

# Facilitators' Report

## Regarding the Channel Islands National Marine Sanctuary Marine Reserves Working Group

*Prepared for*

*Channel Islands National Marine Sanctuary  
Sanctuary Advisory Council*

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## **Introduction**

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This Facilitator's Report has been prepared to aid the Channel Islands National Marine Sanctuary Advisory Committee (SAC) in making a recommendation regarding Marine Reserves within the Sanctuary waters. It is being provided to the SAC in place of a Consensus Recommendation from the Marine Reserves Working Group (MRWG) because the MRWG was unable to reach consensus on a single comprehensive recommendation regarding marine reserves, consistent with its own ground rules which required unanimity among its members for a recommendation to be made.

This report has been prepared by the facilitation team that provided neutral assistance and support to the MRWG over its twenty-two (22) month effort to "consider the potential establishment of marine reserves within the Channel Islands National Marine Sanctuary area." During this time, the MRWG sought "to collaborate to seek agreement on a recommendation to the Sanctuary Advisory Council by using the best ecological, socioeconomic, and all other available information."

As per its ground rules, since the MRWG was unable to achieve unanimity in its recommendation, the facilitation team was tasked with identifying the areas of agreement and disagreement that characterized the MRWG efforts toward reaching a consensus recommendation. We have also sought to provide some observations on the process used to seek agreement and the value derived from the hard work that each and every member of the MRWG invested in defining issues, crafting a problem statement, identifying options and seeking agreement.

This report has been prepared subsequent to the last formal meeting of the MRWG that took place on May 16, 2001. Therefore, it has not been reviewed by members of the Working Group. Accordingly, it represents the perspectives of the facilitation team and not necessarily those of the members of the MRWG itself. In crafting this report, the facilitation team has used its best efforts to objectively and independently convey the outcomes that emerged from nearly two years of collaborative listening, information collection and evaluation, constituent outreach, public forums, and interest-based negotiation.

While the MRWG was not able to achieve unanimity on a comprehensive recommendation to the SAC, this should not be interpreted as either a lack of effort or a failure of the process. As professional facilitators, we observed the working group:

- ❖ Develop a better understanding of each others perspectives and interests;
- ❖ Develop a better understanding of both the substance and process of marine resource policy making;

- ❖ Develop and improve working relationships among and between traditionally opposing interest groups;
- ❖ Generate proposals that were more responsive to a multitude of interests rather than responding to more narrow or limited interests; and,
- ❖ Frame the relevant marine reserve issues in a manner that will inform and help facilitate the development of a recommendation by the SAC to the Sanctuary Manager, the California Fish and Game Commission, and the National Oceanic and Atmospheric Administration, as the state and federal stewards of Sanctuary waters.

## Process Background

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In 1999, the California Fish and Game Commission received a request from the Channel Islands Marine Resource Restoration Committee and the Channel Islands National Park to create a network of marine reserves within the Channel Islands National Marine Sanctuary. In response to this request the Channel Islands National Marine Sanctuary and the California Department of Fish and Game developed a joint federal and state process to consider establishing marine reserves in the Sanctuary. The Channel Islands National Marine Sanctuary Advisory Council (SAC) appointed the Marine Reserves Working Group (MRWG) in July 1999, to consider the establishment of marine reserves within the Sanctuary. The MRWG membership was designed to represent the full range of community perspectives. Members included representatives of the public-at-large, commercial fishing, recreational fishing and diving interests, and non-consumptive interests. The MRWG is presently comprised of 16 members<sup>1</sup>, including five members from the SAC.

Because the MRWG was not able to arrive at a recommendation by consensus (i.e. unanimity), the SAC is now charged with evaluating their areas of agreement and disagreement and crafting its own recommendation to the Sanctuary Manager. The paragraphs that follow are intended to facilitate that process through delineating what was and was not accomplished during the tenure of the MRWG. It is our understanding that the SAC will develop a recommendation based in part on the insights gained from the MRWG process and forward it to the Sanctuary Manager as formal advice. The Sanctuary Manager and the California Department of Fish and Game (DFG) Marine Region Manager will then submit a recommendation to the California Fish and Game Commission, Pacific Fisheries Management Council, and the National Oceanic and Atmospheric Administration for consideration. Because the MRWG did not achieve consensus on a recommendation, there is no final "product" to be evaluated by its advisory bodies - the Science

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<sup>1</sup> The MRWG was originally appointed with 17 members. One of the non-consumptive representatives withdrew from the process in early 2001. That open seat was not filled by the remaining caucus of non-consumptive, conservation representatives on the MRWG.



Panel and the Socioeconomic Team. Therefore, only the preliminary findings of these advisors regarding various options considered by the MRWG during the course of its deliberations will be provided to the SAC. In addition, the meeting notes of the three public forums held will also inform the SAC regarding the range of perspectives on the size, location and specifics of potential reserve areas.

## **Substantive Areas of Agreement**

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### **Overview**

The MRWG did come to a series of general agreements in concept, even though it was not able to achieve unanimity on a recommendation regarding reserve size, design, location and administration. At its final meeting on May 16, 2001 the MRWG agreed to forward to the SAC those substantive agreements that did garner the full support of the group. Those agreements focused on the following six topics:

- ❖ Ground Rules
- ❖ Mission Statement (Reaffirming the SAC's direction to the MRWG)
- ❖ Problem Statement

- ❖ Issues of Concern
- ❖ Goals and Objectives
- ❖ Implementation Recommendations

Areas where the MRWG could not achieve consensus centered around the size and location of marine reserves, possible phasing-in of marine reserves, possible designation of "limited take" areas, and how to integrate potential reserves with current and anticipated fisheries management actions in the CINMS region. The pages that follow review points of agreement reached by the MRWG. Consensus language is indicated in *italics*.

**Ground Rules:** The MRWG reached agreement on a set of Ground Rules that provided a common understanding about the purpose of the MRWG process and established a basis for constructive communication with each other as well as decision-making, and the day-to-day working group operations (See Attachment A)

**Mission Statement:** The MRWG agreed to the following consensus language regarding a its mission:

*Using the best ecological and socioeconomic and other available information, the Marine Reserve Working Group (MRWG) will collaborate to seek agreement on a recommendation to the Sanctuary Advisory Council regarding the potential establishment of marine reserves<sup>2</sup> within the Channel Islands National Marine Sanctuary area.*

**Problem Statement:** The MRWG agreed on a problem statement to guide the development of goals and objectives for marine reserves. This problem statement sought to answer the question "If marine reserves are the solution, what is the problem?" that was posed by many in attendance at the first Public Forum. By agreeing on a problem statement, the MRWG was able to frame the question of "why" consider the establishment of marine reserves. By taking this approach, the problem statement:

- ❖ Enhanced the legitimacy of the process;
- ❖ Encouraged collaboration among a broad alliance of interests;
- ❖ Engaged stakeholders and their constituencies in the process;
- ❖ Served as a "touchstone" for productive dialogue;
- ❖ Identified the implications of non-agreement and maintaining the "status quo"
- ❖ Established a focus on the future of the Channel Islands marine ecosystem;
- ❖ Framed the problem to be addressed; and
- ❖ Minimized misinterpretations regarding the purpose for collaborating.

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<sup>2</sup> A marine reserve is defined as a "No Take" zone.

When difficult situations emerged, the problem statement was used to refocus the participants on a constructive approach to changing the status quo. The MRWG agreed to the following consensus language regarding a Problem Statement:

### 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 Nino 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.*

**Issues of Concern:** Early on in the process, the MRWG agreed to the consensus language regarding Issues of Concern. The following language was instrumental in guiding the development of goals and objectives that occurred later in the process.

### Issues of Concern

*The Working Group identified the following key issues of concern that needed to be addressed in developing its recommendation regarding marine reserves in the Channel Islands National Marine Sanctuary.*

- ❖ **Status of Resources:** *There was an interest in quantitatively assessing how the combination of anthropogenic influences and natural variability have led to changes over time in the distribution and abundance of the species of interest that are indicative of the status of the ecosystems and fisheries of the Channel Islands.*
- ❖ **Social / Economic / Ecological Considerations:** *There was an interest in achieving marine resource conservation while minimizing socioeconomic*

*impacts to the marine fisheries industry as well as fairly allocating the risks and benefits among consumptive and non-consumptive users.*

- ❖ **Evaluation:** *There was an interest in avoiding the repetition of mistakes made in the development of other marine reserves and in future scientific monitoring to assess the long-term effectiveness of the proposed reserve(s).*
- ❖ **User Profiles:** *There was an interest in identifying all relevant user-groups and their respective areas of primary operation in order to quantitatively assess the principle economic activities and related interests in the Channel Islands.*
- ❖ **Reserve Design:** *There was interest in identifying the specific spatial extent of any potential reserve (s) and in determining whether there would be any temporal variation regarding reserve size and location.*
- ❖ **Reserve Administration:** *There was an interest in seeing the development of a comprehensive interagency management strategy for reserve(s) and in determining how reserve management would operate in terms of enforcement and administrative procedures.*

**Goals and Objectives:** Considerable time was invested in developing and refining a set of goals and objectives to provide guidance to the Science Panel and Socioeconomic Team as well as to themselves in the development of a network of marine reserves. The goals and objectives were developed to answer the question of “what” is the desired future state of the Channel Islands marine ecosystem, as well as “what” are the measurable outcomes for evaluating progress and success in moving toward that future desired condition. Through additional input from the Science Panel, the Socioeconomic Panel, existing marine protected area legislation and policies, and further interactive discussion among members, the following Goals and Objectives for marine reserves in the Channel Islands were refined and agreed upon.

### **Goals and Objectives for Marine Reserves in the Channel Islands<sup>3</sup>**

#### ***Ecosystem Biodiversity Goal:***

***To protect representative and unique marine habitats, ecological processes, and populations of interest.***

#### ***Objectives -***

1. *To include representative marine habitats, ecological processes, and populations of interest.*

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<sup>3</sup> In developing and adopting these goals and objectives, the MRWG has adopted the following operational definitions:

**Goal:** A broad statement about a long-term desired outcome that may, or may not be completely obtainable.

**Objective:** A measurable outcome that will be achieved in specific timeframe to help accomplish a desired goal.

2. *To identify and protect multiple levels of diversity (e.g. species, habitats, biogeographic provinces, trophic structure).*
3. *To provide a buffer for species of interest against the impacts of environmental fluctuations.*
4. *To identify and incorporate representative and unique marine habitats.*
5. *To set aside areas which provide physical, biological, and chemical functions.*
6. *To enhance long-term biological productivity.*
7. *To minimize short-term loss of biological productivity.*

**Socio-Economic Goal:**

***To maintain long-term socioeconomic viability while minimizing short-term socioeconomic losses to all users and dependent parties.***

**Objectives**

1. *To provide long-term benefits for all users and dependent parties.*
2. *To minimize and equitably share short-term loss in activity for all users and dependent parties.*
3. *To maintain the social and economic diversity of marine resources harvest by equitably sharing the loss of access to harvest grounds among all parties to the extent practicable when designing reserves.*
4. *To address unavoidable socioeconomic losses created by reserve placement through social programs and management policy.*

**Sustainable Fisheries Goal:**

***To achieve sustainable fisheries by integrating marine reserves into fisheries management.***

**Objectives -**

1. *To increase abundance, distribution, reproductive capacity and individual sizes of harvested populations within marine reserves in the Channel Islands region.*
2. *To facilitate rebuilding and sustaining harvested populations.*
3. *To enhance spillover into non-reserve areas.*
4. *To establish a recognition program for sustainable fisheries in the Channel Islands region.*

**Natural and Cultural Heritage Goal:**

***To maintain areas for visitor, spiritual, and recreational opportunities which include cultural and ecological features and their associated values.***

**Objectives -**

1. *To conserve exceptional ecological and cultural resources that stimulate and encourage human interaction with the marine environment and promote recreational activities.*
2. *To conserve outstanding areas that encompass seascape, adjoining coastal landscapes, or possesses other scenic or visual qualities.*
3. *To maintain submerged remnants of past life that are of special historical, cultural, archeological, or paleontological value.*
4. *To maintain areas of particular importance that support traditional non-consumptive uses.*
5. *To maintain opportunities for outdoor recreation as well as the pursuit of activities of a spiritual or aesthetic nature.*
6. *To facilitate ease of access to natural features without compromising their value or uniqueness*

#### **. Education Goal**

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

#### **Objectives -**

1. *To develop and distribute offsite interpretations and displays allowing indirect observation, study and appreciation of marine resources.*
2. *To provide current pamphlets, project ideas and worksheets for use on and offsite.*
3. *To promote personal and organized visits for direct observation and study.*
4. *To link monitoring and research projects to support classroom science curriculum.*

**Implementation Recommendations:** In addition to the goals and objectives that the MRWG developed, the group also identified an additional set of suggestions related to the question of “how”. In coming to closure on these recommendations, the MRWG sought to anticipate some of the difficulties related to the implementation or execution of reserve and identify matters that should be taken into account in that process, as well as relevant procedures or protocols for maximizing their success and effectiveness.

#### **Implementation Recommendations**

*The following “implementation recommendations” have been adopted to compliment the above goals and objectives for marine reserves and to provide additional guidance and clarification to stakeholders, management agencies, user groups and members of the broader “maritime community,” as the details of program implementation are refined and put in to place.*

**MONITORING, EVALUATION, AND ASSESSMENT RECOMMENDATIONS****Purpose:**

1. *To understand ecosystem functions in order to distinguish natural processes from human impacts;*
2. *To monitor and evaluate the short- and long-term effectiveness of reserves for managing living marine resources including harvested populations;*
3. *To widely publicize the results of findings of monitoring and evaluation efforts.*

**For Biodiversity:**

1. *Design reserves that will be tractable for monitoring of biological and physical processes;*
2. *Establish long-term monitoring of ecological patterns and processes in, adjacent to, and distant from marine reserves;*
3. *Evaluate short- and long-term differences between reserve and non-reserve areas;*
4. *Study the effects of marine mammal predation on marine populations in, adjacent to and distant from reserves;*
5. *Provide for water quality testing near and distant from reserves;*
6. *Monitor ecosystem structure and functioning along gradients of human activities and impacts;*
7. *Develop methods for evaluating ecosystem integrity.*

**For Fisheries Management**

1. *Evaluate the short- and long-term effectiveness of reserves as an integrated fisheries management tool;*
2. *Develop and adopt a monitoring, evaluation and data management plan for goals and objectives that explicitly contribute to "adaptive management";*
3. *Provide long-term continuity in effort, expertise, and funding during reserve monitoring and evaluation;*
4. *Establish long-term resource monitoring programs in, adjacent to, and distant from reserves;*
5. *Monitor impacts of reserves on commercial and recreational industries;*
6. *Provide for the systematic study of near shore species, including (1) larval export, (2) adult migration, (3) relative abundances, (4) size-frequency distributions, and (5) other topics of interest, for stock assessment purposes;*
7. *Monitor reserves to test their ability to:*
  - *Replenish and recover marine populations of interest including harvested populations;*
  - *Export larvae and adult individuals to areas outside reserve boundaries;*
  - *Document changes of catch characteristics of users adjacent to and distant from reserves;*
  - *Study and evaluate the effects of predators on marine populations in, adjacent to, and distant from reserves.*

**For Socioeconomic Impacts:**

1. *Provide an opportunity to monitor and evaluate the benefits and impacts to all users and dependent parties inside, adjacent to, and distant from reserves.*

**For Data Management**

1. *Create and adopt interagency memoranda of understanding to define integrated management framework, responsibilities and accountability;*
2. *Seek commitments of adequate resources of time, funding, and expertise to assure adequate and ongoing monitoring, synthesis, interpretation, and reporting of information;*
3. *Undertake preliminary surveys to provide baseline information to gauge reserve performance;*
4. *Design monitoring strategies to produce definitive results through an explicit reporting process including clearly stated monitoring objectives to address priority issues, and quality assurance programs to ensure that type, amount, and quality of data meets research objectives;*
5. *Design a data management program that provides mechanisms to ensure data is processed, summarized, and reported to concerned individuals, organizations and agency representatives in an easily understood format on a regular (e.g., bi-annual) basis. Seek an ongoing funding base to maintain adequate data management capacity;*
6. *Design and implement a program for dissemination of information from ongoing studies in a useable and accessible format that can provide information for better environmental protection and management;*
7. *Design the monitoring and evaluation program with built in mechanisms for periodic review and that allows for program adjustments that are responsive when monitoring results or new information from other sources justifies program refinement.*

**RESERVE ADMINISTRATION RECOMMENDATIONS:****Purpose:**

*To effectively respond to the "Problem Statement" and achieve the goals and objectives of this program of marine reserves through:*

1. *Effective agency coordination and accountability*
2. *Community oversight*
3. *Data management*
4. *Adequate funding*
5. *Appropriate enforcement practices*

**Agency Coordination and Accountability:**

1. *Create and adopt interagency Memoranda of Understanding (MOU), Memoranda of Agreement (MOA), or other means to memorialize agency commitment to the marine reserves program by the California DFG, CINMS, NMFS, FWS and NPS and other responsible agencies with jurisdiction.*
2. *Develop procedures to insure and maintain consistent interpretation, application and enforcement of regulations across agencies.*
3. *Continue efforts to protect the intent of these reserves from outside intervention and changes.*

**Community Oversight:**

1. Convene a standing community oversight committee to review implementation, the effectiveness of reserve administration and monitoring, and to ensure that community concerns can be expressed and addressed.

