while the many additional flatfishes are grouped together (NOAA, 1999). Of these four, none is listed as overfished, and all are wide ranging with extensive offshore movement patterns. For this reason, none would benefit from nMPAs. For the many remaining flatfish species, their stock status is unknown.

Rockfishes.

There are about 65 species of rockfishes endemic to the US Pacific coast, most in the genus *Sebastes*. They live in a diversity of habitats, from clean bays, to depths greater than 400 M. They are long-lived species, with some living well over 50 years. Thus, annual exploitation to attain the management goals of 35-40% spawning biomass per recruit is often as low as about 5-10%. In recent years, the surplus present in most of these stocks has been fished down, resulting in reductions in recommended annual harvest (NOAA, 1999).

In its report to Congress, NMFS (2001) lists 52 species of rockfish. For four species (Pacific ocean perch [*Sebastes alutus*], bocaccio [S. *paucispinus*], canary rockfish [*S. pinniger*], and cowcod [*S. levis*], all but the latter are major stocks) the stocks are overfished but overfishing is not presently occurring and rebuilding programs are in place or under development. These species are all wide ranging forms with extensive portions of their populations in very deep water. Thus for fishery management purposes, nMPAs are likely not needed Only nMPAs of impractical extent both longitudinally and bathymetrically would have any impact on the stocks as a whole.

For three species (darkblotched rockfish [*Sebastes crameri*], silvergrey rockfish [*S. brevispinis*], and yelloweye rockfish [*S. ruberrimus*], all major stocks) overfishing is occurring, but for the former species the stocks are not currently overfished, and for the latter two stock conditions are unknown. Reduced mortality will be required, but currently, rebuilding plans are not yet in place. These three are also very wide ranging, from the Bering Sea to southern California, and out to depths of well more than 500 M, thus nMPAs would be impractical as a management tool. And in fact, due to the bathymetry of the eastern North Pacific coast, many of the areas inhabited by rockfishes are such as to prevent extensive fishing effort, or create a "natural refuge" (see Yolklavich et al. below).

For eight species (seven of which are major stocks) for which assessments exist the stocks are not overfished, nor is overfishing occurring. For the remaining species, most of which are minor stocks, their status and rate of fishing mortality is unknown. Therefore, particular management measures are premature.

The Pacific Fishery Management Council has implemented limits for individual vessels, as well as other measures in an attempt to maintain a year round harvest for most rockfish species.

Life history data and stock assessments for most species are not yet determined. Cailliat (2000) lists data on about 30 species, and about half are known to be resident species. Of the overfished or species experiencing overfishing, movement data are available only for the canary rockfish which is considered transient/resident, with tagged movements of over 259 km documented, and the yelloweye, which is considered a resident species.

General Life History Comments Regarding Rockfish.

In their study of the Soquel Submarine Canyon, off Monterey California, (Yoklavich et al., 2000) suggested that "**rock outcrops of high relief interspersed with mud in deep water of narrow submarine canyons are less accessible to fishing activities and thereby can provide natural refuge for economically important fishes.**" Their study was represented by 52 fish species, of which rockfishes were represented by a minimum of 24 species. In addition, they concluded that "**There was remarkable concordance between some of the guilds identified in Soquel Canyon and the results of other habitat-specific assessments of fishes along the west coast of the United States from central California to Alaska.**" Certainly this suggests that there is an inherent control of fishing effort in these habitats and consideration of more extensive areas designated as nMPAs is pre-mature and likely unnecessary.

Soh et al. (2001) studied the role of marine reserves on Alaskan rockfishes. Although Alaska is beyond the scope of this report, the findings are likely applicable. While predicting that harvest refugia (=MPA) can be used to greatly reduce discards and serial overfishing, they state that the effectiveness of marine refugia "**in fisheries management is poorly understood and concepts regarding their use are largely untested.**"

Discussion

NMPAs may serve many purposes, as described above. But when intended to serve as a fishery management tool, there are several situations for which they may be extremely beneficial, and many others for which more traditional methods are much preferred. These are reviewed briefly as follows.

Benefits of nMPAs as management tools

NMPAs can have a strong beneficial impact for fishery management during periods of active spawning by aggregations, when species may be especially vulnerable to harvest, and when certain components of the stock (e.g. large male gag grouper) may be disproportionately liable to capture. This can lead to imbalanced sex ratios that can further jeopardize a stressed stock. The utility of these is likely to be seasonal, and normally would not require year around catch restrictions.

In instances where a stock is severely overfished and subject to little or no management, an nMPA can be used along with other measures to more rapidly replenish populations. This is especially true in isolated, insular populations (e.g. Roberts et al., 2001, for St Lucia) that are not strongly connected to proximal populations for replenishment.

Where habitats are damaged by fishing practices, establishment of nMPAs may help ensure habitat recovery. This is useful when these habitats, such as submerged aquatic vegetation, reef structures or other hard bottom habitat, are critical for vulnerable life stages. Oftentimes, however, gear restrictions can be enacted to lessen the social impact that would result in declaration of a total no-take zone.

NMPAs may also be beneficial where ecosystem management is employed in fisheries (primarily of near sedentary species) where by-catch of non-targeted species has become excessive, or conversely, where a protected species has reached population levels which increase natural mortality rates of targeted species, preventing a reasonable harvest (see comments on Goliath grouper, above). An nMPA will allow some version of dynamic equilibrium to return. When the equilibrium has been reestablished, then alternate, more traditional management actions may be desirable to allow yield from the system. However, ecosystem based management is still in its infancy, and much research needs to be done before tested management principles can be established.

Liabilities and "non benefits"of nMPAs as management tools

When establishment of an nMPA is intended as a near proxy for a virgin stock, several factors need to be kept in mind. And it might be helpful, in gaining perspective, to recall that some of these principles have been well known for decades or longer, though sometimes forgotten. **First, by definition, a virgin stock provides no yield.** Therefore a perfect proxy would be a negative in terms of management goals to produce an MSY or OY. However, proponents of nMPA usage for management purposes refer to a "spillover effect" of harvestable adults to adjacent areas. The impact of this spillover will always be less than that of a properly managed stock, which generates the optimal yield-per-recruit, again, by definition. These models are discussed in numerous classical and modern texts (e.g. Rounsefell, 1975; Iverson, 1996),

The issue of spillover is addressed briefly by Houde et al. (2001). The authors describe the difficulty of direct confirmation of spillover effects, and suggest models may be more useful in understanding how marine reserves function in a regional context. But they also note that those conclusions are limited by underlying assumptions on which the model is based. For species with low mobility, the spillover is minimal, yet these sedentary species are the very ones for which an nMPA is supposedly most effective.

Another claim is that larvae from an nMPA will be a significant addition to the overall stocks. This may be beneficial, but only for a very seriously depleted stock. In other cases, larval production, always in excess of the carrying capacity of the habitat, does not normally relate to year class strength. Rather density dependent factors usually control ultimate recruitment to the harvestable stock. While this principle has been the subject of scores of books and probably thousands of publications, it was espoused nearly 150 years ago by Darwin and restated frequently in most every fishery text (e.g. Gulland, 1977; Rothschild 1986).

And much more recently, data presented by the GOMFMC Coastal Pelagic Stock Assessment Panel (January 2002) re emphasizes for very practical management purposes, such as in the case of Gulf king mackerel, that egg production does not correlate to an increase in stock size, the panel stating: **" recruitment is assumed to increase to some level of spawning stock, and then to remain at the average recruitment for higher spawning stock values (Figure 2)."**

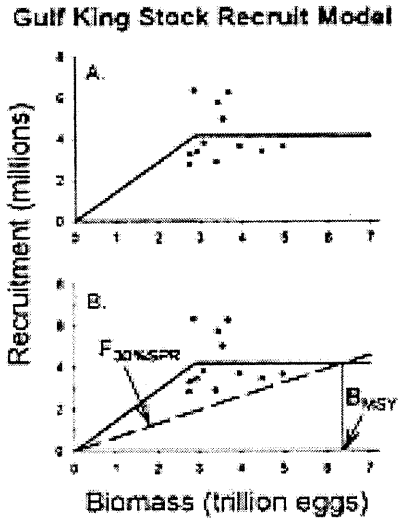

Figure 2. A) Spawner recruit model estimated for Gulf king mackerel. B) Bmsy is estimated at the intersection of the spawner recruit model and F30%SPR replacement line.

Stocks within an nMPA

There are numerous examples in the literature of stock increases within an nMPA (e.g. Johnson et al., 1999; Roberts et al., 2001). However, one must not forget what the point is here in regard to yield. While effective nMPAs may support a stock with relatively greater biomass, perhaps larger individuals, and a higher spawning potential ratio (SPR), **this portion of the stock has been removed from harvest**. Therefore, the overall yield is reduced by whatever fraction could be contributed to overall harvest from this protected stock, and mitigated only by the possibility of spillover or larval contribution, as discussed above.

Pragmatic perspective

Examination of the scores of coastal species from the mid to south Atlantic, Gulf, and US Pacific coasts reveals that very few species are known to be both overfished and/or experiencing overfishing, and are sedentary. Those candidates that are in both categories, and may possibly benefit from and nMPA, are found in widely differing geographic ranges, with optimal potential nMPA sites far apart (e.g. lingcod and surf perch in the Pacific, red porgy in the Atlantic and gray triggerfish in the Gulf). To establish an nMPA for the benefit of those few species would remove harvest potential of the scores of sympatric forms, most of which are not overfished. And while this may not reduce the overall harvest of these species, it would definitely reduce efficiency and increase fishing effort in other, adjacent areas.

Far better would be to impose more traditional methods to restore the overfished stocks, as has been done for many species. This becomes more and more successful as we adopt more precautionary harvest levels, improve our methods of stock assessment, stock/recruit relationships, and life history information.

Current plans or suggestions regarding closure of large areas of the US mainland continental shelf to harvest are simply not scientifically supportable from a fishery management perspective. The suggestion, for example, that as much as 40 % of the Southern California shelf should be designated an nMPA is totally without merit from a fishery harvest perspective. Though there may be other aesthetic benefits, such a closure would severely reduce harvest potentials, shift effort to other areas, and likely have a substantial negative economic impact on both the commercial and recreational fishing industries.

Literature Cited

Bohnsack, J.A. 1996. Marine Reserves, Zoning, and the Future of Management. *Fisheries* 21(9): 14-16.

Bolden, S. K. 2000. Long-distance Movement of Nassau Grouper (*Epinephelus striatus*) to a Spawning Aggregation in the Central Bahamas. *Fish. Bull.* 98:642-645.

Botsford, L. W., L. E. Morgan, D. R. Lockwood, and J. E. Wilen. 1999. Marine Reserves and Management of the Northern California Red Sea Urchin Fishery. *Cal. Coop. Oceanic Fish. Invest. Rep.* 40:87-93.