**Funding:**

1. Develop cooperative interagency agreements (among CINMS, CINP, DFG and NMFS, and other agencies) to seek and commit annual funding and other in-kind assistance to support reserve administration.
2. Provide operational support and seek a dedicated funding stream to implement and maintain: marine reserve design, research, monitoring, and evaluation.
3. Develop a protocol in which each agency annually reports its contributions to the CINMS or other designated "lead" agencies reserve administration.
4. Explore the utilization of non-profit, research, and academic organizations and other implementation strategies as methods of institutionalizing long-term program funding.

**Enforcement:**

1. Develop an enforcement Memorandum of Understanding (MOU) and cooperative interagency enforcement plan with the NMFS, DFG, CINP, CINMS, and Coast Guard.
2. Design clear and discernable reserve boundaries.
3. Enlist community participation in marine reserve management and enforcement in order to maximize the cost-effectiveness of the enforcement program.
4. Provide operational support and seek a dedicated funding stream to maintain an active presence on the water and in the air.
5. Develop explicit regulations and restriction that are clear and consistently interpreted.
6. Use "state of the art" enforcement resources, reserve dedicated officers, and vessels.
7. Allow the transit of vessels with fish through reserves at any time, as long as no gear is in the water.
8. Allow anchoring of vessels with fish in marine reserves as permitted by Federal law or in case of emergency caused by hazardous weather.
9. Allow for limited take associated with research, monitoring and adaptive management of this network of marine reserves.

**Education Recommendations:**

1. Create a (CINMS, DFG, FWS, NPS, and others) team of educators to create a coordinated plan with input from the community for the development of interpretive programs, multimedia products, signs, brochures, and curriculum materials related to marine reserves.
2. Develop a training program for staff and volunteers from the above agencies so that they have the tools and information they need to provide interpretation about marine reserves to the general public.
3. Integrate marine reserves educational materials into existing educational programs such as Sanctuary Naturalist Corps, Sanctuary Cruises, Great American Fish Count, etc.

4. *Incorporate data from marine reserve research and monitoring projects into science curriculum materials and hold workshops to present this information to teachers.*
5. *Develop interagency Web site for Channel Islands Marine Reserves that is a portal to best available and most current information about marine reserves that could be used by the general public and school audiences*
6. *Develop a program for organized public educational visits (such as diving, whale watching, nature photography, etc.) to marine reserves for direct observation and study.*
7. *Seek funding for interagency efforts described above.*

## Outstanding Unresolved Issues

Consistent with the MRWG's Ground Rules, there are several unresolved issues that the group wanted to share with the SAC. Resolution of these issues was elusive to the MRWG, in part because in certain cases, these issues were framed such that the gains to one interest group were viewed as losses to at least one or more other caucus of interests. Efforts by the Facilitation Team to transform these positions into broader interests or as components of a package of proposals were not successful. This section of the Facilitators' Report is intended to provide the SAC with our insights regarding what the MRWG could not agree on and the competing interests underlying those issues.

1. **Size of Reserves:** While efforts were made to avoid focusing primarily on reserve size as the basis for a recommendation, input from the Science Panel largely defined the success of reserves in terms of size. Efforts by the facilitation team and others to introduce other variables such as phasing, limited take areas and integrated fisheries management into the "conversation" did not create sufficient agreement to resolve the issue of reserve size. The following perspectives appear at odds at this time:

Perspective	Interest	Proposals to Date:
Reserves should initially be limited in size until their benefits, especially spillover benefits, can be adequately demonstrated.	Minimize economic hardships on consumptive users. Maintain access to key important traditional areas of use.	7% Set-aside 14% Set-aside
Set aside 20-30% of high quality habitat within the Sanctuary as a initial Phase of marine reserves. Provide consumptive users additional time to adapt to the closures and through adaptive management over time, increase the area to 30+% per the Science Panel's recommendation.	Make significant scientifically defensible progress towards achievement of the goals and objectives for marine reserves and build community support for additional expansions through adaptive management.	
Reserves must cover at least 30% of the Sanctuary to be successful, as defined by the Science Panel.	Minimize environmental risk at the expense of short-term adverse economic impacts to consumptive users	30+% Set-aside 28% Set-aside
Reserves should be at least 30% plus an additional 1.2 – 1.8X "insurance" multiplier. Anything less could fail to protect species if natural or manmade disasters cause significant harm to ecosystem health and functions.	Eliminate environmental risk at the expense of adverse economic impacts to consumptive users.	36-48% Set aside

Facilitation Team Observation: A primary focus on reserve size (i.e., percentage set-aside) will not likely lead to a consensus agreement because the gains to one or more stakeholder groups are construed as losses to other groups and because stakeholder options away from

the negotiating table appear better to each side than compromise on this issue. This issue can probably only be resolved by higher-level policy decisions or by negotiating other combinations of proposal elements in place of a "size-driven" outcome.

- 2. Location of Reserves:** Generally, the discussion of the location of specific areas for reserves has been driven by a combination of desire for quality habitat and accessibility (either distance from port, or safety of access). While there may be general agreement that areas that are difficult to access that also contain quality habitat are well suited for reserves, that approach becomes more problematic as one moves from west to east toward Santa Cruz (north side), Anacapa and Santa Barbara Islands. The following perspectives kept the MRWG from consensus:

Perspective	Interest	Proposals to Date:
Santa Barbara and Anacapa Islands are used extensively by sport fishermen (and for Anacapa by recreational divers) from throughout Ventura and Los Angeles Counties and should not be off limits. Access to Santa Barbara has already been severely limited by the Cow Cod Conservation closure.	Maintain some areas easily accessible to ½ and ¾ day charter boats.	No reserves what so ever on Santa Barbara or Anacapa Islands.
Sport fishermen and squid fishermen use the north side of Santa Cruz Island; very limited reserve areas should be set aside along this portion of the Island.	Maintain some areas easily accessible to ½ and ¾ day charter boats. Balance the placement of reserves so that squid harvesting is not disproportionately impacted	If reserves are absolutely necessary in this area, they should only extend out to the 20 fathom depth, leaving the remainder either open entirely or open to some limited take by recreational fishermen and possibly some types of low impact commercial fishing.
Commercial fishermen utilize the northwest portion of San Miguel, weather permitting.	Maintain some areas accessible to shrimp trawlers and other commercial uses.	The placement of reserves should not extend beyond three miles from the elbow to Wilson Rock
The placement of reserves should not be such that it significantly impacts existing kelp harvesting lease areas. Kelp harvesting is a renewable resource and only impacts the top six feet of the water column.	Balance the placement of reserves so that kelp harvesting is not disproportionately impacted.	Allow limited kelp harvesting in selected reserve areas which are situated in locations that are critical to the economic viability of the kelp harvest industry.
Adequate habitat should be fully protected in a replicate manner in all three bio-geographic provinces	The placement of reserves needs to provide for sufficient representation of the full range of habitats in amounts sufficient to meet identified sustainability and biodiversity goals	Set aside quality habitat areas on both the north and south sides of islands in the Oregonian, Californian and Transitional provinces.

### 3. Use of “Limited Take” areas to compliment or substitute for “No Take” Reserves:

Proposals were offered by some Working Group members to allow for different types of “limited take” in some areas. Various types of “limited take” were considered, such as recreational “catch and release” fishing for pelagics; restrictions on certain kinds of recreational fishing tackle and commercial fishing gear; and access to recreational fishing as well as certain commercial fisheries that are cause less impacts to habitat, but closure to the commercial finfish fishery. Such areas might equate to the concept of Marine Conservation Areas as defined by the Marine Life Management Act (MLMA) process.

The basis for these proposals is that some MRWG members felt that such measures would not significantly impact stocks identified as being in decline, and they would still allow some recreational and commercial activities adjacent to no-take reserves.

Perspective	Interest	Proposals to Date:
Allow limited-take/catch & release areas instead of or for credit toward the total percent set aside of marine reserves	Allow for the commercial and recreational benefits of limited impact fisheries of non-threatened species that do not directly require or benefit from no take reserves.	Some discussion as a possible option on the north sides of Santa Cruz and Anacapa Islands.
Allow “recreational only” areas where sport fishing is allowed but commercial fishing is not.	Give preferential treatment to recreational fishing to compensate for other areas set aside for no-take reserves.	No specific proposals offered to date.
Allow for recreational-only, catch & release areas only as a interim measure, prior to designating such areas as Phase II “no-take” reserve areas	Utilize phasing as a method of distributing or minimizing economic hardship and adverse impacts to users over time.	Some discussion as a possible option on the north sides of Santa Cruz and Anacapa Islands.
Do not allow any credit for limited take/catch & release areas toward marine reserves	Preclude unanticipated impacts on biodiversity and predator/prey relationships of an intact marine ecosystem; the Science Panel’s recommendation assumes reserves are “no-take” – catch & release is a form of “take”.	N.A.

It appears that the designation of limited take areas could provide selective benefits to sport fishing and/or certain commercial fishing interests without significantly affecting non-consumptive conservation interests. If satisfactorily sized reserves are also established, this approach may hold promise in realizing the hoped for long-term spillover benefits of reserves, particularly if the limited take areas are located adjacent to no-take reserves.

- 4. Relative Weighting of Advice from Science Panel and Socioeconomic Team** – There was a significant divergence of opinion regarding the relative importance of advice from the two advisory bodies to the MRWG. The facilitation team had sought to establish a system of aggregating individual stakeholders' preferences for how to weigh socioeconomic factors in relation to the advice and recommendations of the Science Panel. The Working Group as individuals and as a group, however, were unwilling to establish the relative weight that should be given to the advice of the two bodies. Some members were of the opinion that because the process was established from the outset as a “science-based” process, that the recommendations of the Science Panel should take precedence over those of the Socioeconomic Team. Other members expressed the perspective that both bodies were advisory in nature, and that it was the responsibility and role of the MRWG itself to “balance potentially conflicting perspectives and make an independent judgment based upon both sets of data.” Both perspectives are supported by the MRWG's Ground Rules. However, neither “position” moved the full group toward common ground.
- 5. Phasing of Reserves:** The MRWG engaged in meaningful discussion of the role of phasing as a method of establishing marine reserves over time. This particular approach presents a series of nested options for consideration. There is general agreement that phasing could be an acceptable method of implementing marine reserves that would spread out the potential socioeconomic impacts on user groups over time. The issues center around: 1) the size of the initial phase, 2) the certainty of future phases, and 3) the use of performance standards or criteria to determine the specific implementation of subsequent phases. All three issues are underlain by a desire for marine reserves to be successful.

The Size of the Initial Phase: One perspective expressed was that for reserves to be successful, they need to be initiated by setting aside a sufficient percentage of the total area to ensure a high probability of succeeding in ultimately meeting the goals established by the Working Group. Another perspective was that the initial size of reserves should be one that would minimize the economic impact to user-groups. Over time perhaps, the size of reserves could increase to a size that would have a higher probability of success in regards to enhancing the distribution and abundance of species of concern.

The Certainty of Future Phases: A concern expressed by several MRWG members was that if a phased reserve network began too small, it would not be effective in producing the desired biological effects on the species of concern. Thus, if the desired biological effects cannot be produced and clearly demonstrated by a small Phase I reserve, then a larger Phase II reserve would never be implemented.

Use of Performance Standards or Criteria to affect the specifics of Subsequent Phases: One concern expressed regarding the use of performance standards was that criteria might be developed that would cause the biological effects of reserves to appear not as pronounced and thereby reduce the probability that larger phases of reserves would be implemented. Another perspective regarding the use of performance standards was that criteria could be developed that would cause the biological effects of reserves to appear more pronounced and thereby increase the probability that larger phases of reserves would be implemented over time. In order to promote constructive dialogue, the nature of appropriate performance standards would need to be discussed and agreed. Without time to more fully consider and define appropriate performance criteria, the MRWG members tended to respond to this concept from their own worst-case scenario perspective.

- 6. Integration of Fisheries Management Outside Reserves** During the course of the MRWG's deliberations, additional fisheries management strategies have been proposed and/or implemented by state and federal authorities outside of the MRWG process. Some on the MRWG had the perspective that fisheries management actions implemented outside by near the CINMS area should be considered when determining the spatial extent of a reserve system. That is, if areas are closed to certain fisheries south of the CINMS border, then that should be taken into account, and not as much emphasis needs to be placed on the area within the CINMS in regards to establishing no-take reserves.

Others on the MRWG felt that new management actions and strategies should be acknowledged and considered when designing a reserve system within the CINMS. Such consideration might allow for not fully meeting the Science Panel's minimum 30% set aside recommendation.

Yet others on the MRWG felt that the Science Panel's 30-50% recommendation applied to CINMS as a discrete management unit unto itself, without regard to other closures outside its boundaries.

Thus, these differences in perspective stem from the way in which different people perceive how fisheries management strategies outside of the CINMS will affect the resources within the Sanctuary.

### **Maps Generated by the MRWG:**

A total of 30 maps of potential marine reserve scenarios and proposals were generated by the MRWG over its 22-month tenure. Support staff from the Channel Islands National Marine

Sanctuary (as well as the Science Panel and Socioeconomic Team) provided extensive technical support and analysis that complimented these mapping efforts, through the development and application of GIS and Decision Support Tools.

Formal mapping efforts took place immediately following the consensus on the MRWG's Goals and Objectives in August, 2000. The table below provides an overview of the range of options developed, their purpose and context, and the resultant outcome of MRWG efforts specific to those maps.

<b>Timeframe</b>	<b>Maps Developed</b>	<b>Context</b>	<b>Outcome</b>
September 27, 2000	10 initial marine reserve <b>Concepts</b> (Maps A1, B1, B2, B3, C1a, C1b, D1, D2, & D3) developed by small <u>heterogeneous</u> MRWG sub-groups for refinement by full MRWG	Provide the basis for negotiating goal-oriented options among divergent interest groups within the MRWG; identify pros and cons for range of interest groups.	Utilized for analytical purposes to evaluate ability to meet both social, economic and ecological goals; not pursued as viable proposals for formal consideration
October 18, 2000	5 additional marine reserve <b>Scenarios</b> (Maps A, B, C, D, & E) developed by small homogeneous, self-selecting groups for refinement by full MRWG	Build upon initial set of maps and identify areas from which to negotiate a proposed network of reserves that was responsive to full range of interests	Provided a basis for soliciting feedback from constituent groups.
February 21, 2001	4 proposed marine reserve <b>Options</b> (Maps A-D) developed by full MRWG, with audience input.	Maps developed for feedback and evaluation from Science Panel, Socioeconomic Team and general public	Science Panel and Socioeconomic team provide technical analysis of implications of each map; public forum held to receive input on each map.
April 18, 2001	MRWG identifies four <b>additional scenarios</b> (E, F, G, H) and identifies one non-consensus-based map (I) as representing the overlap of potential marine reserve proposals. MRWG reaches impasse on a proposal to send forth to SAC.	Maps developed in response to advisory input from Science Panel, Socioeconomic team, and general public; represented an attempt to find common ground, and reflect constituent group input as well.	No Consensus achieved among full MRWG.
April 19, 2001 - May 15, 2001	MRWG members negotiate additional scenarios (J, K, L, M, N, O) outside of meeting in small groups with intention of achieving consensus	Further efforts to negotiate common ground and integrate other dynamics including phasing, areas of limited take, fisheries	No Consensus achieved among full MRWG.

Timeframe	Maps Developed	Context	Outcome
		management and other factors into a map that is agreeable to all MRWG members..	
May 16, 2001	MRWG reaches formal impasse on a recommendation and sends forward two maps to SAC, neither of which received a full consensus. Each map represents, the “resistance point” of consumptive vs. non-consumptive interests.	Deadline for agreement reached; parties identify their bottom lines for mapping purposes and identify areas of overlap but not consensus	Impasse formally acknowledged; MRWG forwards one composite map (depicting areas of overlap and non agreement) to the SAC representing divergent perspectives, neither of which could garner consensus from the group as a whole.

The composite map forwarded to the SAC and depicted below represents the best effort that each of the consumptive and non-consumptive interests could propose and remain true to their constituent groups. The two areas depicted on this map represents the “resistance point”<sup>4</sup> of each caucus of interests - that combination of reserve locations and size configurations beyond which they and/or their constituent group(s) could not support.

For those representing conservation interests, Map E represented the minimum level of habitat set-aside and spatial extent that could be supported. For those representing consumptive interests, the map depicting Areas of Overlap represented their maximum level of habitat set-aside and spatial extent. Neither of these two proposals contains elements for dealing with phasing, areas of limited take or integration of fisheries management issues.

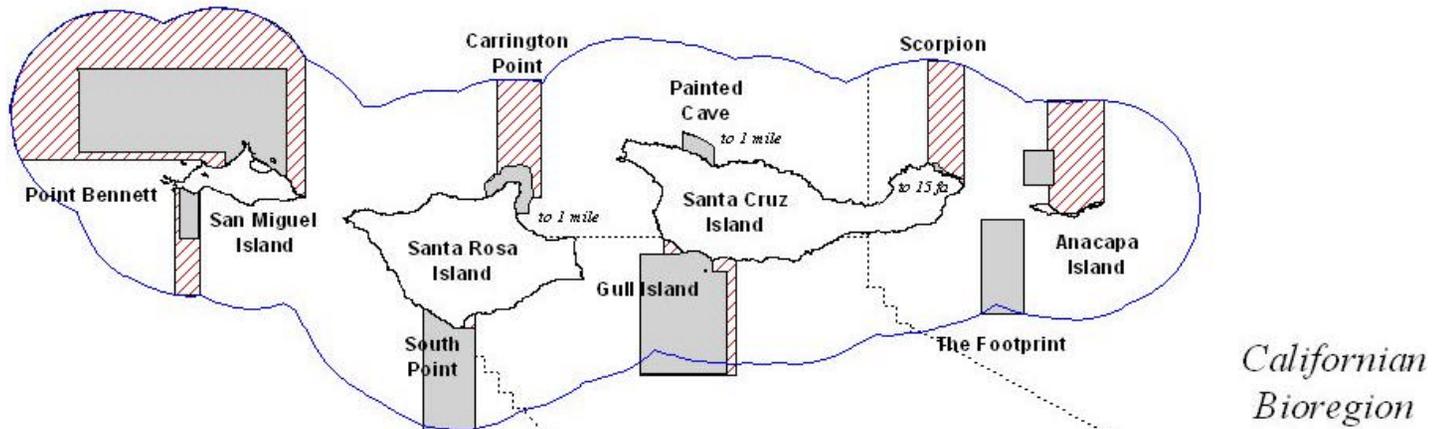
<sup>4</sup> In the field of Negotiation Analysis, a resistance point or reservation value is a negotiator’s bottom line, beyond which alternatives to a negotiated settlement (walking away, letting someone else decide, pursuing more other methods of dispute resolution) are more attractive than agreeing on an outcome negotiated by the parties themselves.