Cailliet, G.M. 2000. Biological Characteristics of Nearshore Fishes of California: A Review of Existing Knowledge and Proposed Additional Studies. Final Report to the Pacific states Marine fisheries Commission. 103 p.

Coleman, F. C., C. C. Koenig, and L. A. Collins. 1996. Reproductive Styles of the Shallow-water Groupers (Pisces: Serranidae) in the Eastern Gulf of Mexico and the Consequences of Spawning Aggregations. *Env. Bio. of Fishes* 47:129-141.

Colin, P. L. 1992. Reproduction of the Nassau Grouper, *Epinephelus striatus*, (Pisces: Serranidae) and its Relationship to Environmental Conditions. *Env. Bio. of Fishes.* 34:357-377.

DeMartini, E. E., 1993. Modeling the Potential of Fishery Reserves for Managing Pacific Coral Reef Fishes. *Fish. Bull.* 91:414-427.

Fogarty, M.J., J. A. Bohnsack, and P. K. Dayton. 2000. Marine Reserves and Resource Management. In: Sheppard, C (ed.) Seas at the Millennium. Elsevier Science Ltd. London.

Goodyear, C. P. 1995. Red Snapper in U.S. Waters of the Gulf of Mexico: 1992 Assessment Update. NMFS-SEFSC, MIA-92/93-76.

Gulland, J. A. 1977. Fish Population Dynamics. John Wiley and Sons. New York, 372 p.

Hastings, A. and L. Botsford. 1999. Equivalence in Yield from Marine Reserves and Traditional Fisheries Management. *Science* 284:11-2.

Holland, D. S. and R. J. Brazee. 1996. Marine Reserves for Fisheries Management. *Marine Resource Economics* 11:157-171.

Houde, Ed, chair, Committee on the Evaluation, Design, and Monitoring of Marine Reserves and Protected Areas in the United States. Marine Protected Areas, Tools for Sustaining Ocean Ecosystems. 2001. National Academy of Sciences. Washington, DC.

Ingram, G. W. 2001. Movement, Growth, Maturity Schedules and Fecundity of Gray Triggerfish (*Balsites capriscus*) from the North-central Gulf of Mexico. Ph.D. diss. Univ. of South Alabama.

Iverson, E. S. 1996. Living Marine Resources, their Utilization and Management. Chapman and Hall, New York. 403p.

Johnson, D.R., N. A. Funicelli, and J. A. Bohnsack. 1999. Effectiveness of an Existing Estuarine No-take Fish Sanctuary within the Kennedy Space Center, Florida. *N. Amer. J. of Fish. Manag.* 19(2):436-453.

MacCall, D., A. McArdle, J.C. Ogden, J. Roughgarden, R.M. Starr, M.J.Tegner, and M. M. Yoklavich. 1999. No-Take Reserve Networks: Sustaining Fishery Populations and Marine Ecosystems. *Fisheries* 24 (11): 11-25.

Manooch, C.S.,III and W.W. Hassler. 1978. Synopsis of Biological Data on the Red Porgy (*Pagrus pagrus*) Linnaeus. NOAA Tech. Rep. NMFS Circ. 412, 19 p.).

Murray, S.N., R.F. Ambrose, J. A. Bohnsack, L. W. Botsford, M.H. Carr, G.E. Davis, P.K. Dayton, D. Gotshall, D.R. Gunderson, M.A. Hixon, J. Lubchenco, M. Mangel, A. MacCall, D. A. McArdle, J. C. Ogden, J. Roughgarden, R. M. Starr, M. J. Tegner, and M. M. Yoklavich. 1999. No-Take Reserve Networks: Sustaining Fishery Populations and Marine Ecosystems. *Fisheries* 24 (11): 11-25.

National Marine Fisheries Service. 2001. Report to Congress. Status of Fisheries of the United States. Silver Spring Maryland. 119p.

National Oceanic and Atmospheric Administration (NOAA). 1999. Our Living Oceans: Report on the Status of U. S. Living Marine Resources, 1999. NOAA Technical Memorandum NMFS-F/SPO-41. Silbver Spring, MD.

National Resources Defense Council. 2001. Keeping Oceans Wild. April 2001 report.

Nowlis, J. S. and C. M. Roberts. 1999. Fisheries Benefits and Optimal Design of Marine Reserves. *Fish. Bull.* 97:604-616.

Patterson III, W. F., J. C. Watterson, R. L. Shipp, and J. H. Cowan. 2001. Movement of Tagged Red Snapper in the Northern Gulf of Mexico. *Trans. Amer. Fish. Soc.* 130:533-545.

Polacheck, T. 1990. Year Around Closed Areas as a Management Tool. *Natural Resource Modeling* 4:327-354.

Roberts, C. M., J. A. Bohnsack, F. Gell, J. P. Hawkins, and R. Goodridge. 2001. Effects of Marine Reserves on Adjacent Fisheries. *Science* 294:1920-1923.

Robins, C.R., C. G. Ray, and J. Douglass. 1986. A Field Guide to Atlantic Coast Fishes. The Peterson Field Guide Series. Houghton Mifflin, Boston.

Rothschild, B. J. 1986. Dynamics of Marine Fish Populations. Harvard Univ. Press, Cambridge, MA. 272p.

Rounsefell, G. A. 1975. Ecology, Utilization, and Management of Marine Fisheries. C. V. Mosby, St. Louis. 516p.