# Composite Map of Areas of Overlap and Non-Overlap

May 16, 2001



*Oregonian Bioregion*

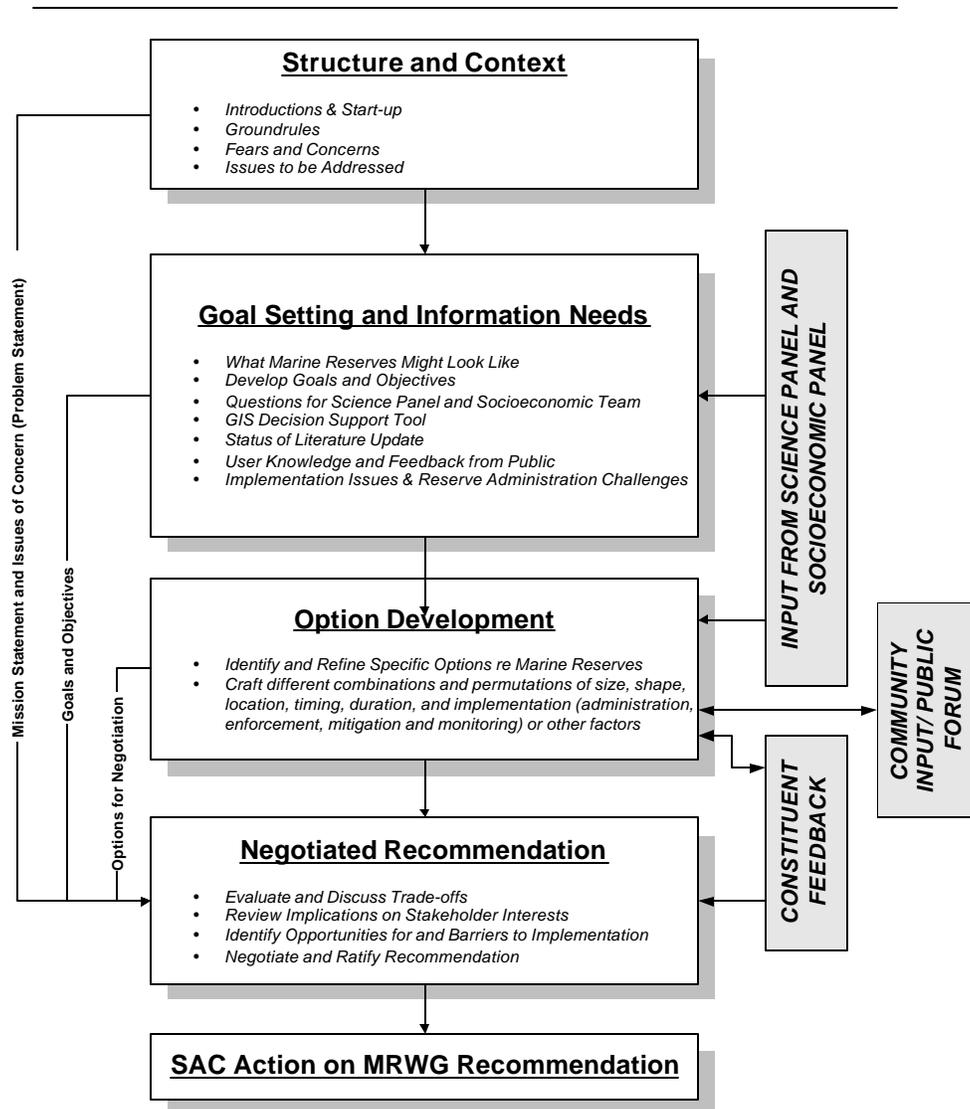


The challenge for those who must interpret the areas of consensus and non-consensus of the MRWG will be to find additional ways to creatively address the key concerns of the consumptive and non-consumptive interests in the marine reserve policy arena. For consumptive users, this means perhaps incorporating new policy alternatives and approaches for helping to minimize or mitigate the anticipated economic impacts of marine reserve designation, while also maintaining an acceptable level of access to productive fishing areas. For non-consumptive interests, a solution requires a system of representative reserves, situated in opportune locations, which are of sufficient size to protect the integrity of marine ecological processes at the scale of the Channel Islands. The thoughtful consideration of phasing, limited take areas, and further integration with sustainable approaches to fisheries management may help decision-makers in arriving at ecologically sound high quality solutions that also significantly address the core needs and interests of affected stakeholders.

## Overall Process Observations

The Marine Reserves Working Group (MRWG) was convened in July of 1999 and began its substantive discussions regarding the establishment of marine reserves (“no take” fishing zones) in October of that year. Group members invested a considerable amount of time working together, reviewing information provided by their advisory panels, and the public at large in undertaking its mission to use the best available ecological, socioeconomic and other information to seek agreement on a recommendation regarding the potential establishment of marine reserves within the Channel Islands National Marine Sanctuary area. The flowchart below provides a general overview of the components of the MRWG process.

### Overview of MRWG Process Stages



In their collaborative efforts, the MRWG has accomplished a number of positive and long lasting substantive results including:

- ❖ Framing the policy issues surrounding the issue of designating a network of marine reserves;
- ❖ Adopting protocols for collaborative problem solving and constructive dialogue;
- ❖ Improved working relationships among disparate interest groups;
- ❖ General agreement on a problem statement to guide the consideration of marine reserves;
- ❖ Development of goals and objectives that should guide the design, location, implementation and administration of marine reserves;
- ❖ Building of consensus regarding the potential value and benefits of marine reserves;
- ❖ Narrowing of original differences over the acceptable size of marine reserves.
- ❖ Identification of areas of overlap where marine reserve(s) could be located. (See discussion below)
- ❖ Public education and outreach with regard to the scientific, political and socioeconomic issues surrounding the creation and management of marine reserves.

From a process perspective, the MRWG discussions and deliberations were based upon a series of guiding principles. These guiding principles contribute to the stability of the outcomes that have been realized, as well as lessons to be learned.

**Diversity of Representation:** The representation reflected on the MRWG was formulated in advance of the involvement of the facilitators, being comprised of recreational fishing interests, kelp harvesting, commercial fishing interests, consumptive and recreational diving interests, conservation interests, public at large representatives, marine policy/science, and regulatory agencies at the state and federal level. If any deficiencies of representation were to be identified, they would center around a lack of representation of oil interests, and harbor/yachting interests, as well as the geographical extent of users. However, these limitations were overcome by efforts to involve Ventura-based fishing interests as alternates on the MRWG, and specific efforts by constituent representatives including squid seiners and other commercial fishing interests outreaching within their groups to users well beyond the immediate area (e.g., Monterey and San Pedro). Overall, the facilitation team concluded that representation was sufficiently diverse to craft a lasting agreement that was representative of all of the key stakeholding interests.

**Commitment of the Participants to the Process:** One noteworthy observation of the process was the energy and commitment of participants to preparing for and attending meetings. In spite of some degree of turnover and organizational change within the MRWG membership, each stakeholder group represented on the MRWG fielded representatives for each of the 27 meetings held. Principals rather than their alternates attended the great majority of the meetings.

**Ability to Respond to a Loss of Membership:** One of the originally designated MRWG members, Dr. Michael McGinnis withdrew from the process in early 2001. His withdrawal was consistent with the ground rules as interpreted by the MRWG itself and the facilitation team. The conservation caucus, within which Dr. McGinnis' seat was classified, determined that it would not seek to have his vacancy filled. Negotiations continued and Dr. McGinnis continued to attend several of the meetings as a member of the public, and communicated his views to the MRWG as a whole on a regular basis up until the final meeting.

**Process Flexibility:** Flexibility was designed into the process from the initial involvement of the facilitators. On several occasions, the facilitation team conferred with the MRWG as a whole regarding process design issues and made adjustments in not only the time frame for discussions but also the role of the MRWG itself in designing and refining agendas and meeting topics. While the process did consume considerably more time than was envisioned by its convenors, deadlines and timing did not significantly affect the outcome (i.e., lack of consensus recommendation) as much as the inability of competing interests to identify common ground. While extraordinary efforts were made to develop proposals that could address all stakeholder interests at the table, in the end, divergent interests precluded a true consensus regarding the issues of both size and location.

**Use of Advisory Panels:** The MRWG relied heavily upon the advice of their two advisory panels – the Science Panel and the Socio-economic Team. Both bodies were utilized in the context of joint fact-finding, and responded in varying degrees to questions posed by the MRWG. Initial concerns and conflicts over the discretionary versus advisory nature of panel input were resolved during the early stages of the process. The independence of each advisory panel was evident in the manner in which they responded to questions raised by the MRWG.

**Strategic Use of Public Comment/Input:** The process was designed to function as a series of working meetings rather than a schedule of public hearings where public comment was an integral part of the meeting design. Because of this approach, members of the public were encouraged to voice their concerns through the network of stakeholder representatives sitting on the MRWG. Concerns were raised with this approach and there was an ongoing tension throughout the process between members of the general public who wanted to participate directly in the MRWG discussions and the need to have sufficient time to allow for meaningful dialogue among the MRWG itself. This dilemma was mitigated in part with three public forums held in at strategic points in the process. Early on, an initial public forum was held in Oxnard (January 2000) that addressed the overall process and its purpose. Constructive input was received from

over 200 participants, resulting in the eventual adoption of a “problem statement” by the MRWG. Mid-way through the process, a second public forum was held in Goleta where the goals and objectives developed by the MRWG were reviewed and discussed, again by over 200 individuals in attendance. A third public forum was held in February of 2001 and discussed specific options for the location of marine reserves. Like the previous two public forums, a brief question and answer session was followed by a series of small round-table focus groups that identified areas of agreement and disagreement. Focus-group moderators then reported back to the full assembly the results of the small group discussions. In all three cases, vocal and passionate comments were aired and the Sanctuary staff provided follow-up meeting summaries.

**Stakeholder Understanding of the Science and User Profiles behind Marine Reserves:**

Because of the engagement of scientific and socioeconomic experts as part of the process, the MRWG as a whole improved their knowledge and integration of the scientific basis for reserves as a method of addressing ecosystem biodiversity and sustainable fisheries, while at the same time considering the potential impacts of “no take” fishing zones on those who depend upon the resources for their livelihood.

**Stakeholder/Constituent Outreach:** While not all MRWG members had identifiable or formalized constituent groups, a number of MRWG members made a concerted effort to meet with and discuss evolving MRWG dialogues with their respective constituencies. In many cases, they were challenged with conveying the dynamics and the “give and take” that took place at MRWG meetings with their constituent groups who had not attended the MRWG meetings. However, in the final analysis, each MRWG member succeeded in establishing worthwhile and meaningful connections between their identified constituencies and their role as decision makers/consensus builders on the MRWG. In the end, some constituencies remained uncomfortable with the broad based support for some proposals and were not able to commit their representatives to sign on to a consensus recommendation.

**Need for Process Evaluation:** Mindful that many outside interested observers have looked to the MRWG process as a potential model approach to consensus stakeholder-based marine resource decision-making, the facilitation team believes it is important to invest the time to impartially evaluate the lessons to be learned from the MRWG’s effort about its overall process conception, design, and execution. Such an evaluation would enhance the long-term benefits gained from the MRWG process and provide useful guidance and advice to agency sponsors and conveners of similar collaborative agreement-seeking processes in the future.

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## Value Added by the Process

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At the close of the Marine Reserve Working Group meeting on May 16, 2001, members were asked to reflect on the benefits gained from their collective efforts for themselves personally and to the community as a whole. Each of the participants outlined their thoughts about lasting value and importance of the MRWG process. Those observations can be classified into six categories. Selected observations are as follows:

- ❖ **From consideration to action:** Everybody on the MRWG is now in agreement that Marine Reserves provide potential benefits and should be implemented.

“We have come a long way from just considering Marine Reserves to proposing thousands of acres for Marine Reserves”

“The final maps discussed (today) reflected a scale of reserves that is positive in terms of community perspective. They’re bigger than everything else on the continent.”

“The reserves dialogue shifted fisherman into a pro-active mode.”

“The leadership, commitment and perseverance has been significant; that is pleasantly surprising.”

- ❖ **Everyone got smarter:** Increased awareness and understanding of scientific basis and socioeconomic implications of reserves gave everyone a vastly improved perspective.

“We have received great benefit from being “forced fed” information, not the least of which is an expanded political and jurisdictional awareness.”

“We amassed a huge information base in one place for resource management.”

“We learned about the limits of science and challenges inherent in using science in decision-making process.”

- ❖ **Building consensus requires an exceptional amount of work:** In spite of not reaching agreement, efforts toward unanimity created substantial benefits in terms of improved collective capacity for collaborative problem solving.

“We invested heart and soul into this process, not just time and money.”

“Constituent involvement has been a challenge and tremendous learning experience.”

“We compressed a 10-year effort that took place at the Florida Keys National Marine Sanctuary, into a 2-year effort for the Channel Islands National Marine Sanctuary.”

“The big challenge is to move beyond the uncertainties associated with Marine Reserves.”

“Our hard work and pain will pay dividends in the future.”

- ❖ **The end of our process will be where others start:** The products and experiences of this process will inform future processes so that they can be more effective, both in terms of substance and process.

“The outcome of this process gives a starting point for other processes (MLPA, etc.)”

“The Goals and Objectives reflect everyone’s perspectives and desires for the future.”

“Working with other stakeholders was rewarding and yielded good information to build on.”

- ❖ **Created a broader knowledge base:** Substantial information gathering, research, evaluation of existing studies, mapping, and dialogue all added significantly to the body of knowledge about marine reserves.

“There is tremendous value for the community to be derived from Science and Socio-economic panels.”

“Our information base (Socio-economic information and GIS) was developed by a partnership. This can be built upon from a data base perspective. “

“There is a higher level of broad based understanding and how to deal with uncertainty.”

- ❖ **Better working relationships:** People are now able to put a face with the issues. Good will is no longer in short supply; better understanding of diverse perspectives and friendships exist where they previously did not.

“I have better appreciation of people and process.”

“Working with other stakeholders was rewarding and yielded good information to build on. “

“This was a beneficial process in part because it put faces on the issues.”

“The MRWG was better than the “Survivor” television show – we could not boot people out!”

“Interagency relations have been improved.”

## Appendix A

### ADOPTED GROUND RULES

Channel Islands National Marine Sanctuary Advisory Council  
Marine Reserve Working Group

#### 1. Purpose

The purpose of these ground rules is to provide a common set of understandings upon which the discussions of the Marine Reserve Working Group might proceed and to facilitate the efficient use of participants' time and resources in achieving consensus on a recommendation to the Sanctuary Advisory Council (SAC). These ground rules will serve as the group's "agreement" for collaboration and consensus building.

#### 2. Why are we doing this?

The Working Group has been established in response to:

- Channel Islands National Marine Sanctuary (CINMS) and California Department Fish and Game (CDFG) 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.

#### 3. Mission Statement

Using the best available ecological, socioeconomic and other information, the Marine Reserve Working Group (MRWG) will collaborate to seek agreement on a recommendation to the Sanctuary Advisory Council regarding the potential establishment of marine reserves within the Channel Islands National Marine Sanctuary area.

#### 4. Timeline

It is anticipated that the MRWG will develop and forward its recommendation to the Sanctuary Advisory Council by June 2000.

#### 5. Definitions<sup>5</sup>

- A. A Marine Reserve is defined as a "No Take" zone.

#### 6. Participation

Working Group Selection Process: The Channel Islands National Marine Sanctuary Advisory Council (SAC) created the Marine Reserve Working Group around a core of five Council members and a Sea Grant Extension Marine Advisor. The MRWG operates under the purview of the SAC. The SAC solicited nominations of individuals with a strong knowledge of the regional marine resources and management issues, who also had the ability to understand and respect diverse points of view. The SAC selected members of the Working Group from this roster of nominated individuals.

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<sup>5</sup> Definitions within the context of these Ground Rules may be refined and new terms added at the discretion of the Marine Reserve Working Group. However, as with other changes or additions to these Ground Rules, all such revisions shall be by consensus of the Working Group.

Composition: The membership of the Working Group was established with the intention of having a range of community and stakeholder perspectives being represented. These included the public-at-large, commercial fishing and diving interests, recreational fishing and diving interests, and conservation interests. The SAC sought to have relative parity between members representing consumptive and non-consumptive interests on the Working Group. However, because it was envisioned that the Working Group would develop its recommendations through consensus, achieving a perfect numerical balance on the Working Group was not considered essential for a fair and informed process.

Alternates: All Working Group members have the responsibility to identify a designated alternate who can represent their interests and perspectives. The alternate's role is to attend any meeting that the member cannot attend, participate on that member's behalf, and to provide information about the proceedings and results of the meeting directly to the member. Alternates are empowered to participate in the decision making process when members are not in attendance. Alternates are not empowered to ratify the final recommendation of the MRWG.

Technical Advisors: The Working Group may choose to invite other individuals with special knowledge and expertise related the Channel Islands marine reserve issues to attend meetings to provide information and/or advice. Advisors will be encouraged to participate in discussions but shall not participate in the decision-making of the Working Group.

Constituent Involvement: Working Group members and their alternates serve as conduits for two-way information exchange with their constituencies. Constituents wanting to provide input to the process are encouraged to channel their concerns and suggestions through individual members of the Working Group who they feel could represent their interests. Working Group members will make a concerted outreach effort to communicate regularly with their agencies or constituencies to keep them informed about the process and the issues under discussion.

Participation and Observation by Members of the Public: All Working Group meetings are open to the public and observers are welcome. Meetings of the Working Group are meant to be working meetings focused on collaboratively developing a recommendation to the Sanctuary Advisory Council regarding marine reserves in the Channel Islands area. As such, the meetings are not designed to be opportunities for soliciting input from the general public. However, members of the public are encouraged to raise their concerns with Working Group members before or after the meetings, as well as during breaks, to help ensure that all issues of significant concern to the public are considered in the Working Group's deliberations or directed to other relevant entities such as the Science Panel or Sanctuary Advisory Council.

Public Involvement Opportunities: The Sanctuary will be providing a number of opportunities to solicit additional public input throughout the marine reserve and management plan review process. Specifically, one or more workshops will be scheduled with this specific purpose in mind. The Working Group is expected to utilize the input and feedback obtained through these public involvement activities in their deliberations, in order to develop a recommendation to the Sanctuary Advisory Council that will receive broad support from the general public.

Additions to the Working Group: During the course of its deliberations, the Working Group may determine that it's in the best interests of achieving a quality and informed outcome to add additional members with different perspectives to the Working Group. Such new members may be added by consensus of the Working Group, subject to ratification by the Sanctuary Advisory Council.

Replacement of Working Group Members: In the unlikely event that a member of the Working Group is unable to continue to serve, his or her replacement shall be added by consensus of the Working Group, subject to ratification by the Sanctuary Advisory Council.

## 7. Decision-Making Process

The Working Group will strive to achieve decisions by consensus. For matters of substance associated directly with its mission, the Working Group will strive for unanimity. In seeking consensus, each member has an obligation to articulate interests, propose alternatives, listen to proposals and build agreements by negotiating a recommendation for adoption by the SAC. In exchange, each member has the right to expect:

1. a full articulation of agreement and areas of disagreement, if any;
2. an opportunity to revisit issues on grounds of substantial new information becoming available during the Working Group's deliberations.

When unable to support a consensus, a member has an obligation to demonstrate that the item at issue is a matter of such principle or importance that his or her constituents' interests would be substantially and adversely affected by the proposed decision. In addition, it is the responsibility of the dissenting party to: 1) state the reason(s) underlying their withholding of consent in sufficient detail, and 2) offer an alternative suggestion that satisfactorily addresses not only their concerns and interests, but also those of other members of the Working Group as well.

Definition of Consensus: One definition of consensus is unanimity. This means that all participants will work toward reaching agreement as a group on all major elements of their collective decisions. In practice, however, where the challenge is a balancing of interests and issues, it is necessary to provide for differing levels of support between members and issues in constructing a viable set of agreements. In the unlikely event that one or more members disagree on a specific aspect of the decision making process, the following factors will be used in crafting agreements:

1. the relative importance of the issues to individual members;
2. the relationship of the issue in dispute to the total package that comprises the Working Group's recommendation to the SAC; and,
3. the provision of specific assurances (e.g., sunset clauses, etc.) that respond to uncertainties that cannot be resolved in the context of these discussions.

From an operational standpoint, the Working Group will utilize the following definition of consensus: *Consensus is a process used to find the highest level of agreement without dividing the participants into factions. Everyone in the group supports, agrees to, or can accept a particular decision. In the end, everyone can say "whether or not I prefer this decision, above all others, I will support it because it was reached fairly and openly."*

In seeking consensus on an interim or final recommendation, it is understood that members should voice their concerns with specific proposals along the way, rather than waiting until a final recommendation has been developed. In addition, the Working Group may choose to use the following five levels of agreement to indicate a member's degree of approval and support for any proposal or decision being considered by the Working Group and to determine the degree of consensus among the Working Group:

*Level 1* - I feel we have no clear sense of agreement among the group. We need to talk more before considering a decision.

*Level 2* - I do not agree with the group's proposal. I feel the need to block its adoption and propose an alternative.

*Level 3* - I may not be especially enthusiastic about it, but I can accept the group's proposal.

*Level 4* - I think this proposal is the best choice of the options available to us.

*Level 5* - I am enthusiastic about the group's proposal and am confident it expresses the best wisdom of the entire group.

The goal is for all members of the Working Group to be in the upper levels of agreement. The Working Group would be considered to have reached consensus if all members are at Levels 3 to 5. If any member of the Working Group is at levels 1 or 2, the Working Group will stop and evaluate how best to proceed.

In the event of significant disagreements, the Working Group will decide, in consultation with the Facilitators, how best to move forward. For example, additional discussion may be needed to help understand unresolved concerns before proceeding further, or the group may benefit from working on creating additional options. If, after exhausting all other options, a Working Group member feels that he or she cannot go along with a very strong consensus developed by the group, they have the option to withdraw as an official member of the Working Group.

Straw Polls: Straw polls may also be taken to assess the degree of preliminary support for an idea, before being submitted as a formal proposal for final consideration by the Working Group. Members may indicate only tentative approval for a preliminary proposal, without fully committing to its support. It is understood that agreement on a final recommendation will typically require consideration by constituent groups of all elements of the recommendation that ultimately emerges from the Working Group.

Absence When Decisions Are Made: When members and their alternates cannot attend a meeting of the Working Group, they will seek to communicate their views to other members of the group prior to that meeting. Absence of both a member and their alternate is interpreted as assent.

If Consensus Cannot Be Reached on the Final Recommendation: If consensus cannot be reached on a recommendation to the Sanctuary Advisory Council regarding marine reserves, the Working Group will forward to the SAC a summary of their areas of agreement and their areas of disagreement. In no case will there be a statement of what proportion of members were in favor of or opposed to any provision on which there is continuing disagreement.

Implementation Considerations: Although the Working Group as a whole is not directly responsible for implementation of its recommendation by the SAC, members should be continually mindful of the feasibility and practical aspects of any recommendation they develop.

## **8. Day-to-Day Working Group Operations**

### Co-Chairs of the Working Group:

The manager of Channel Islands National Marine Sanctuary and the Southern Marine Manager of the California Department of Fish and Game, who together represent the lead federal and state agency sponsors of the Marine Reserve Working Group process, will serve as Co-Chairs of the Working Group.

It is the responsibility of the Co-chairs or their designee to:

- Develop meeting agendas with input from the members and in consultation with the Facilitators.
- Serve as the official spokespersons for the process.

- Clearly communicate to the Working Group the parameters, constraints, goals, and requirements of the lead federal and state agencies sponsoring this process that will have the primary responsibility for the implementation of any recommendation that is adopted.
- Encourage the active participation of all Working Group members.
- Keep Working Group members and support staff accountable for agreed upon tasks and deadlines.
- Support the efforts of the Facilitators.

#### Meeting Mechanics:

The Working Group will initially meet approximately monthly for all-day meetings. The time and location of all Working Group meetings will be publicized in advance and the public is welcome to attend. The development of meeting schedules will take into consideration the special needs of its members so as to maximize attendance. Members agree to place a high priority on participation in the Working Group process and to make a good faith best effort to attend all meetings. If unable to attend a meeting, members will ensure that their designated alternate attends in their place.

Any member of the Working Group may request a break or caucus to consult with other colleagues or constituents attending the meeting. The Facilitators may also request or suggest a caucus.

Draft Meeting Agendas along with supportive materials will be provided to the Working Group at least 10 calendar days and preferably two weeks in advance of each meeting. The Facilitator will produce meeting notes following each meeting that identify the major issues discussed and any decisions made or actions to be taken<sup>6</sup>. The draft meeting notes will be distributed as a part of the subsequent meeting agenda packet for review by the participants. Finalized meeting summaries will be posted on the Sanctuary's web site.

#### Role and Responsibilities of Working Group Members

The following points are offered as examples of the roles and responsibilities of members and guests of the Working Group:

- Actively participate in discussions.
- Bring concerns to other members, co-chairs or facilitators.
- Share the airtime with others.
  - Offer respect of different viewpoints and attention when others speak.
- Ask questions of each other for clarification and mutual understanding.
- Verify assumptions when necessary.
- Avoid characterizing the motives of others.
- Acknowledge and try to understand others' perspectives.
- Deal with differences as problems to be solved, not battles to be won.
- Stay focused on the task at hand.
- Refrain from distracting others through side conversations; silence all cell phones during meetings.
- Keep the Facilitators neutral.

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<sup>6</sup> Meeting notes are intended to characterize and clarify points of agreement and areas in need of resolution in order to move the process forward. They are not intended to serve as "meeting minutes" in the traditional sense.

- Concentrate on the content of discussions and allow the Facilitators to focus on how to promote productive discussion.
- Share the responsibility of ensuring the success of the process and the quality of the outcome.
- Make our best good faith effort to work towards reaching an agreement.
- Represent the perspectives, concerns, and interests of our agency or constituencies whenever possible to ensure that agreements developed by the Working Group are acceptable to the organizations, agencies, or constituents we are representing.
- Keep the Working Group informed regarding constraints on our decision-making authority within our agencies or constituency groups.

#### Role and Responsibilities of the Facilitators

The Facilitators are neutral third parties whose responsibility it is to serve the entire Working Group impartially, build consensus and provide the procedural framework for productive working relationships among all participants. The Facilitators serve at the pleasure of the Working Group and can be replaced at any time. Other roles and responsibilities include the following:

- Help the group focus on their common task, clarify information and achieve a common understanding of the available information.
- Create a constructive environment for open discussion and dialogue.
- Protect individuals and their ideas from attack.
- Help channel strong emotions into productive discussions and solutions.
- Help ensure that all points of view are expressed and understood.
- Help ensure that all members have an opportunity to participate in discussions.
- Clarify areas of agreement and disagreement.
- Suggest processes and procedures to help the group accomplish its tasks.
- Help the group reach agreement, resolve differences, identify options, and discover common ground.
- Ensure that key decisions are documented.
- Draft press releases to be issued through the Co-Chairs on the progress of the process upon request and with guidance from the Working Group.

#### Establishment of Task Groups

Because of the technical complexity of the tasks at hand, it may be necessary and useful to appoint task groups of the Working Group to: (1) engage in the development and refinement of options for the full Working Group consideration, (2) refine proposals for specific action by the Working Group as a whole, (3) conduct specific joint “fact-finding” efforts, and (4) undertake other specific tasks necessary to the success of the Working Group as a whole. As a general rule, any task-oriented sub-group should be small enough to effectively accomplish their charge and at the same time large enough to ensure a balance of interests. Each Task Group will also operate through the principle of consensus and be facilitated by a Chair whose responsibility it is to regularly communicate with the Working Group through its Chair and the Facilitators. Task Groups are not empowered to make decisions in place of the Working Group as a whole.

### **9. Joint Fact-Finding and Information Sources**

Relevant information can play an important role in the identification of options and the development of informed consent. At the same time, too much information or information of limited relevance can cause confusion and slow down the process. The Sanctuary Advisory Council has established a Science Panel to aid the Working Group in utilizing the best science to

craft recommendations for its consideration<sup>7</sup>. The Sanctuary Advisory Council has also established a Socio-Economic Team to assist the Working Group in evaluating various socio-economic implications of marine reserves<sup>8</sup>.

The Working Group will seek access to information from the following sources:

- a. Science Panel established by the Sanctuary Advisory Council to assist the Working Group in its deliberations.  
National Center for Ecological Analysis and Synthesis (NCEAS), established by the National Science Foundation at UCSB, which has a Marine Reserves Working Group.
- b. Information provided by various groups that utilize the Channel Islands National Marine Sanctuary area for consumptive and non-consumptive activities.
- c. Information provided by various constituent groups with an interest in the Channel Islands National Marine Sanctuary area.
- d. Information provided by others with knowledge and expertise related to the marine environment of the Channel Islands National Marine Sanctuary area or marine reserves.
- e. GIS-based decision support tools being developed by the Sanctuary, that will integrate and map the ecological and socioeconomic information being developed and that will allow Working Group members to evaluate different impacts and benefits of various marine reserve scenarios it may be considering.
- f. Workbook binders compiled by the Sanctuary staff that will provide background information and ongoing technical, and procedural information that will contribute to the success of the process and the development of consensus-based recommendations to the SAC

Working Group members may, from time to time, desire additional information to resolve outstanding issues related to developing recommendations. These requests should be developed by the consensus of the Working Group. In crafting requests, the Working Group should clarify how or why the information would facilitate the resolution of issues of concern to its members.

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<sup>7</sup> It is the Mission Statement of the Science Panel to use the best available information and expertise to assist the Marine Reserves Working Group in evaluating potential reserve scenarios. The draft tasks reflected in the minutes include:

- 1) to identify and review the state of the literature on marine reserves and provide MRWG with potential natural resource consequences of reserves;
- 2) to identify and evaluate existing data sets for incorporation into a GIS-based ecological characterization;
- 3) to define scientific criteria to achieve the objectives defined by the MRWG; and
- 4) to evaluate the scientific merit of different reserve scenarios provided by the Working Group and provide feedback.

<sup>8</sup> The mission of the Socio-economic Study Team is: "to use the best available socioeconomic information and expertise to assist the MRWG in evaluating various socioeconomic implications of marine reserves. The proposed tasks of the Socio-Economic Study Team are:

1. To identify, review and analyze potential socioeconomic implications of marine reserves;
2. To provide to the MRWG the potential socioeconomic costs and benefits of marine reserves;
3. To identify and evaluate existing datasets for incorporation in a GIS-based socioeconomic characterization;
4. To design, collect and analyze supplemental necessary information for incorporation into the GIS-based socioeconomic characterization;
5. To define socioeconomic criteria for the MRWG to consider in achieving reserve objectives; and,
6. To evaluate socioeconomic implications of different reserve scenarios provided by the MRWG.

Where individual members wish to share written or printed information regarding an “action item” with the Working Group as a whole, such information should be provided to the Sanctuary staff at least 48 hours prior to any meeting, along with a written abstract summarizing the key points and indicating how it facilitates agreement or understanding related to a specific issue under consideration.

#### **10. Interactions with the Media**

The Working Group Co-Chairs will serve as the official spokespersons for the MRWG process. Any press releases or media contact regarding the process or its outcome will be conducted through the Co-chairs, unless other arrangements are made by a consensus of the group.

All members are free to interact with the media, but they agree to focus on explaining the concerns and interests of their own constituencies and avoid characterizing the views or motives of other members of the MRWG. Members will not use the media for communicating their concerns to other members of the MRWG. When in contact with the media about marine resources in the Channel Islands, members will, as a courtesy, provide notice to the Working Group about those contacts.

#### **11. Use of MRWG Funds**

Some members of the Working Group have expressed an interest in contributing funds to support activities related to the MRWG process. Contributors may stipulate the kind of activities they would like to support; however, all allocations of funds are subject to approval of the Working Group to ensure that the common needs of the process are being addressed. All contributed funds will be administered by the Facilitators or a task group selected by the Working Group, and held in a dedicated bank account established for the MRWG process.

## Appendix B – MRWG, Facilitation Team, and Support Staff

### Marine Reserves Working Group Membership:

<b>Name</b>	<b>Affiliation</b>	<b>Representation</b>
Patricia Wolf, Chair	Department of Fish and Game	Department of Fish and Game
Matt Pickett , Sanctuary Manager Co-Chair	NOAA'S Channel Islands National Marine Sanctuary	NOAA's National Marine Sanctuary
Warner Chabot Greg Helms	Center for Marine Conservation	Non-Consumptive
Steve Roberson	Channel Island Marine Resource Restoration Committee	Non-Consumptive
Alicia Stratton Sean Kelly	Surfrider Foundation	Non-Consumptive
Chris Miller	Lobster Trappers Association	Consumptive
Neil Guglielmo	Squid Seiner and Processor	Consumptive
Dale Glanz	ISP Alginates Inc.	Consumptive
Tom Raftican	United Anglers	Consumptive
Robert Fletcher	Sport Fishing Association of California	Marina/Business
Locky Brown	Channel Islands Council of Divers	Sport Diving
Marla Daily	Sanctuary Advisory Council	Public At Large
Dr. Craig Fusaro	Sanctuary Advisory Council	Public At Large
Gary Davis	Channel Islands National Park	National Park Service
Mark Helvey	NOAA's National Marine Fisheries Service	NOAA'S National Marine Fisheries Service
Deborah McArdle	California Sea Grant	California Sea Grant
Dr. Michael McGinnis	Acting Director of the Ocean and Coastal Policy Center, MSI, UCSB.	Non-Consumptive

Note: Where two names are listed, the former initiated the process and the latter completed it

**Facilitation Team:**

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**Marine Protected Area (MPA) Process Review:  
Case Studies of Five MPA Establishment Processes**

**May 2003**

**Prepared by the National Marine Protected Areas Center  
in cooperation with the  
National Oceanic and Atmospheric Administration  
Coastal Services Center**

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[www.csc.noaa.gov/cms/cls/mpa\\_training.html](http://www.csc.noaa.gov/cms/cls/mpa_training.html)

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## **Introduction**

Marine protected areas (MPAs) are used as management tools to protect, maintain, or restore natural and cultural resources in coastal and marine waters. Both internationally and throughout the United States, MPAs have been established specifically to conserve biodiversity, manage natural resources, protect endangered species, provide educational and research opportunities, and enhance commercial and recreational activities (Kelleher 1999; National Research Council 2001; Salm *et al.* 2000). Several themes have been found to be universal among MPA efforts. One such theme is that constructive stakeholder involvement in MPA planning is vital to achieving conservation goals, both in establishing sites and in ensuring their effective long-term stewardship (Kelleher 1999; National Research Council 2001; Salm *et al.* 2000). Conversely, when MPA planning processes go awry, the resulting controversy can result in compromises on siting and levels of protection. Any remaining confusion and mistrust among stakeholders has the potential to complicate future MPA efforts, particularly enforcement, in other settings (National Research Council 2001; Salm *et al.* 2000).