Sadovy, Y., and A. E. Eklund. 2000. Synopsis of Biological Data on the Nassau Grouper, *Epinephelus striatus* (Bloch, 1792) and the Jewfish, *E. itajara* (Lichtenstein, 1822). NOAA Tech. Rep. NMFS 146. FAO Fisheries Synopsis 157.

Schirripa, M.J, and C.M. Legault. 1999. Status of the Red Snapper Stock in U.S. Waters of the Gulf of Mexico: updated through 1998. NOAA/NMFS, SFD-99/00-75.

Shipp, R. L. 1986. Dr. Bob Shipp's Guide to the Fishes of the Gulf of Mexico. KME Seabooks, Mobile, AL. 186p.

Shipp, R.L. 1999. Status of exploited fish stocks in the Gulf of Mexico, 196-204. *In*: The Gulf of Mexico Large Marine Ecosystem, H. Kumpf, K. Steidinger, and K. Sherman, eds. Blackwell Science, Malden, MA.

Soh, S., D.R. Gunderson, and D. H. Ito. 2001. The Potential Role of Marine Reserves in the Management of Shortraker Rockfish (*Sebastes borealis*) and rougheye rockfish (S. aleutianus) in the Gulf of Alaska. *Fish. Bull.* 99:168-179.

Turner, S.C., C.E. Porch, D. Heinmann, G. P. Scott, and M.Ortiz. 2001. Status of the Gag Grouper Stocks of the Gulf of Mexico: assessment 3.0. NMFS/SEFSC contri. SFD-01/02-134.

Vaughan, D.S., G. R. Huntsman, C.S. Manooch, III, F.C. Rohde, and G.F. Ulrich. 1992. Population Characteristics of the Red Porgy, *Pagrus pagrus,* Stock off the Carolinas. *Bull. Mar. Sci.* 50 (1): 1-20.

Watterson, J. C., W. F. Patterson III, R. L. Shipp, and J. H. Cowan, Jr. 1998. Movement of Red Snapper, *Lutjanus campechanus*, in the North Central Gulf of Mexico: Potential Effects of Hurricanes. *Gulf of Mexico Science* 1998(1):92-104.

Yoklacich, M.M., H. G. Greene, G. G. Cailliet, D. E. Sullivan, R. N. Lea, and M. S. Love. 2000. Habitat Associations of Deep-water Rockfishes in a Submarine Canyon; an Example of a Natural Refuge. *Fish. Bull.* 98:625-641.

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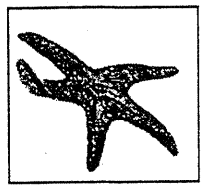
Ocean Policy Advisory Council

Draft Proposed Recommendation to the Governor

Marine Reserves in Oregon

Approved April 26, 2002 for public discussion at Open Houses



Origins of This Recommendation

In July 2000, the Governor's Office requested the Ocean Policy Advisory Council (OPAC) to review the topic of marine protected areas, engage the public, fisheries industry, conservationists, and others in the review, and provide a recommendation to the Governor on state policies on marine reserves and marine protected areas. The Governor turned to the OPAC because it was created by the 1991 Oregon legislature to provide ocean policy advice to the Governor and to be a forum for ensuring that all affected and interested parties participate in ocean policy deliberations.

Terminology is critical. This report and proposed recommendation focuses on "marine reserves," a kind of marine protected area. The OPAC has agreed that under Oregon's state ocean planning law, the state's Territorial Sea is already regulated for multiple uses as a "marine protected area." These terms are further explained in Appendix I of this report.

This proposal is based on study and discussions by a special Marine Protected Areas Working Group of OPAC members who met with many others over the past year in public meetings. A MPA Working Group website (http://oregonocean.org) has provided convenient public access to meeting notices, meeting summaries, staff papers, and other information about the Working Group and the topic of marine protected areas.

The OPAC intends that this draft report and recommendation be reviewed and discussed widely. Comments to improve it are encouraged. Comments may be submitted via e-mail to bob.bailey@state.or.us or via U.S. Mail to Ocean Policy Advisory Council, 800 NE Oregon St., Box 18, Portland, Oregon 97232.

Reasons to Assess Marine Reserves

Governor's Request

The Governor's Office requested that the OPAC's review the issue of marine protected areas and marine reserves because of developments nationwide and in the region and the potential importance of this issue to Oregon. Among the developments cited were:

- A Presidential Executive Order in May, 2000, that directed federal agencies to strengthen marine protection and to create a national network of marine protected areas;
- A decision by the Pacific Fishery Management Council to include no-fishing reserves in a West Coast Groundfish Strategic Plan as a potential technique to rebuild depleted fish stocks;
- A Marine Protected Areas Action Plan for North America being developed by the Commission for Environmental Cooperation (CEC), part of the North America Free Trade Agreement (NAFTA);
- Preparation of a science-based theory of marine reserves by a nationwide group of marine scientists;
- Proposals by major environmental organizations for marine protected areas to address concerns about the integrity of marine ecosystems and sustainability of fisheries harvests;

Further Developments

Additional developments related to marine reserves have added to the stream of real-world issues addressed by the OPAC:

- California's state law requiring a network of marine reserves in state waters has potential to displace fishers and affect fisheries along the Oregon coast. This process is mired in controversy surrounding implementation, due principally lack of involvement in fishing communities.

- The Washington Fish and Wildlife Commission approved new marine reserves in Puget Sound and has adopted a policy supporting use of marine reserves for fishery management.

- Continuing support of the Executive Order on marine protected areas by the Bush Administration, and establishment of a National Marine Protected Areas Center to coordinate and assist federal agency and state programs related to the Executive Order and act as a clearinghouse for information and research. It is not empowered to establish any ocean protection areas in either state waters or federal waters.

- Interest by the National Commission on Ocean Policy, established by the Congress and appointed by the President in 2001, in the potential use of marine protected areas as part of a revamped national ocean governance and policy system.

Background for Recommendations

Study Process

The OPAC and the Working Group heard presentations from fishermen, scientists, and others, and reviewed written reports. A major study by the National Academy of Sciences published in 2001 provided information about the function and performance of marine reserves worldwide. A key task for the OPAC was to understand what is known and what is not known about the marine environment off Oregon. To do so, the OPAC held a two-day dialogue with Marine Experts with a panel of Local Experts (fishermen, recreational users, port and community experts, and others) on the first day and a panel of Scientific Experts (biologists, oceanographers, fisheries scientists, sociologists, economists, etc) on the second day.

The OPAC and the Working Group heard, discussed, and weighed many factors and points of view. Some relate to the complicated topic of reserves for marine fisheries management, while others relate to reserves to help conserve marine resources in general, provide protection of threatened or endangered species, and enable recovery degraded habitats. The OPAC learned that the social and economic importance of marine resources to coastal communities must be accounted for in any proposal regarding marine reserves. Pervading the entire review was the need for better scientific information about the marine environment, its resources and habitats, uses of it resources, and economic and social values to coastal communities.

Rationale for the Proposed Recommendation

The OPAC's proposed recommendation is framed by principal findings:

1. Marine fisheries, both commercial and recreational, are very important to the economy and culture of Oregon's coastal communities, especially where ports are centered on fisheries activities. These fisheries vary by gear type, by season, and by area, and are often rely on specific habitats that are unevenly distributed along the coast.

2. Oregon's commercial marine fisheries and several coastal communities are under a high level of stress due to severe reductions and uncertainties in groundfish harvest caused by federal regulations.

3. New fisheries in Oregon's nearshore waters are changing due to restructuring of the groundfish industry, innovations in harvest techniques, and development of specialty, high-value markets.

4. The abundance of most marine fish stocks off Oregon is not well documented with respect to either effects of harvest or effects of natural variability in the marine environment.

5. Numerous studies around the world show that the abundance and size of marine organisms increases within highly protected reserves, but few such studies have been conducted within Oregon waters. Some studies may be applicable to Oregon while others may not be because of differences in biologic or physical conditions.

6. Studies elsewhere have examined the effects of marine reserves and marine protected areas on marine life, principally fish, outside of reserve boundaries but no such studies have been conducted in Oregon.

7. Few "undisturbed" baseline study areas have been designated on the Oregon coast for long-term monitoring or evaluating changes in the marine environment that are a consequence of either variability in natural conditions or human activities.

8. Designation of large-scale reserves for fisheries management in Oregon ocean waters cannot be justified at this time because necessary scientific biological and socio-economic analyses have not been performed due, in part, to lack of information and lack of funding to conduct needed research and perform these analyses.

9. A study by the National Academy of Sciences concluded that marine protected areas, including restrictive reserves, can be effective in conserving and protecting marine ecosystems, especially if used in conjunction with other regulations and incentives and if they are designed to meet clear goals and objectives;

Summary of Rationale

Oregon has a strong sense of the many values of the ocean and its resources and has as a state-wide planning goal "to conserve marine resources and ecological functions for the long-term ecological, economic, and social values and benefits to the community." Oregon's unique state-level ocean management program provides a comprehensive framework for conserving and protecting marine resources and uses in state waters and for asserting state interests in marine resources in federal waters.

During its review, the OPAC has learned about significant work underway to map the ocean bottom and understand the ecology, complex ocean conditions, and marine life off the Oregon and Pacific Northwest coast. OPAC also learned that more information is needed about both nearshore and offshore waters and about potential management techniques that could help to sustain the long-term health of coastal resources and the economies that depend on them. Several reports, including the National Academy of Sciences study, provided information about the function and performance of marine reserves in other parts of the country and the world.

While the OPAC concludes that there is insufficient information or rationale at the present time for Oregon to designate marine reserves to manage ocean fisheries, the OPAC believes that a limited system of marine reserves would help Oregon to achieve overall state ocean conservation goals and to obtain valuable information that cannot be obtained otherwise. Oregon could obtain three kinds of information from such a course of action.

First, such marine reserves would serve as long-term "control sites" in which to monitor fish stocks, habitats, and ecosystem conditions. Such information would help to distinguish natural variability in the marine environment from changes caused by human activities, and would help to evaluate the effects of management actions on fisheries and other activities. At present, no such control sites exist.

Second, a limited system of reserves as envisioned by the OPAC would enable Oregon to test the effectiveness of reserves in providing "spill over" of adult fish into other nearby areas and increasing the reproductive output of eggs, larvae, and juvenile organisms to "seed" other areas. The potentials and constraints on these benefits are untested in Oregon's marine environment.

Third, such system would help all parties learn about potential benefits and detriments to fishermen and coastal communities from the placement and operation of reserves. The marine environment off Oregon is not uniform or homogenous; placement of reserves will be highly sensitive to many factors that are best considered at a local level. The OPAC envisions a community-based, participatory process to design, site, and monitor reserves to provide state agencies, local communities, and the public with valuable information and experience in meeting the economic and social needs of coastal communities as well as state marine conservation goals.

The OPAC foresees that such information will enable the state, ocean users, coastal communities, and the public to make better decisions in the future about the need for, design of, applicability, and limitations of reserves to meet objectives such as fishery management or protection of sensitive species.