What remains unclear is how to design an MPA planning process that results in effective protection while actively engaging all stakeholders in meaningful, productive, and equitable dialogue and decision making. Clearly, there is much to be learned from existing MPAs and from past MPA planning processes. A variety of MPA programs and establishment processes are used internationally, as well as throughout the United States. Hence, there is no single formula for creating an MPA site (Kelleher 1999; National Research Council 2001; Salm *et al.* 2000). MPAs in the United States today are generally not the result of a systematic effort to design and implement MPAs. Rather, existing MPAs are rooted in a matrix of programs and policies under which various jurisdictions (federal, state, and local) use their authorities to manage ocean space, activities, and resources. As a result, planning processes will vary according to the level of government involvement, the goal of protection, the resource in question, and the views of local communities, resource users, or other interested parties (Brody 1998).

## **Background: The Lessons Learned Project**

There is widespread interest in the topic of MPA process design, and specifically in understanding how processes can be structured to be both science-based and participatory. A recent MPA Needs Assessment documented that both marine resource managers and diverse stakeholder groups believe there are important lessons to be learned from past MPA processes (NOAA Coastal Services Center 2002). In response to growing interest in this topic, the National MPA Center has initiated a “lessons learned” project to investigate a number of past MPA establishment processes. The MPA Center’s two supporting institutes – The Science Institute in California and the Training and Technical Assistance Institute in South Carolina – are cooperating on this work.

The ‘lessons learned’ project consists of two distinct phases. The first phase was an objective documentation of five recent MPA establishment processes, with specific process-related elements outlined for each of the case studies. This report presents results of this first phase. The second phase of the project will be a series of interviews with varied stakeholders to get their subjective perception of what worked and what did not for each case study. (Note: This second phase is currently being carried out by a contractor, and is projected to be completed during the fall of 2003.)

## **The Case Studies**

Although each MPA process must be tailored to local issues, stakeholders, and environmental conditions, case studies can demonstrate effective tools and techniques and allow a comparison across MPA efforts. The case studies presented in this report are intended to contribute to future MPA establishment efforts by allowing the readers to identify best practices, to learn from past experiences, and to consider a range of approaches used in MPA establishment processes.

During the past few years, U.S. federal, state, and local agencies have undertaken a number of public planning processes to create new MPAs or to establish different use zones within existing MPAs. Five case studies were selected to demonstrate processes in a range of geographic locations that were established for a variety of purposes, and which had varying amounts of involvement by different levels of government. Approaches used to acquire stakeholder participation within the process varied widely depending on agency-specific requirements, policies, timelines, and other constraints. (Note: For the purpose of this report, “stakeholder” refers to anyone who has an interest in or is affected by the establishment of a protected area.) As a result, stakeholder involvement in these planning processes ranged from continual, substantive involvement over several years to more limited participation that focused primarily on commenting on preliminary plans.

The following MPA designation processes were developed as case studies for this report:

- ◇ Carl N. Schuster Horseshoe Crab Reserve (Delaware Bay)
- ◇ Channel Islands Marine Reserves (California)
- ◇ Gulf of Mexico Grouper Closures (Gulf of Mexico)
- ◇ San Juan County Bottomfish Recovery Zones (Washington)
- ◇ Tortugas Ecological Reserve (Florida)

The purpose of this report is not to suggest that following these approaches will always lead to a successfully established and managed MPA. Rather, this report summarizes the events, issues, and participants of each process and culminates in a number of findings about the research itself and about commonalities across the case studies.

## **Methodology**

For each case study, the MPA establishment process was documented from nomination to designation in chronological order, and the process-related elements detailed below were fully developed and characterized. Internal documents were accessed as primary sources of information, as well as were primary public documents from libraries and Web sites. In addition, theoretical literature, press releases, and news articles were reviewed. Finally, attendance at MPA-related meetings and conferences provided supplementary information, in addition to the opportunity to interview stakeholders who have been involved in one or more MPA establishment processes. It would be impossible to account for all details unless one had been involved in the process itself; however, these various sources provided excellent information on the establishment context, the chronology of events, and the types of stakeholder participation involved in each process.

A rigorous review process was undertaken for each case study as it was produced. First, each case study went through an internal review process by employees of the NOAA Coastal Services Center who were not involved in the project. (Refer to Appendix A for a list of internal reviewers.) Allowing someone who had no previous knowledge, experience, or attachment to a particular case study to review each document was important in identifying gaps and increasing the clarity of the report. Second, each case study went through a standardized editing process. Third, each case study went through an external

review process, wherein several people knowledgeable about the process had an opportunity to provide additional information, make suggestions on how to improve its clarity, and most importantly, report any inaccuracies in the information. (Refer to Appendix B for a list of external reviewers.) Throughout the review process, all comments were taken into consideration, although not all were incorporated, and then each case study was finalized.

## **Report Format**

Case studies were created with a consistent format to facilitate comparisons across MPA efforts. The following components can be found within each case study:

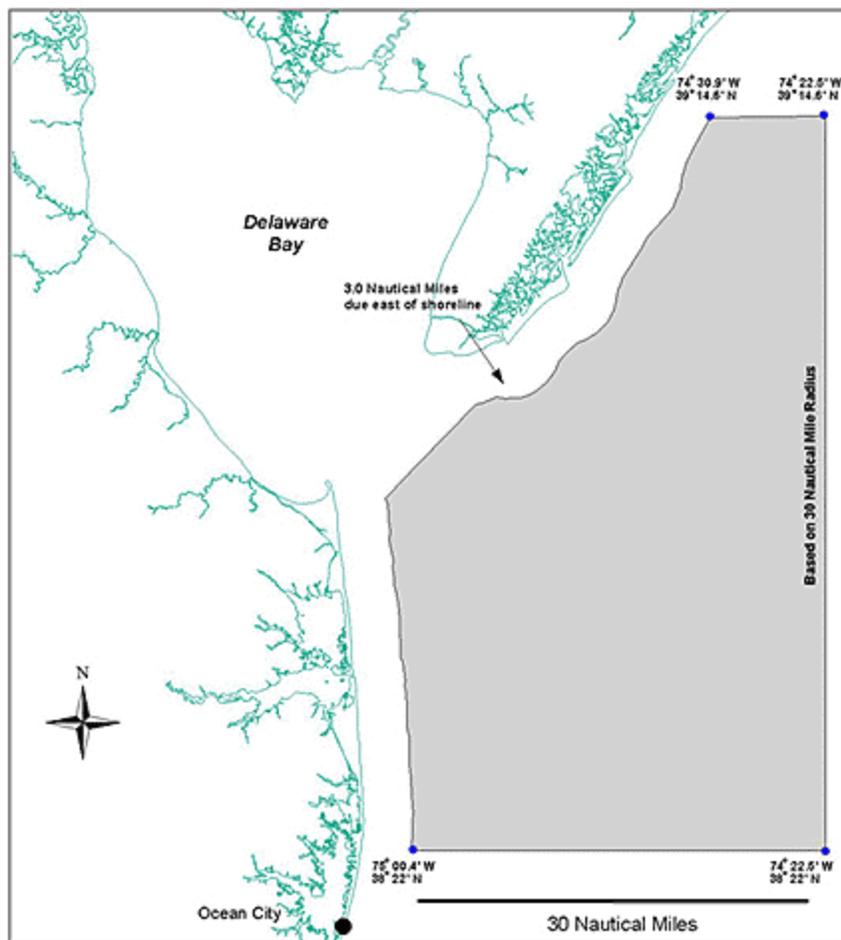
- ◇ Site map
- ◇ Abstract
- ◇ Introduction
- ◇ Process Diagram (simplified visual of the process to complement the timeline)
- ◇ Timeline (details of the process from nomination to designation)
- ◇ Objectives (for the MPA)
- ◇ Current Status/Outcome
- ◇ Stakeholders (key players in the process – not meant to be an exhaustive list)
- ◇ Advisory Groups
- ◇ Economic Factors
- ◇ Areas of Conflict/Difficulty
- ◇ Technology-Based Decision-Support Tools
- ◇ Enforcement (measures planned or undertaken since implementation)
- ◇ Boundaries
- ◇ Legislation and/or Regulation (relevant to the MPA process)
- ◇ Media/Public Outreach
- ◇ References (specific to a particular case study)
- ◇ Appendices – tables of public meeting dates and locations, citations for additional readings, tables of advisory groups, panel members, and affiliations (if applicable), and supplementary information related to the process (if applicable)

## **A Note about Terminology**

Executive Order 13158 defines MPA as “any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein.” In this report, however, each case study uses the terminology adopted by that particular process, and is not based on a consistent definition. For example, some case studies used the term “marine reserve” in reference to areas that are completely no-take, while others used the term in reference to areas that have limited take. In another example, some sites preferred to use the term “consumptive,” while others preferred to use the term “extractive.” Definitions of terms are incorporated in each case study as appropriate.



## Carl N. Schuster Jr. Horseshoe Crab Reserve



Source: ([www.nmfs.noaa.gov/horseshoecrb\\_map.htm](http://www.nmfs.noaa.gov/horseshoecrb_map.htm))

*Note: Each case study uses the terminology adopted by that particular process, and is not based on a consistent definition.*

## Abstract

The National Marine Fisheries Service closed an area (comprising about 1,500 square nautical miles of federal waters) outside of Delaware Bay to horseshoe crab fishing beginning in 2001. The intent of this ruling was to provide protection for the Atlantic coast stock of horseshoe crabs and to implement the Atlantic States Marine Fisheries Commission's Interstate Fishery Management Plan for horseshoe crabs. No sunset provision was included with the establishment of the closure.

## Introduction

Horseshoe crab (*Limulus polyphemus*) populations in the U.S. are most abundant in Delaware, Maryland, and Virginia around Delaware Bay. In this region, horseshoe crabs play a critical role. Nine species of migratory shorebirds rely on horseshoe crab eggs for food during their spring migration north to Canada. Eel, whelk, and catfish fisheries also depend on horseshoe crabs for bait. Furthermore, the biomedical industry utilizes horseshoe crab blood, which has an extensive infection fighting system, thereby improving the ability of pharmaceutical and medical device manufacturers to assure that their products are free of contaminating endotoxins.

Recent studies have shown a decline in both the horseshoe crab populations as well as in the shorebird populations they sustain. In the past three years, for example, the concentration of horseshoe crab eggs on shorebird feeding beaches in New Jersey has declined by almost fifty percent (New Jersey Department of Environmental Protection, 2003). In recent years, fishing efforts have also shifted dramatically from state waters to mid-Atlantic federal waters. "Under current state laws, all Atlantic coast states monitor and manage fishing for horseshoe crabs in state waters. However, adjoining exclusive economic zone (EEZ) waters have no federal restrictions on horseshoe crab harvest" (*Federal Register*, October 16, 2000a). For these reasons, there was general concern over the possible consequences of continued declines in horseshoe crab populations.

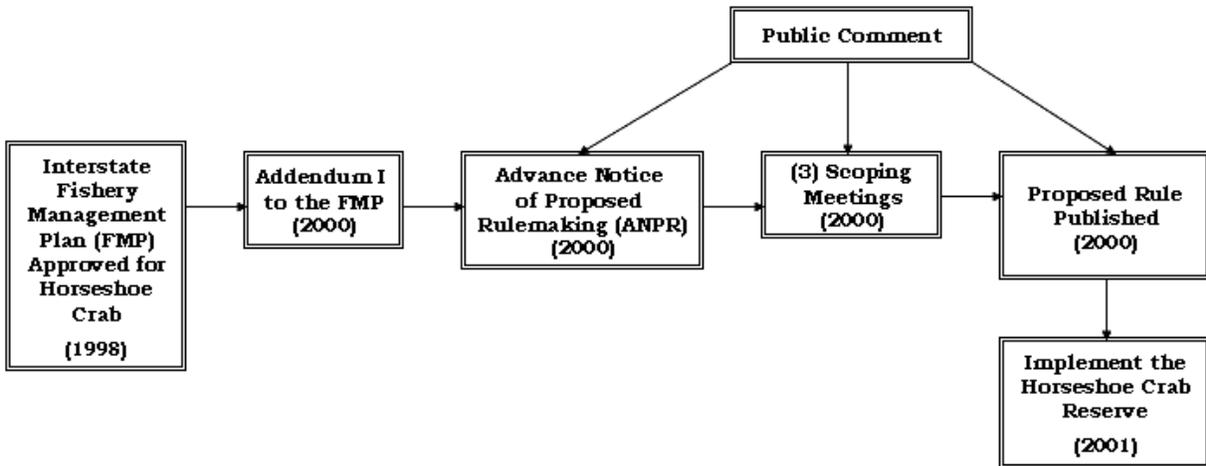
In 2001, to help avoid these consequences, the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) created a horseshoe crab closure that is roughly rectangular in shape, comprising about 1,500 square nautical miles of federal waters. It adjoins state waters south of Pecks Beach, New Jersey, to just north of Ocean City, Maryland. No sunset provision was included with the establishment of the closure. By definition, a sunset provision provides that a provision of the law is automatically repealed on a specific date, unless the law is reenacted. The closure was named the Carl N. Schuster Jr. Horseshoe Crab Reserve in honor of a retired College of William & Mary professor who is a leading horseshoe crab biologist and researcher.

The taking of horseshoe crabs is the only activity not permitted within the closure, but there are two exceptions written into the regulations. First, a biomedical company, Limuli Laboratories, was granted an "exempted fishing permit" to obtain blood from 10,000 horseshoe crabs per year for three years, with the condition that the crabs be released back into Delaware Bay water (*Federal Register*, August 15, 2001; NMFS 2000a). Second, the Virginia Polytechnic Institute and State University's Department of Fisheries and Wildlife Science obtained a "scientific research activity" permit to conduct a pilot trawl study to develop a protocol for coast-wide horseshoe crab monitoring (NMFS 2000b).

## Process Diagram

“An important factor in the establishment of MPAs is the process by which they are nominated and designated” (Brody 1998).

The Horseshoe Crab Reserve process occurred as follows:



## Timeline (1998 to 2001)

This section details the sequence of events in the establishment process.

- The Atlantic States Marine Fisheries Commission (ASMFC) approved an Interstate Fishery Management Plan (FMP) for the horseshoe crab in 1998, and Addendum I to the plan in February 2000. “Addendum I’s intent is to protect and maintain horseshoe crab spawning stock at levels that can sustain fisheries and that will provide an abundance of horseshoe crab eggs as a food source for migratory shorebirds” (*Federal Register*, October 16, 2000a). Under Addendum I,
  - A variety of new requirements for state waters were implemented to better monitor and manage the horseshoe crab fishery, including the establishment of a state-by-state quota.
  - ASMFC recommended to NMFS that it should 1) establish an offshore horseshoe crab sanctuary in federal waters within a 30 nautical mile radius of the mouth of Delaware Bay, and 2) prohibit the transfer of horseshoe crabs in all federal waters.
- May 3, 2000: In support of the commission’s horseshoe crab management efforts under Addendum I, NMFS published an advance notice of proposed rulemaking (ANPR) in the *Federal Register* to ask the public to consider a closed area.
  - NMFS asked if there was a need to close fishing for horseshoe crabs seaward from the mouth of Delaware Bay, and if so, what shape and size should a closure be.
  - Public responses were overwhelmingly in favor of proceeding with the proposed rule. “Two-hundred-eighty-one comments were received in favor of continuing the rulemaking process, and one was against” (*Federal Register*, October 16, 2000a).