The Proposed Recommendations

The proposed recommendation to the Governor is composed of two parts: one is policy; the other is process. Both are essential and must be considered together.

The Ocean Policy Advisory Council acknowledges that several key issues remain to be clarified, that not all details are now filled in, and that substantial additional public and scientific processes are needed. For now, however, the OPAC agrees that public review and discussion is essential prior to completing the report and recommendation to the Governor in August 2002.

Recommended Policies

The OPAC recommends that a limited system of reserves be established to test the effectiveness of marine reserves to achieve state marine conservation goals and policies and to provide baseline information on marine environmental conditions and species.

The OPAC recommends that consideration of marine reserves to achieve conservation goals associated with fisheries management, if warranted, should be left to state and federal fishery management agencies.

The OPAC has not specified the size, number, or location of sites in a "limited system" but intends that such a limited system:

- be based on clear goals and criteria for reserve design, monitoring, and performance, including criteria for future "abandonment" of the reserve;
- consider flexibility in designations, e.g. time-limits and movable or "rolling" reserves;
- minimize or avoid economic effects on existing fisheries, other users, and coastal communities;
- account for the entire continental margin, not just state waters;
- be based on biologic, oceanographic, economic, and social science;
- promote scientific research to test the effectiveness of reserves in achieving state marine ecosystem and conservation goals; and
- consider enforcement as a principal need.

Recommended Process

The OPAC recommends that the limited system of marine reserves be designed through a two-step collaborative, community-based process involving all affected and interested parties such as fishermen, other ocean users, coastal tribes, marine scientists, state and federal resource managers, interest groups, local communities and the public. Such a process addresses the "process principles" for marine reserves adopted by the Oregon Coastal Zone Management Association in early 2002. While not all details can be known at present, the OPAC envisions the following process:

Step One: Coast-wide System Framework "Design" (estimated 1-2 years):
The OPAC would provide oversight and coordination, set overall system goals/objectives, approve a coastwide system design (perhaps choose among alternatives), and, during the second step, approve the location of specific sites, probably via amendments to the Territorial Sea Plan.

A Reserve Oversight Committee (ROC) would be appointed to develop the overall system design. The ROC would have broad representation from scientists, commercial and recreational fishermen, resource managers, port officials, interest groups, and others with information and technical expertise. The ROC would design the overall reserve system, including objectives, siting criteria, etc:

The OPAC would adopt the coastwide framework design, objectives, criteria, etc., for state waters and would work with the Governor to recommend appropriate parts of system, policies, areas, criteria, etc., to the Pacific Fisheries Management Council and other federal entities for implementation in federal waters.

Step Two: Local Level Site Selection and Implementation (est. 2-3 years):
The OPAC recommends that actual site selection and implementation in state waters, based on coastwide design criteria and objectives, be carried out through community-based processes and partnerships,

perhaps with local port districts, community groups, Oregon Coastal Zone Management Association, Oregon Sea Grant, non-profit foundations, and others to enable all stakeholders and interested parties to utilize local knowledge in siting, design, implementation, and monitoring. Local processes would be encouraged to create incentives for fishermen to participate at all levels.

During the design implementation process, Oregon and federal agencies should fund and conduct baseline inventory, research, and monitoring to obtain information needed to address uncertainties associated with the application and function of marine reserves in Oregon's marine environment.

Implementation
In state waters inside three nautical miles, state agencies such as Oregon Department of Fish and Wildlife, Oregon Parks and Recreation Department, Division of State Lands, Oregon Natural Heritage Advisory Committee, Department of Environmental Quality, Oregon State Police Fish and Game Division, State Marine Board could implement reserve designations through regulations and programs. Local advisory groups or processes would be encouraged to provide oversight, carry out cooperative research, provide enforcement, conduct monitoring, etc.

For federal waters, Oregon would recommend that federal agencies carry out similar process with state and local involvement or participate in local processes established under the OPAC. The OPAC believes its recommended approach should be adopted for areas across the continental margin.

Evaluation
It is essential that ecosystem conditions inside potential reserves sites be inventoried and evaluated prior to establishing a reserve. Performance criteria would be used on a regular basis (e.g. annual, decadal, etc) to assess performance and to expand, contract, adjust, or terminate sites as appropriate;

Mitigation
The ROC would identify potential measures to mitigate for effects on fishermen, coastal communities, and other ocean users from establishing reserves (e.g. contracts for research, monitoring, enforcement). Local site processes would be encouraged to avoid or minimize effects on local fishermen, other ocean users, and coastal communities, and use these mitigation measures when necessary.

Funding
Funding of research, monitoring, enforcement, baseline studies, etc., for marine reserves is a fundamental concern of the Ocean Policy Advisory Council. The OPAC agrees that full funding of all anticipated activities associated with marine reserves prior to their designation is a desirable objective but one that it is not possible. The OPAC believes that its proposed process and objectives for marine reserves on the Oregon coast will be instrumental in helping the state to acquire new funds for reserve-related activities.

The OPAC recommends that the State of Oregon fund basic elements of the reserve process and not rely solely on federal or other funds. Such funding support would enable the state to aggressively seek a variety of funding partners to support necessary research, monitoring, and enforcement.

The OPAC recommends that, at a minimum, Oregon should prepare a long-term marine reserve management plan that would include a research and monitoring strategy from which to develop funding proposals as opportunities arise.

Further Policy Questions

The OPAC is interested in comments and suggestions regarding these additional questions, such as:

WHAT IS THE SCOPE OF A "LIMITED SYSTEM? The OPAC has not determined what "limited system" means, but has heard advice that such a system should:

- have a sound "experimental" design to meet information and other objectives;
- minimize adverse effects on fishers and local communities; and
- maximize benefits to involve fishers and local communities.

SHOULD THERE BE A "CAP" ON TOTAL AREA? The OPAC discussed but did not establish an upper limit on the total area to be designated in the limited system of marine reserves. While the OPAC understands that such a limit may provide a frame of reference and alleviate concerns about the expansiveness of such a system, the OPAC prefers that the Reserves Oversight Committee provide alternative system designs to meet the goals and objectives of the limited system.

SHOULD THERE BE TIME LIMITS? The OPAC agreed that the Reserves Oversight Committee should develop criteria for performance "milestones" by which to evaluate effectiveness and to determine whether to abandon a reserve, move it, or otherwise modify it. The OPAC also understands that testing the effectiveness of marine reserves is likely to require significant periods of time but that performance analyses at discrete intervals such as 10 years should be required.

APPENDIX 1: DEFINITIONS

The Ocean Policy Advisory Council has adapted the following definitions from the report by the National Research Council Ocean Studies Board (2000).

1. Marine Protected Area (MPA):
An ocean or estuarine area designated to conserve marine resources through an integrated management plan that includes broad regulations for some uses (e.g. waste discharge, fisheries) and greater regulations of other uses (e.g. oil or gas drilling), and may include sub-areas that are highly-regulated for specific purposes (e.g. fishery management, ecological protection, baseline research).

Generally, an MPA is a larger-sized area managed for multiple uses or purposes. This term therefor applies to the Oregon Territorial Sea.

2. Marine Reserve
A sub-category of Marine Protected Areas; a marine reserve is an area that is designated to meet specific goals and is highly-regulated to protect resources or uses from activities that may conflict with these goals.

Marine Reserves are specific kinds of marine managed areas, smaller in size and located within an MPA. They are usually designated and managed for tightly-defined purposes or uses. There are many possible kinds of, and names for, marine reserves, although they are usually associated exclusively with fisheries management. The goal or purpose of the MR is critical to its designation, function, and success. Some examples of different kinds of marine reserves identified by the National Academy of Sciences are:

- Ecological Reserve: *an area with special or significant ecological values or functions (e.g. important or representative habitats);*
- Research Reserve: *an area for baseline research or monitoring (e.g. to improve management of marine resources and uses);*
- Educational Reserve: *an area with high public education value or opportunity;*
- Fishery Management Reserve: an *area highly regulated to meet fishery management objectives (e.g. species recovery areas or spawning areas)*; and
- Recreational Reserve: *an area for public recreational use (e.g. diving, surfing, etc).*

Purposes for Marine Reserves need not be exclusive; they may be created to meet multiple purposes or objectives. The Ocean Policy Advisory Council agrees that it is important that the principal purpose or objective of any Marine Reserve be reflected in its name designation.

APPENDIX 2: STATEWIDE PLANNING GOAL 19

The principal ocean policy for Oregon is Statewide Planning Goal 19, Ocean Resources. Goal 19 was originally adopted by the Land Conservation and Development Commission in 1977 and updated in 2000,

based on the work of the OPAC. Goal 19 governs Oregon's ocean resource management programs and activities and is the policy framework for designating special marine management areas.

The overall goal of State-wide Planning Goal 19, Ocean Resources, is:

"To conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social value and benefits to future generations."

"To carry out this goal, all actions by local, state, and federal agencies that are likely to affect the ocean resources and uses of Oregon's territorial sea shall be developed and conducted to conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social values and benefits and to give higher priority to the protection of renewable marine resources--i.e., living marine organisms--than to the development of non-renewable ocean resources."

Goal 19 mandatory policies are:

a. *"maintain and, where appropriate, restore the long-term benefits derived from renewable marine resources;*
b. *protect renewable marine resources-- i.e., living marine organisms--from adverse effects of development of non-renewable resources, uses of the ocean floor, or other actions;*
c. *protect the biological diversity of marine life and the functional integrity of the marine ecosystem;*
d. *protect important marine habitat, including estuarine habitat, that are:*
   - *important to the biological viability of commercially or recreationally caught species; or*
   - *needed to assure the survival of threatened or endangered species; or*
   - *ecologically significant to ecosystem, and biological productivity and diversity; or*
   - *essential to the life-history or behaviors of marine organisms; or*
   - *vulnerable because of size, composition, or location in relation to pollutants, noise, physical disturbance, alteration, or harvest; or*
   - *unique or of limited range within the state; and*
e. *protect areas important to fisheries, which are:*
   - *areas of high catch (e.g., high total pounds landed and high value of landed catch); or*
   - *areas where highly valued fish are caught even if in low abundance or by few fishers; or*
   - *areas that are important on a seasonal basis; or*
   - *areas important to commercial or recreational fishing activities, including those of individual ports or particular fleets; or*
   - *habitat areas that support food or prey species important to commercially and recreationally caught fish and shellfish species.*

Ocean Stewardship Area

Goal 19 asserts an Ocean Stewardship Area, an area within which Oregon has clear economic and ecological interests in the conservation of ocean resources. This area includes the state's territorial sea, the continental margin seaward to the toe of the continental slope, and adjacent ocean areas. Within the Ocean Stewardship Area, the state will

- promote its interests in management and conservation of ocean resources;
- encourage scientific research on ocean conditions, resources, and uses to support management;
- work with federal agencies to make sure that ocean resources and uses are managed consistent with state policies; and
- cooperate with other states and governmental entities directly and through regional mechanisms to manage and protect ocean resources and uses.