- Thirteen conservation organizations, with a collective membership approximated at over one million people, wrote in support of the closure.
  - The states of Delaware, Maryland, and New Jersey wrote in support of the closure.
  - One letter was written on behalf of two Virginia conch-processing companies (Chesapeake Bay Packing and Bernie's Conchs) opposing the closure. "It stated that a closed area in addition to the other measures in the commission's FMP for horseshoe crabs is not scientifically justified" (*Federal Register*, October 16, 2000a). The commenter felt the closed area would force horseshoe crab harvesters to move from offshore areas to nearshore areas where females are more abundant.
- Comment period for the ANPR process closed June 2, 2000.
- During the closure development process, a separate action took place. In accordance with the Atlantic Coastal Fisheries Cooperative Management Act, NMFS determined on July 7, 2000, that Virginia was not in compliance with the ASMFC FMP. "The commission found that the Commonwealth of Virginia has not implemented and is not enforcing the commission's FMP for horseshoe crab because it has failed to establish a quota on commercial horseshoe crab landings of 152,495 horseshoe crabs as specified in Addendum I" (*Federal Register*, October 16, 2000b).
  - The ASMFC made a recommendation to the Secretary to take action on the issue with Virginia (Selberg, Personal Communication, 2002).
  - The Department of Commerce established a federal moratorium to ensure that Virginia complied with the ASMFC measures. This moratorium was to be effective October 23, 2000, but was immediately withdrawn as Virginia agreed to comply with FMP regulations.
- A series of three public scoping meetings was held on the proposed rule. (Refer to Appendix A for dates and locations of scoping meetings.)
  - "During the scoping meetings, NMFS received 22 comments in favor of the proposed closed area and 14 against" (*Federal Register*, February 5, 2001; Schaefer, no date).
    - Comments received in favor of the proposed rule included that it would protect the horseshoe crab population in the Delaware Bay Area, and would produce more horseshoe crab eggs for the migratory shorebirds.
    - Opposing comments said there were already enough regulations to protect the horseshoe crab, the closed area was too large to obtain needed bait, the closure was not based on good science, and it would inhibit interstate commerce.
- October 10, 2000: NMFS prepared an initial regulatory flexibility analysis (IRFA) that described the impact the proposed rule would have on small entities. By definition, the term small entity includes small businesses or small organizations. A summary of the IRFA can be found in the *Federal Register* (October 16, 2000a).
- October 16, 2000: NMFS published the proposed rule in the *Federal Register* (2000a), opening a comment period that ran until October 31, 2000.
  - "The proposed rule would prohibit fishing for and limit the possession of horseshoe crabs in an area in the EEZ encompassing a 30 nautical mile radius (in a shape roughly equivalent to a rectangle) seaward from the midpoint of the territorial sea line at the mouth of Delaware Bay. The proposed rule would also allow whelk fishing vessels to possess horseshoe crabs as bait on board in the closed area as long as the vessels do not have commercial fishing gear on board aside from whelk fishing traps" (*Federal Register*, October 16, 2000a). Other commercial gears such as trawls, dredges, or gill nets would be prohibited on vessels in the closed area with horseshoe crabs on board, and as a consequence, whelk vessels would not be able to fish for species other than whelks in the closed area. "The proposed rule would also require fishermen to return to the

water all horseshoe crabs caught in the closed area incidental to any fishing operations, including whelk fishing” (*Federal Register*, October 16, 2000a).

- “During the 15-day comment period on the proposed rule and the IRFA, NMFS received 58 written comments from the public. In general terms, 54 of the commenters were in favor of the proposed rule, and 4 objected to its implementation” (*Federal Register*, February 5, 2001; Schaefer, no date).
    - Local and national conservation groups, state agencies, biomedical companies, and the general public submitted comments in favor of the closed area.
    - Fishing organizations, biomedical companies, and the general public submitted comments in opposition to the closed area.
      - Refer to “Stakeholders” section for a list that includes those conservation organizations, state agencies, and private companies that commented on the proposed rule.
    - In general, comments received for the proposed rule were similar to those raised at the scoping meetings.
  - “All comments received during the comment period were considered. An additional 38 persons submitted comments within seven days after the deadline for the comment period” (*Federal Register*, February 5, 2001; Schaefer, no date).
    - These comments did not raise new issues, and all but one of these late comments were in favor of the proposed rule.
  - Several companies that use horseshoe crab blood for biomedical purposes and some of the conservation organizations requested a modification to the rule that would allow horseshoe crabs to be harvested in the closed area for biomedical use only.
    - “The biomedical fishery issue was addressed in the proposed rule and included in the final rule by authorizing NMFS to issue exempted fishing permits for the harvest of horseshoe crabs” (Schaefer, no date).
      - The exempted fishery process provides the opportunity to gather important fishery information. Because the majority of horseshoe crabs collected are released alive back to the water, the biomedical fisheries could provide useful information for horseshoe crab management with little stress to the resource.
- January 19, 2001: NMFS prepared a final regulatory flexibility analysis (FRFA) that described the impact of the final rule on small entities. The FRFA addresses the issues raised by public comments on the IRFA. A summary of the FRFA can be found in the *Federal Register* (February 5, 2001).
  - Following preparation of the FRFA, the assistant administrator for fisheries, NOAA (AA), determined that these actions were compatible with the effective implementation of the commission’s coastal fishery management plan and consistent with the national standards of the Magnuson-Stevens Fishery Conservation and Management Act.
  - February 5, 2001: NMFS issued a final rule prohibiting fishing for horseshoe crabs in an area in the EEZ at the mouth of Delaware Bay (closed area); prohibiting the possession of horseshoe crabs on a vessel with a trawl or dredge while in the closed area; and requiring fishermen to return to the water all horseshoe crabs caught in the closed area incidental to any fishing operations, including whelk fishing.
  - The closed area became effective March 7, 2001.

## Objectives

In most cases, an MPA will have multiple objectives. These may include protection of representative habitats, conservation of rare species, fish stock restoration or enhancement, or safeguarding of historical sites, among others.

Objectives established for the Horseshoe Crab Reserve include the following:

- To conserve the Delaware Bay population of horseshoe crabs at a level that can sustain the fishery.
- To help ensure that declining populations of migratory shorebirds have an abundant source of horseshoe crab eggs to feed on when they stop to rest in the Delaware Bay before flying north to their Canadian nesting areas.

## Current Status/Outcome

This section describes the current status of the MPA process, and includes information on any ongoing research that will help evaluate effectiveness.

Currently, the Horseshoe Crab Reserve:

- Prohibits fishing for horseshoe crabs in the closed area; prohibits the possession of horseshoe crabs on a vessel with a trawl or dredge while in the closed area; and requires fishermen to return to the water all horseshoe crabs caught in the closed area incidental to any fishing operations, including whelk fishing.
  - “What was more important is what could be done inside the lines, and there was some adjustments to the type of fishing gear allowed on whelk fishing vessels in the area. This was done after receiving public input about how the fisheries operate in the area” (Perra, Personal Communication, 2002).
- Prohibits the transfer of horseshoe crabs in all federal waters.

Few research efforts have been conducted in the closed areas since they were designated:

- NMFS awarded a \$10,000 grant for a pilot program to introduce horseshoe crab bait bags into the Mid-Atlantic whelk fisheries. These plastic mesh bags dramatically reduced the amount of horseshoe crab bait needed per whelk trap. Use of the bags has reduced the amount of bait needed in some areas, especially in Virginia, where they have now been mandated. A second \$10,000 has been issued in 2002 to extend the program into the New York and New England whelk fisheries (NOAA 2002; Perra, Personal Communication, 2002).
- A horseshoe crab stock assessment was conducted in 1998 and was unable to estimate the horseshoe crab stock size due to a lack of data. This report led to several research initiatives to collect the necessary information for future stock assessments (Selberg, Personal Communication, 2002).

## Stakeholders

MPA establishment may impact a wide range of individuals and entities. This means a diversity of stakeholders have an interest in participating in the process.

Stakeholders interested in or affected by the establishment of the Horseshoe Crab Reserve include the following:

- Biomedical companies
  - Associates of Cape Cod
  - Bio-Whittaker
  - Limuli Laboratories
  - Virginia Polytechnic Institute
- Commercial Fishermen
  - American eel, conch/whelk, and catfish fishermen
- Conch processing companies
  - Chesapeake Bay Packing (Virginia)
  - Bernie's Conchs (Virginia)
- General public
- Recreational fishermen
  - American eel, conch/whelk, and catfish fishermen
- Scientists
  - University of Delaware Sea Grant College Program
  - Virginia Polytechnic Institute and State University Department of Fisheries and Wildlife Sciences (Horseshoe Crab Research Center)
- Nongovernmental organizations
  - American Bird Conservancy
  - Committee for the Conservation of Horseshoe Crabs
  - Defenders of Wildlife
  - Delmarva Ornithological Society
  - Delaware Audubon Society
  - Delaware Nature Society
  - Ecological Research and Development Group
  - Environmental Defense
  - Garden State Seafood Association
  - Maryland Audubon Society
  - Maryland Coastal Bays Program
  - Maryland Conservation Council
  - National Audubon Society
  - National Resources Defense Council
  - Nature Conservancy
  - Nature Society
  - New Jersey Waterman's Association
  - Sierra Club Chapters for New Jersey, Delaware, Virginia, and Georgia
  - Sierra Club National Marine Wildlife and Habitat Committee
  - Southern Environmental Law Center
  - Wildlife Conservation Society
  - World Wildlife Fund
- Government agencies
  - State agencies

- Delaware Division of Fish and Wildlife
- Maryland Department of Natural Resources
- New Jersey Fish and Wildlife
  - New Jersey Endangered and Nongame Species Advisory Committee
- Atlantic States Marine Fisheries Commission
- Potomac River Fisheries Commission
- Virginia Marine Resources Commission
- U.S. Department of Commerce
  - National Oceanic and Atmospheric Administration
    - National Marine Fisheries Service
    - National Ocean Service
      - Ocean and Coastal Resource Management
        - Coastal Programs Division

### **Advisory Groups**

Advisory committees may be used during an MPA development process. The establishment of an advisory committee representing various interest groups and affected parties will facilitate local participation throughout the MPA establishment process, and may help to form partnerships by ensuring that all interests are represented in the final proposal (Brody 1998).

Advisory groups were not utilized during the establishment of the Horseshoe Crab Reserve. However, ASMFC organized a Horseshoe Crab Advisory Panel for the purpose of making changes to the horseshoe crab FMP. The panel had completed most of its comments on the ASMFC plan when the closed area was proposed late in the development of the FMP. While the panel had little to do with the development of the reserve, the chairman of the advisory panel was consulted on what fishing gear should be allowed (Perra, Personal Communication, 2002).

### **Economic Factors**

“The acceptability of a MPA to the general public and to direct users will depend significantly on whether the perceived benefits are greater with or without the MPA”  
(National Research Council 2001).

The following are economic factors taken into consideration during the establishment of the Horseshoe Crab Reserve:

- “NMFS estimates that in 1999 about 3 million horseshoe crabs worth about \$3 million in landings were collected along the U.S. Atlantic coast for use as bait in eel, whelk, and catfish fisheries” (NOAA 2001).
- “In 2000, an estimated 1.8 million horseshoe crabs worth about \$2 million in landings were collected along the U.S. Atlantic coast for use as bait in eel and whelk fisheries” (NOAA 2002).
- Out of the 18 vessels affected, 8 direct their fishing effort on horseshoe crabs, and 10 harvest and sell horseshoe crabs that were caught incidentally while directing their fishing effort on other species.

- “The reduction in annual total revenue for the 8 vessels that conduct directed fishing trips is likely to be much lower than the \$694,650, which is the total 1998 EEZ horseshoe crab combined dockside landings for Maryland, Delaware, and Virginia” (*Federal Register*, October 16, 2000a).
- “The reduction in annual revenue for the 10 vessels that incidentally harvest horseshoe crabs is expected to be less than \$3,000 per vessel or about \$30,000” (*Federal Register*, October 16, 2000a).

### **Areas of Conflict/Difficulty**

“MPA proposals often raise significant controversy...” (National Research Council 2001).

The following are areas of conflict or difficulty that arose during the establishment of the Horseshoe Crab Reserve:

- Some fishermen thought the reserve was too large and that the regulations were premature and based on insufficient information (Schuster, Personal Communication, 2002).
- The initiative took months to work out, as the process was prolonged to allow the new presidential administration time to review (Schuster, Personal Communication, 2002; Selberg, Personal Communication, 2002).

### **Technology-Based Decision-Support Tools**

“MPA formulation and operation require, and benefit from, higher levels of technology in information handling and onsite management... Computer assisted mapping tools, used in storing, retrieving, processing, and displaying spatial data may be particularly useful” (Salm and others 2000).

Technology-based decision-support tools were not utilized during the establishment of the Horseshoe Crab Reserve.

### **Enforcement**

“Effective enforcement is essential to achieve MPA objectives and sustain cooperation from the general public and affected user groups” (National Research Council 2001).

- The U.S. Coast Guard enforces the closure with assistance from the States of Delaware and Maryland through a joint enforcement agreement.
- To date, no apprehensions have been made or reports filed for illegal taking in reserve waters (Meyer, J., Personal Communication, 2002; Moro, Personal Communication, 2002).

## Boundaries

Clear delineation of spatial boundaries is important so that both managers and users know where structured management has been implemented.

- Due to difficulty of enforcing a closed area in the shape of a semicircle, NMFS established a closed area that would be roughly rectangular in shape. Refer to *Federal Register* (February 5, 2001) for a posting of boundary coordinates.
- NMFS drew boundary lines after consultation with adjoining state fisheries agencies (New Jersey, Delaware, Maryland, and Virginia), and after a review of biological survey data and literature on the area (Perra, Personal Communication, 2002).
- Based on scientific data on crab migration, NMFS believed that an area encompassing a 30 nautical mile radius was adequate to protect horseshoe crabs in Delaware Bay. NMFS also believed the closure reasonably balanced the need to protect horseshoe crabs and the need to consider impacts on the fishing and biomedical industries (*Federal Register*, February 5, 2001).

## Legislation and/or Regulation

MPA establishment is typically authorized by existing legislation, but implementation frequently requires new regulations. Existing legislation may guide and/or provide context for MPA processes.

- ASMFC, consisting of 15 Atlantic coastal states, works in cooperation with the District of Columbia and the Potomac River Fisheries Commission to manage horseshoe crab fisheries in state waters. Through Addendum I to the FMP, the commission required that all Atlantic coastal states reduce their horseshoe crab bait catch by 25 percent.
  - ASMFC also recommended a prohibition on fishing for horseshoe crabs in federal waters within a 30 nautical mile radius of the mouth of the Delaware Bay.
- In the absence of a federal fishery management plan, regulations have been established under the authority of the Atlantic Coastal Fisheries Cooperative Management Act, which gives the Department of Commerce authority to implement federal measures compatible with the interstate commission's fishery management plan.
  - Under this authority, NMFS banned fishing for horseshoe crabs in federal waters off the mouth of Delaware Bay. NMFS also suggested "permitting and reporting requirements for vessels that catch horseshoe crabs in federal waters, and dealers that sell them, along with prohibiting at-sea vessel transfers of horseshoe crabs, which are currently not counted among state quotas" (NOAA 2001).
    - According to Tom Meyer, "the commission has stated that there does not appear to be any more problems in reporting or transfer at sea, so we do not plan on going forward with any regulations at this time" (Personal Communication, 2002).
- New England, Mid-Atlantic, or South Atlantic Fishery Management Councils could develop regulations, but have chosen not to do so.

## **Media/ Public Outreach**

Entities involved in MPA designation processes frequently undertake a variety of public outreach and education activities.

Sources of media/public outreach used throughout the Horseshoe Crab Reserve process include the following:

- NOAA press releases
- National Audubon Society Press Releases
- New Jersey chapter of the Sierra Club compiled strong scientific facts to share with activists via the Web and list servers.
- New Jersey Division of Fish and Wildlife encouraged the general public to assist in identifying horseshoe crab spawning habitat throughout the state during the spring of 2002, and to report their observations on horseshoe crab spawning activity on the division's Web site or by phone.
  - All data received will be analyzed, summarized, mapped, and reported to the ASMFC and state regulatory agencies so that critical habitat can be protected.
- Public scoping meetings

Refer to Appendix B for a listing of additional readings.

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Note: All World Wide Web addresses listed in this section were accessible on January 31, 2003, and accurately reflected information referenced here and in the text. Site content at these links may change, or the links may become inactive at any time.

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**APPENDIX A. Public Scoping Meetings [Horseshoe Crab Reserve]**

<b>Date</b>	<b>Location</b>
September 5, 2000	Dover, Delaware
September 6, 2000	Cape May, New Jersey
September 7, 2000	Salisbury, Maryland

**APPENDIX B. Additional Readings [Horseshoe Crab Reserve]**

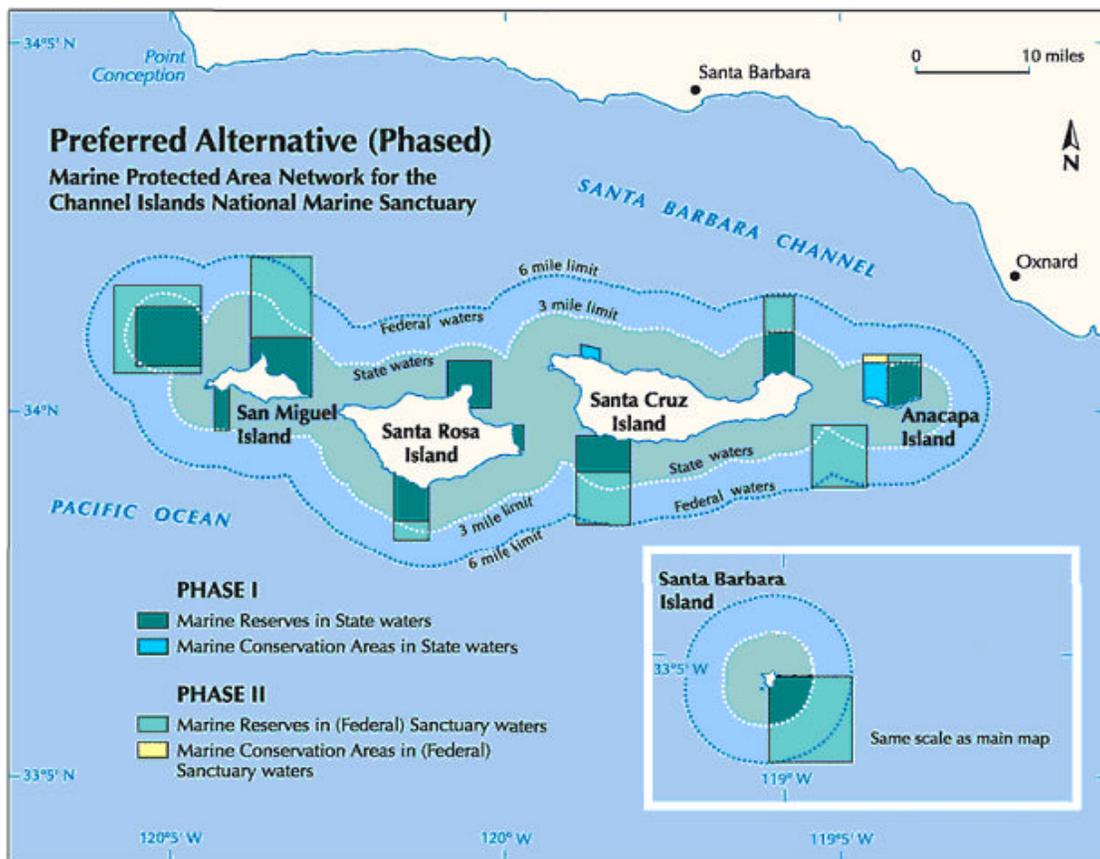
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## Channel Islands Marine Reserves



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

*Note: Each case study uses the terminology adopted by that particular process, and is not based on a consistent definition.*

## **Abstract**

California's Channel Islands, which include the islands of San Miguel, Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara, host a unique variety of marine habitats and species. However, growing human populations, in addition to naturally occurring factors such as oceanographic regime shifts and increasing sea lion populations, have led to degradation of the marine environment and excessive harvesting of marine species. A group of recreational fishermen were the first to come forward with a proposal to close 20 percent of the shoreline around the northern Channel Islands. This proposal both raised awareness and generated contention, eventually leading to a joint state-federal initiative to establish a network of marine protected areas within the Channel Islands National Marine Sanctuary, which encompasses 1,252 square nautical miles. A multi-stakeholder process was undertaken and resulted in a recommendation for a network of marine protected areas that would be implemented in two phases. The first phase consists of a network of ten state marine reserves (no-take), one state marine park (recreational fishing only), and one state marine conservation area (limited recreational and/or commercial fishing), encompassing a total of 132 square nautical miles (or 19 percent) of state waters within the sanctuary. The first phase was approved by the California Fish and Game Commission in October 2002 and implemented on April 9, 2003. A second phase is anticipated, and this phase would make a recommendation on how to expand the network of marine protected areas into federal waters.