UPDATE ON OTHER MARINE RESERVES PROCESSES

Situation: State level processes for considering marine reserves in ocean areas are ongoing in Oregon and California. Information on these processes is summarized here. Both specify a role for the Council in the state process.

Also provided in this situation summary is a reiteration of information provided to the Council in April 2002 on processes that may generate proposals for marine reserves in National Marine Sanctuaries on the West Coast (other than the Channel Islands process discussed under agenda item F.1).

Last year the Council requested approximately $1.5 million per year over three years to support Council lead consideration of marine reserves for the West Coast. The Council received a response from NMFS (Exhibit F.2, Attachment 1).

There has been substantial discussion among Council constituents referencing "The Shipp Report." This study of no-take marine rserves is a report to the Fish America Foundation by Dr. Robert L. Shipp. As part of this exhibit, a copy of this report is provided for Council member reference (Exhibit F.2, Attachment 2).

Oregon

The following is excerpted from Oregon's Ocean Policy Advisory Council website:

> The Ocean Policy Advisory Council (OPAC) is responding to a request from Governor Kitzhaber to assess the controversial issue of marine reserves and provide him with a report and recommendations. The OPAC has set a deadline of August 2002 to report to the Governor.
>
> To carry out this assessment, the OPAC formed a working group of members to gather information and ideas and prepare a draft recommendation for the full OPAC. The Working Group submitted its draft report and recommendations to the OPAC on April 26, 2002. The OPAC approved a draft proposal to be reviewed at a series of public Open Houses to hear comments. The OPAC Working Group will then meet to review the comments and make any adjustments before the full OPAC once again considers the report and recommendations to the Governor at its meeting in August [2002].

OPAC's draft proposal is provided as an informational item (Exhibit F.2, Attachment 3). The proposal recommendations are comprised of a policy section and process section. The policy section recommends "a limited system of reserves be established to test the effectiveness of marine reserves to achieve state marine conservation goals and policies and to provide baseline information on marine environmental conditions and species." The process section recommends that "OPAC would adopt the coastwide framework design, objectives, criteria, etc., for state waters and would work with the Governor to recommend appropriate parts ... to the **Pacific Fisheries [SIC] Management Council** and other federal entities for implementation in federal waters."

California

In addition to the consideration of marine reserves for the Channel Islands National Marine Sanctuary, California is considering marine reserves under processes specified by the California Marine Life Protection Act (MLPA). The MLPA requires the California Department of Fish and Game (CDFG) to develop a master plan for Marine Protected Areas (MPAs) in California. The following is excerpted from the CDFG webpage on the MLPA.

> In late June 2001, the Department introduced Initial Draft Concepts for MPAs to meet the MLPA goals and requirements. . . . One of the most frequent and important comments . . . [received] . . . was that the Department [CDFG] had not effectively involved the public in early planning, and that

future drafts needed to have significant levels of constituent input.

As the next step, the Department will launch a series of facilitated constituent workshops. . . .The Department plans to establish one or two groups in each of four planning regions, with representatives from recreational and commercial fishing, diving, environmental, and ecotourism interests, harbor districts, scientists, and research/education and military organizations. . . .Through facilitated regional workshops, the goals of MLPA will be reviewed, and alternatives for MPA sites will be developed from the ground up. . . . While the workshops will be open to the public, comments will be received through constituent representatives allowing a working discussion. . . . Certain State and Federal agencies or organizations will be represented either on the Working Groups, or as consultants at the meetings. These include: . . . . **Pacific Fishery Management Council** . . . .The individual agencies will choose representatives for these groups.

National Marine Sanctuaries

National Marine Sanctuaries Joint Management Plan Review for Northern and Central California

The following text is from the April 2002 Council situation paper on this issue (there is no update):

The National Marine Sanctuary Program is undertaking a joint review of the sanctuary management plans for Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries. The review will include evaluation of sanctuary regulations and boundaries. Scoping meetings have been held to identify issues and management problems. The scoping process concluded January 31, 2002. The next steps are for the sanctuaries to summarize the scoping comments, seek advice from the sanctuary advisory councils, and use work groups to develop "action plans." Action plans will provide the basis for developing draft amendments to the sanctuary management plans. Changes to allow the creation of marine reserves would require amendment of the sanctuary designation documents to allow the regulation of fisheries.

Olympic Coast National Marine Sanctuary

The following text is from the April 2002 Council situation paper on this issue (there is no update):

The Olympic Coast National Marine Sanctuary (OCNMS) intends to review its sanctuary management plan, however, the OCNMS staff indicates their review will lag the California sanctuary processes by a few years.

Council Task:

1. Discussion and direction to staff as appropriate.

Reference Materials:

1. Letter from NMFS (Exhibit F.2, Attachment 1).
2. No Take Marine Protected Areas (nMPAs) as a fishery management tool, a pragmatic perspective (Exhibit F.2, Attachment 2).
3. OPAC Draft Proposed Recommendations to the Governor (Exhibit F.2, Attachment 3).

Agenda Order:

a. Agendum Overview — Jim Seger
b. Reports and Comments of Advisory Bodies
c. Public Comment
d. Council Discussion

Groundfish Fishery Strategic Plan (GFSP) Consistency Analysis

The GFSP calls for the Council 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."

PFMC
06/05/02