## **Introduction**

The Channel Islands, which include the islands of San Miguel, Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara, have earned a reputation as “the American Galapagos” and draw millions of visitors to nearby coastal communities each year (Environmental Defense 2001a). A host of marine habitats are found around the islands, including rocky reefs, submarine canyons, and kelp forests. Part of what makes this area unique is that it is a transition zone between the cool waters off the coast of central and northern California and the warm waters that move north from Baja, California. Natural variations in water temperature have created distinct habitats, each sustaining a rich proliferation of marine species. A national marine sanctuary and national park have been created to protect these valuable resources. The Channel Islands National Marine Sanctuary (CINMS) encompasses 1,252 square nautical miles, ranging from the mean high tide line of the northern Channel Islands and Santa Barbara Island out to six nautical miles offshore. The Channel Islands National Park includes the same five islands and consists of 249,354 acres, half of which are under the ocean.

It is widely acknowledged that the marine environment surrounding the Channel Islands is in serious decline. Abalone, southern sea otters, Guadalupe fur seals, and several species of fish—including cowcod, lingcod, and bocaccio—have declined to low levels and, in some cases, have been hunted to local extinction. In addition to increased human use, several factors have contributed to these biological declines, including water pollution from marine and land-based sources, climate-driven variability in ocean productivity, and excessive harvesting.

In 1998, the Channel Islands Marine Resources Restoration Committee, a group of recreational fishermen and other citizens from Oxnard, California, submitted a proposal to close 20 percent of a one-mile zone surrounding the Northern Channel Islands. The proposal aimed to work within the California Fish and Game Commission's (FGC) existing authority to establish ecological reserves. With the support of the National Park Service (NPS), the proposal was brought to public attention and submitted to the FGC for review. However, the proposal evoked contention from commercial fishermen, who opposed proposals for establishing fully protected reserves (no-take). The CINMS staff, in partnership with the California Department of Fish and Game (DFG), and with the support of the Sanctuary Advisory Council,

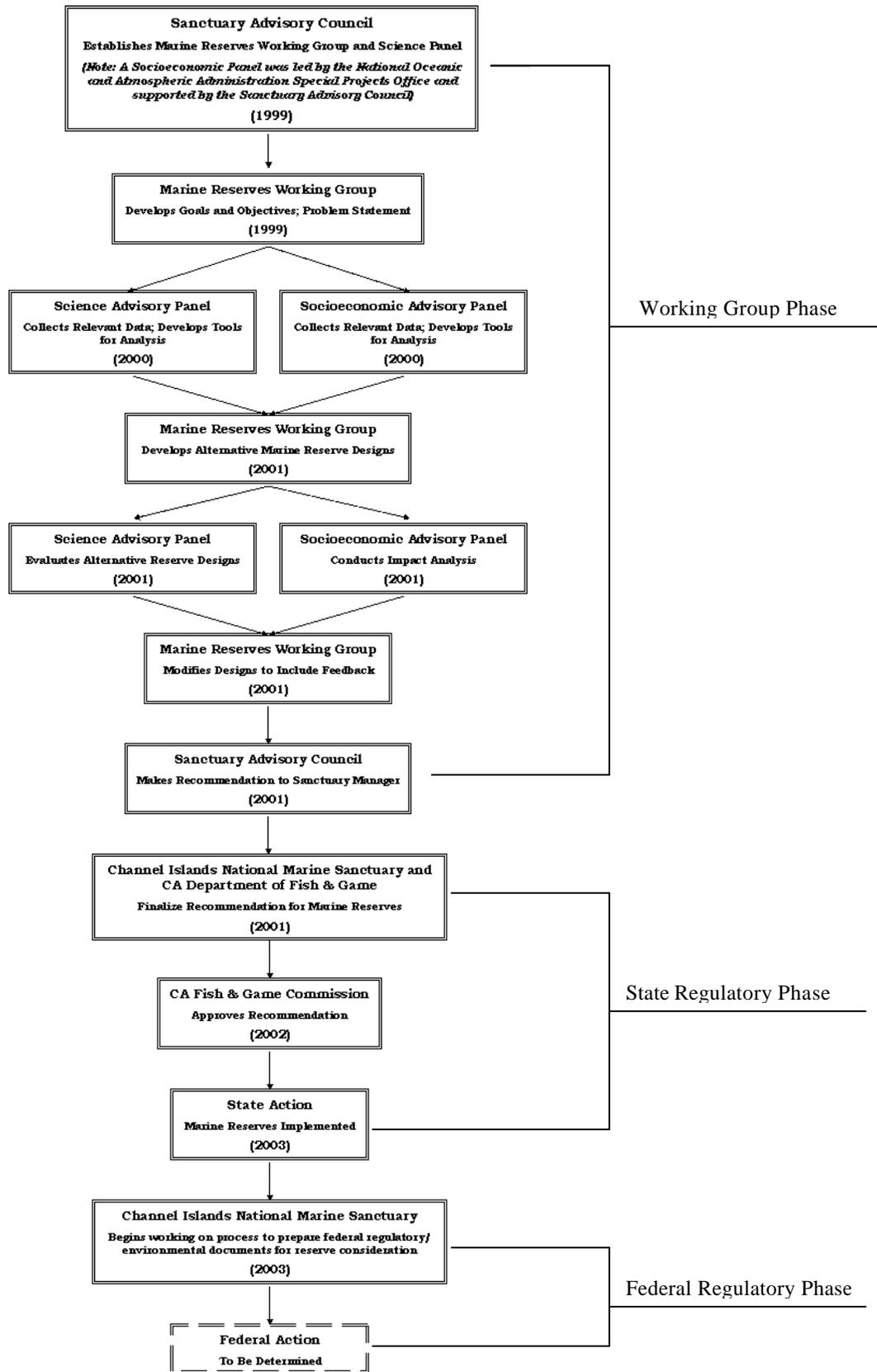
reconfigured the proposal into a multi-stakeholder process involving the general public, recreational and commercial fishermen, environmentalists, as well as state and federal agency staff.

The multi-stakeholder process resulted in a recommendation for a network of marine protected areas, although no agreement was reached on the exact number and size of reserves. The DFG and CINMS provided an array of alternatives to the FGC, including a preferred alternative. The preferred alternative was divided into two phases based on differences in jurisdiction between state and federal waters. The first phase consists of a network of ten state marine reserves (no-take), one state marine park (recreational fishing only), and one state marine conservation area (limited recreational and/or commercial fishing), encompassing a total of 132 square nautical miles (or 19 percent) of state waters within the sanctuary. This first phase was approved by the California Fish and Game Commission in October 2002 and implemented in April 2003. A second phase is anticipated that would provide recommendations on how to expand the network of marine protected areas into federal waters.

### **Process Diagram**

“An important factor in the establishment of MPAs is the process by which they are nominated and designated” (Brody 1998).
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The Channel Islands Marine Reserve process to date has occurred as follows (next page):



## Timeline (1938 to present)

This section details the sequence of events in the establishment process.

- Initial Development (1938 to 1998):
  - In 1938, the Channels Islands were federally recognized as a national monument by Franklin D. Roosevelt. In 1949, submerged lands within one mile of Anacapa and Santa Barbara Islands were added to Channel Islands National Monument.
  - Authority to regulate use of the submerged lands was returned to the state with the Submerged Lands Act of 1953, as affirmed by the U.S. Supreme Court in 1978. Following this U.S. Supreme Court decision in 1978, the state of California created ecological reserves in the Channel Islands that allowed fishing in all but small portions of the reserves.
  - In 1980, Congress designated the Channel Islands as a national park. This law expanded the park to include three additional islands and re-established the park boundary to the waters one nautical mile offshore to include the submerged lands and waters in the park, while recognizing the authority of California to manage the living marine resources in the park.
  - Also in 1980, in response to federal proposals to expand offshore oil and gas drilling, local residents and elected officials secured designation of 1,252 square nautical miles (all of the waters within six nautical miles of the islands) as a national marine sanctuary. This status provides permanent protection from new offshore oil rigs and also bans ocean mining operations.
  - In April 1998, the California Fish and Game Commission (FGC) received a recommendation from the Channel Islands Marine Resources Restoration Committee to set aside 20 percent of the shoreline and waters out to one mile in marine reserves, or no-take zones, around the northern Channel Islands (Santa Barbara, Anacapa, Santa Cruz, Santa Rosa, and San Miguel Islands).
  - In 1999, in response to this proposal and the need for a community process, the Channel Islands National Marine Sanctuary (CINMS) and the California Department of Fish and Game (DFG) developed a joint federal/state partnership to consider establishing marine reserves in the sanctuary.
  
- Channel Islands Marine Reserve Process (1999 to present):
  - March 25, 1999: The Sanctuary Advisory Council (SAC), an advisory group to the sanctuary manager, held an update meeting on the marine reserve issue. (Refer to Appendix C for a listing of SAC members.)
  - May 20, 1999: The SAC held a meeting to initiate development of a stakeholder group that would consider the marine reserve issue.
  - July 1999: The SAC created a stakeholder-based community group called the Marine Reserves Working Group (MRWG). Note: The group was originally known as the Marine Ecological Reserves Working Group (Davis, Personal Communication, 2002). (Refer to Appendix C for a listing of MRWG members.)
    - The MRWG agreed to operate by consensus, working with a locally contracted facilitator and a National Oceanic and Atmospheric Administration (NOAA) facilitator.
      - “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’” (DFG 2002b).
  - Two advisory panels were established to inform the SAC’s decision-making in addition to the work of the MRWG.
    - The Science Advisory Panel was established and travel was funded by the CINMS. (Refer to Appendix C for Science Panel Members)
      - The Science Panel 1) reviewed the literature on marine reserves and provided the MRWG with potential natural resource consequences of reserves; 2) defined scientific criteria to

- achieve the goals for biodiversity and fisheries defined by the MRWG; 3) identified and evaluated existing data sets for geographic information system (GIS)-based ecological characterization; and 4) evaluated the scientific merit of different reserve scenarios provided by the MRWG (DFG 2002b).
- The Science Advisory Panel adopted a habitat-based approach, and used a GIS computer model with maps of the locations of substrate type (e.g. rock, sand, mud), kelp, eelgrass, and surfgrass, as well as bird and mammal breeding colonies.
  - The Socioeconomic Advisory Panel was established and funded by the National Oceanic and Atmospheric Administration (NOAA) Special Projects Office with support from the SAC.
    - The Socioeconomic Panel was asked to provide baseline information and analyses on the use values associated with the project area, potential costs, and, where feasible, benefits of the establishment of reserves.
    - The panel collected and synthesized existing studies, records of catch or harvest, and other information to develop economic impact analyses of various marine reserve scenarios.
  - The MRWG met monthly from July 1999 through May 2001 to receive, consider, and integrate advice from the Science Advisory Panel, the Socioeconomic Advisory Panel, and the general public to develop consensus.
    - The MRWG hosted a majority of its meetings, which were open to the public, in Ventura and Santa Barbara Counties. Individual meetings are chronicled below; however, consult the CINMS Marine Reserves Web site ([www.cinms.nos.noaa.gov/marineres/main.html](http://www.cinms.nos.noaa.gov/marineres/main.html)) for detailed meeting minutes. (Refer to Appendix A for dates and locations of all public meetings.)
      - July 7, 1999: Introduction to the issues and proposed process.
      - October 21, 1999: Adopted draft ground rules.
      - November 10, 1999: Discussed revisions and finalized ground rules.
      - December 9, 1999: MRWG presentations on the relationships between issues identified at last meeting; worked on preliminary goals and objectives for marine reserves; developed preliminary set of questions for the science and socioeconomic panels.
      - January 10-11, 2000: Joint meeting held with science and socioeconomic panels to learn the status of marine reserves worldwide; continued development of preliminary goals and objectives to guide development of marine reserve scenarios; adopted categories/themes as a method of framing goals and objectives, including research/education, natural and cultural heritage, socioeconomics, sustainable fisheries, ecosystem biodiversity, and reserve administration.
      - February 23, 2000: Responded to questions raised by the science panel during the January meeting; discussed goals, objectives, and task group caucuses.
      - March 16, 2000: Task group break-out sessions to work on developing goals and objectives for each individual category/theme; update on MRWG process, progress, and development.
      - April 13, 2000: Update on data collection efforts; science panel discussion on marine reserve design theory; science panel feedback on draft goals and objectives; reviewed relationships among information collection, reserve design, and management plan issues.
      - June 8, 2000: Update on science panel progress; revised and adopted goals and objectives related to ecosystem biodiversity, sustainable harvested populations, and research.
      - June 22, 2000: Update on socioeconomic panel progress; discussion on map drawing.
      - July 18, 2000: Adopted revised goals and objectives related to education and natural and cultural heritage; update on science panel progress.
      - August 22, 2000: Preliminary discussion of exclusion and inclusion areas; revised and adopted goals and objectives related to reserve administration and research, which was

revised again specifically to take the place of goals and objectives already established for sustainable harvested populations; socioeconomic panel presentation on socioeconomic analysis process.

- September 26-27, 2000: Discussed prioritization of goals and objectives; received data and recommendations from the science and socioeconomic panels.
  - According to Satie Airame, Science Coordinator for the Channel Islands National Marine Sanctuary, MRWG members were unable to assign relative importance to the goals because they agreed that all goals were equally important (Personal Communication, 2003).
  - Recommendations from the science and socioeconomic panels include the following:
    - To achieve the biodiversity and fisheries goals for the species of interest, the science panel advised creating at least one reserve—but no more than four—comprising between 30 to 50 percent of the representative habitats in each of three biogeographic regions in the sanctuary.
    - In reference to this recommendation, “analysis by the socioeconomic advisory panel indicated that a closure of 50 percent of the sanctuary would result in a maximum potential loss of about 50 percent in fishing industry revenue (commercial and recreational)” (Davis 2001a).
- October 18, 2000: Ecological analysis of marine reserve options; refined options into alternative recommendations for reserve design.
- November 15, 2000: Determined areas of agreement, unresolved issues, and a timeline to address these issues, as well as ultimately achieve consensus.
- December 14, 2000: Revised and adopted goals and objectives related to socioeconomic and sustainable fisheries; developed questions for the science and socioeconomic panels.
- January 17, 2001: Science and socioeconomic panel presentations and discussion.
- February 15, 2001: Discussed and tried to resolve key issues prior to crafting spatial options.
- February 21, 2001: Developed preliminary spatial options for review by science panel, socioeconomic panel, and general public; review of socioeconomic data.
- March 21, 2001: Science and socioeconomic analyses presented on the spatial options for marine reserves, in preparation for negotiations.
- April 18, 2001: MRWG presented new spatial options for reserves; negotiated and mapped spatial options.
- May 16, 2001: (Final meeting) Sorted through reserve options in an effort to craft a preferred option; prepared a recommendation for the SAC including the problem statement; goals and objectives, and two maps indicating areas of overlap and non-overlap between MRWG members.
  - In addition to having all of its meetings open to the public, the MRWG hosted four public forums. (Refer to Appendix A for dates and locations of public forums.)
- By mid-May, CINMS and DFG received 9,161 public comments on the Channel Islands Marine Reserve process. During the monthly public meetings and forums, comments were submitted in the form of electronic mail, phone messages, letters, postcards, faxes, and comment forms (DFG 2002b). (Refer to Appendix D for specific examples of concerns expressed.)
  - “There were 8,597 comments received in support of establishing marine reserves in the Channel Islands National Marine Sanctuary. The majority suggested that at least 30 percent and up to 50 percent of the current sanctuary should be set aside in reserves to protect and replenish marine ecosystems” (DFG 2002b).
  - “There were 564 comments received in opposition to the establishment of marine reserves. Some of these comments suggested that no reserves be designated, while others called for reducing reserve size (e.g. not larger than 20 percent, 10 percent, 5 percent, etc.). Many

- comments supported restricting commercial fishing but not sportfishing or diving” (DFG 2002b).
- “The majority of opposition comments came from within the tri-county region, with a few coming from other locations within the state. Supportive comments came mostly from within the local area and the state. The balance of comments came from 46 states and three foreign countries” (DFG 2002b).
  - May 23, 2001: The MRWG shared its final work with SAC. As directed by the group’s ground rules, the MRWG forwarded to the SAC information developed during the process, including the problem statement, goals and objectives, and two maps indicating areas of overlap and non-overlap among MRWG members.
    - Overall, MRWG came to consensus on a set of ground rules, mission and problem statement, issues of concern, goals and objectives for reserves (i.e., ecosystem biodiversity, socioeconomics, sustainable fisheries, natural and cultural heritage, and education), and implementation recommendations. (*Note: The goals and objectives previously adopted for research and reserve administration were rolled into implementation recommendations.*)
    - The MRWG was not, however, able to arrive at one unified spatial recommendation. The MRWG developed 37 potential marine reserve designs during the two-year process, and in the end delivered a composite map that depicted two different reserve network options.
  - June 19, 2001: SAC deliberated over the marine reserves recommendation and then forwarded all material developed by the MRWG, the Science Advisory Panel, and the Socioeconomic Panel, including all maps, to the CINMS sanctuary manager.
  - Between June and August (2001), DFG and CINMS used feedback and materials from the SAC, the MRWG, and the advisory panels to develop a single proposal (or preferred alternative).
  - August 24, 2001: CINMS and DFG staff presented the preferred alternative to the California Fish and Game Commission (FGC). Extensive public testimony was received at this meeting.
    - The DFG-recommended preferred alternative would establish eleven new no take marine reserves, one marine conservation area where only spiny lobster and pelagic finfish may be taken by recreational anglers, and one state marine conservation area where the commercial and recreational take of spiny lobster and recreational take of pelagic finfish is allowed. These areas comprise approximately 25 percent of sanctuary waters, and the initial state phase comprises approximately 19 percent (reduced from 22 percent that was initially proposed) of state waters within the sanctuary.
    - The state’s boundaries extend to a distance of three nautical miles oceanward of the mainland, offshore islands and rocks. The proposed regulations were developed jointly by the DFG and CINMS, and each alternative includes some marine protected areas (including both marine reserves and marine conservation areas) in federal waters. The areas within state waters are addressed as the first phase. NOAA has indicated its intent to consider establishment of complimentary marine protected areas within federal waters.
  - October 4, 2001: The FGC held a meeting in San Diego, California, that included public testimony on the proposed alternatives.
  - December 6, 2001: The FGC held a meeting in Long Beach, California, that included public testimony on the proposed alternatives.
  - January 9, 2002: The FGC produced an “Initial Statement of Reasons for Regulatory Action.”
  - February 8, 2002: The FGC held a discussion hearing in Sacramento, California to hear the Science Panel’s recommendation for MPAs at the Channel Islands, and the Pacific Fishery Management Council’s Scientific and Statistical Committee status of MPA proposals for CINMS.
  - March 7, 2002: The FGC held a discussion hearing in San Diego, California, where public testimony was received regarding the designation of marine reserves within the CINMS.
  - April 4, 2002: The FGC held a discussion hearing in Long Beach, California, where public testimony was received regarding the designation of marine reserves within the CINMS. An

advisory panel also presented a socioeconomic analysis of the proposed designation of MPAs within the CINMS.

- May 30, 2002: On behalf of the FGC, DFG released a “Draft Environmental Document, Marine Protected Areas in NOAA’s Channel Islands National Marine Sanctuary” for public review and comment.
  - DFG provided public notice of the availability of the document for public review and comment.
  - DFG also made hard copies available at numerous locations including the following: the California Fish and Game Commission (FGC) office in Sacramento; the California Department of Fish and Game (DFG) offices in Sacramento, Redding, Yountville, Rancho Cordova, Fresno, Los Alamitos, San Diego, Santa Barbara, Morro Bay, Monterey, Menlo Park, Bodega Bay, Fort Bragg, and Eureka; the State Clearinghouse at the Governor’s Office of Planning and Research; the county libraries in areas that may be affected; and DFG’s Marine Region Web site.
- The DFG and the FGC accepted comments regarding the draft document until July 15, 2002. The FGC then directed the DFG to extend the deadline for comments until September 3, 2002. Following this extension, written and oral comments were solicited again at a public hearing on August 1, 2002 in San Luis Obispo, California.
  - Overall, 2,492 letters, e-mails, and oral comments were received on the draft document, 2,445 of which were form letters. Thirty-nine letters and e-mails, one form e-mail, and seven oral comments (representing 221 individual comments) specifically addressed the “Draft Environmental Document” (DFG 2002b).
- October 23, 2002: The FGC held a meeting in Santa Barbara for consideration of regulations regarding marine reserves. A vote was held and the preferred alternative passed 2-1.
- The Office of Administrative Law approved the proposed regulations in March 2003.
- Marine reserves (in state waters) were implemented on April 9, 2003.

## Objectives

In most cases, an MPA will have multiple objectives. These may include protection of representative habitats, conservation of rare species, fish stock restoration or enhancement, or safeguarding of historical sites, among others.

The Marine Reserves Working Group (MRWG) developed and adopted goals and objectives for the Channel Islands Marine Reserves, and these include the following:

- Ecosystem biodiversity goal: To protect representative and unique marine habitats, ecological processes, and populations of interest.
  - To include representative marine habitats, ecological processes, and populations of interest.
  - To identify and protect multiple levels of diversity (e.g., species, habitats, biogeographic provinces, trophic structure).
  - To provide a buffer for species of interest against the impacts of environmental fluctuations.
  - To identify and incorporate representative and unique marine habitats.
  - To set aside areas that provide physical, biological, and chemical functions.
  - To enhance long-term biological productivity.
  - To minimize short-term loss of biological productivity.
- Socioeconomic goal: To maintain long-term socioeconomic viability while minimizing short-term socioeconomic losses to all users and dependent parties.
  - To provide long-term benefits for all users and dependent parties.
  - To minimize and equitably share short-term loss in activity for all users and dependent parties.

- To maintain the social and economic diversity of marine resource harvests by equitably sharing the loss of access to harvest grounds among all parties to the extent practical when designing reserves.
  - To address unavoidable socioeconomic losses created by reserve placement through social programs and management policy.
  - Sustainable fisheries goal: To achieve sustainable fisheries by integrating marine reserves into fisheries management.
    - To increase abundance, distribution, reproductive capacity, and individual sizes of harvested populations within marine reserves in the Channel Islands region.
    - To facilitate rebuilding and sustaining harvested populations.
    - To enhance spillover into non-reserve areas.
    - To establish a recognition program for sustainable fisheries in the Channel Islands region.
  - Natural and cultural heritage goal: To maintain areas for visitor, spiritual, and recreational opportunities that include cultural and ecological features and their associated values.
    - To conserve exceptional ecological and cultural resources that stimulate and encourage human interaction with the marine environment and promote recreational activities.
    - To conserve outstanding areas that encompass seascape, adjoining coastal landscapes, or that possess other scenic or visual qualities.
    - To maintain areas of particular importance that support traditional nonconsumptive uses.
    - To maintain opportunities for outdoor recreation as well as the pursuit of activities of a spiritual or aesthetic nature.
    - To facilitate ease of access to natural features without compromising their value or uniqueness.
  - Education goal: To foster stewardship of the marine environment by providing educational opportunities to increase awareness and encourage responsible use of resources.
    - To develop and distribute off-site interpretations and displays allowing indirect observation, study, and appreciation of marine resources.
    - To provide current pamphlets, project ideas and worksheets for use on- and off-site.
    - To promote personal and organized visits for direct observation and study.
    - To link monitoring and research projects to support classroom science curriculum.
- (DFG 2002b)

### **Current Status/Outcome**

This section describes the current status of the MPA process, and includes information on any ongoing research that will help evaluate effectiveness.

- The DFG released a California Environmental Quality Act (CEQA) document describing the preferred alternative (also referred to as the “proposed project”) and the five alternatives.
- On October 23, 2002, the FGC approved the preferred alternative on a vote of 2-1.
- The Office of Administrative Law approved the proposed regulations in March 2003.
- Marine reserves (in state waters) were implemented on April 9, 2003.

## Stakeholders

MPA establishment may impact a wide range of individuals and entities. This means a diversity of stakeholders have an interest in participating in the process.

Stakeholders interested in or affected by the Channel Islands Marine Reserves include the following:

- Businesses
  - International Specialty Products (ISP) Alginates
- Commercial fishermen
- Recreational fishermen
- Divers (consumptive and nonconsumptive)
  - Channel Islands Council of Divers
- Conservationists
- General public
- Marinas
- Resource managers
- Scientists
  - California State University Channel Islands
  - California State University Fullerton
  - Scripps Institute
  - Stanford University
  - University of California at Santa Barbara
  - University of California at Santa Cruz
- Nongovernmental agencies:
  - The Ocean Conservancy (formerly the Center for Marine Conservation)
  - Environmental Defense
  - Natural Resources Defense Council
  - Pacific Marine Conservation Council
  - Sportfishing Association of California
  - Surfrider Foundation
- Government agencies:
  - U.S. Department of Commerce
    - National Oceanic and Atmospheric Administration
      - National Marine Sanctuaries Program
        - Channel Islands National Marine Sanctuary
      - National Marine Fisheries Service
  - U.S. Department of the Interior
    - National Park Service
  - State of California
    - Resources Agency
      - Coastal Commission
      - Department of Fish and Game
      - Fish and Game Commission
      - Department of Parks and Recreation
- Pacific Fishery Management Council
- California Sea Grant

## Advisory Groups

Advisory committees may be used during an MPA development process. The establishment of an advisory committee representing various interest groups and affected parties will facilitate local participation throughout the MPA establishment process, and may help to form partnerships by ensuring that all interests are represented in the final proposal (Brody 1998).

- The Channel Islands National Marine Sanctuary Advisory Council (SAC) consists of twenty voting members and twenty alternates, whose members represent the following:
  - Conservationists
  - General public
  - Tourism
  - Business
  - Recreation
  - Fishing
  - Education
  - Research
  - Local, state, and federal government agencies
  
- The Marine Reserves Working Group (MRWG) consists of seventeen members, including five members from the SAC. MRWG membership was designed to represent the full range of community perspectives, and included representatives from the following:
  - California Sea Grant
  - Conservation organizations
  - Consumptive and nonconsumptive divers
  - Commercial fishermen
  - General public
  - Kelp harvesters
  - Recreational fishermen
  - State and federal government agencies
  - *Note: Only three MRWG members represented nonconsumptive uses exclusively, including a political science professor, and representatives from Surfrider Foundation and the Ocean Conservancy (Davis, Personal Communication, 2002).*
  
- The Scientific Advisory Panel consists of sixteen members with expertise in marine science.
  - Members of the panel represent a variety of disciplines including the following:
    - Physical oceanographers
    - Biological oceanographers
    - Ichthyologists
    - Invertebrate zoologists
    - Statisticians
    - Ecologists
    - Modelers
  - Science Panel members were selected on a variety of criteria, including local knowledge, having no published advocacy for reserves, and geographic and institutional balance.

- The Socioeconomic Advisory Panel consists of five members with expertise in fisheries economics and social science.
  - Members of the panel include two NOAA economists and three locally-based contractors who collected economic data for various industries.

### **Economic Factors**

“The acceptability of a MPA to the general public and to direct marine resource users will depend significantly on whether the perceived benefits are greater with or without the MPA”  
(National Research Council 2001).

The following are economic factors taken into consideration regarding the Channel Islands Marine Reserves:

- The MRWG developed and adopted the following socioeconomic goal: To maintain long-term socioeconomic viability while minimizing short-term socioeconomic losses to all users and dependent parties (refer to ‘objectives’ section for further information).
- Economic impact information came from the *State of California Fish and Game Commission Initial Statement of Reasons for Regulatory Action* (2002).
- This document projected the potential impacts of DFG’s recommended preferred alternative as well as the five alternatives, specifically noting the following for the preferred alternative:
  - The maximum potential loss to commercial fish landings, assuming total loss of all consumptive activities in the proposed reserves, could vary between 1.7 percent and 16.5 percent of annual ex-vessel value generated in sanctuary waters. This reflects a combined maximum potential annual ex-vessel loss of \$3,222,810 to commercial fisheries.
  - This can be expanded to included losses in total income for processors, fish buyers, and other related businesses. The maximum potential loss in income from commercial activities to all counties is estimated at \$9,910,520 per year.
  - The maximum potential loss to income derived from recreational fishing varies between 9.9 percent and 26.2 percent annually, representing a maximum potential loss in income of \$5,720,077 annually.
  - The maximum potential impact to income derived from existing nonconsumptive activities (diving, whale watching, kayaking, sightseeing, and sailing) in the proposed reserves is estimated to range between 10.8 percent and 29.1 percent annually, representing a maximum potential annual value of \$1,385,756. No loss to nonconsumptive activities is expected.
  - The maximum potential numbers of jobs lost relating to commercial and recreational fishing activities is estimated to be 435, while the number of jobs related to nonconsumptive activities is estimated to be 37. No loss of jobs associated with nonconsumptive activities is expected. (FGC 2002c)
  - “In the long-term, the potential negative impacts are expected to be balanced by the positive impacts of sustainable fisheries, nonconsumptive benefits, and ecosystem function in the reserve areas. In addition, potential benefits may be realized through adult fish spillover to areas adjacent to marine reserves and larval transport to distant fished sites” (FGC 2002c).

## Areas of Conflict/Difficulty

“MPA proposals often raise significant controversy...” (National Research Council 2001).

The following are areas of conflict or difficulty that arose during the Channel Islands Marine Reserve process:

- Some fishermen and environmentalists could not agree on the size, shape, and location of the marine reserves (Burns 2001).
- A couple recreational fishermen vetoed all no-fishing zones around Anacapa and Santa Barbara, the two islands most easily reached by boat from Southern California (Burns 2001).
- There was a significant divergence of opinion regarding the relative importance of advice from the two advisory bodies to the MRWG (Jostes and Eng 2001).
- There was discrepancy about phasing the reserves, specifically 1) the size of the initial phase, 2) the certainty of future phases, and 3) the use of performance standards or criteria to determine the specific implementation of subsequent phases (Jostes and Eng 2001).
- The process used economic information that estimated only maximum negative impacts, but not likely impacts or potential positive impacts associated with improvements in natural resources (Davis, Personal Communication, 2002).
- “Consensus rules, as enforced, failed to prevent vetoes during negotiations” (Davis, Personal Communication, 2002).
- “Balancing different scales of social representation—local vs. state vs. national interests for national park and national marine sanctuary.” (Davis, Personal Communication, 2002).
- MRWG members had differing levels of familiarity with ecological principles, and some members equated ecological requirements for reserve design with social values. Both factors added to the difficulty of agreeing on goals and objectives. (Davis, Personal Communication, 2003).
- Some MRWG members lacked authority to negotiate, or were not free to negotiate because their jobs would be in jeopardy if they allowed reserves to be placed in certain areas. In addition, lack of communication between representatives and constituents left some interest groups, such as commercial fishermen and nonconsumptive divers, feeling unrepresented. This was expressed through a letter to the MRWG, SAC, and CINMS from dive clubs and dive boat operators (Davis, Personal Communication, 2002).

## Technology-Based Decision-Support Tools

“MPA formulation and operation require, and benefit from, higher levels of technology in information handling and onsite management... Computer assisted mapping tools, used in storing, retrieving, processing, and displaying spatial data may be particularly useful” (Salm and others 2000).

Technology-based decision-support tools were utilized during the Channel Islands Marine Reserve process. The overall goal was to develop alternatives for marine reserves within sanctuary waters using the best available scientific and socioeconomic data. The Channel Islands Spatial Support and Analysis Tool (CI-SSAT) was developed by the NOAA Coastal Services Center in conjunction with the Channel Islands National Marine Sanctuary. This geographic information system (GIS)-based tool was developed to support stakeholders in participatory problem-solving by providing a visualization and query mechanism to investigate the relative impacts of a variety of potential marine reserve siting options.

- The MRWG used CI-SSAT to view ecological and economic data in different reserve configurations to ultimately recommend a preferred alternative. (Refer to Killpack *et al.*, no date, for more information.)
- The Science Advisory Panel used SITES Volume I (now MARXAN) to identify locations with high conservation value. This program identifies a set of sites that collectively represent specified amounts of habitats, populations, or other natural features (Airame *et al.* 2003). In this case, the scientists used SITES Volume I to identify the smallest areas possible that included all representative and unique habitats and species of interest identified by the MRWG. The areas of highest conservation value also tended to have high habitat heterogeneity (Airame *et al.* 2003).
- The Science Advisory Panel used SITES Volume I to:
  - Identify locations of different habitat types.
  - Predict the potential distribution of species of interest.
  - Identify areas of high habitat heterogeneity with potential for meeting the MRWG goals.
- Results of the SITES Volume I analysis were included in the CI-SSAT model.

### **Enforcement**

“Effective enforcement is essential to achieve MPA objectives and sustain cooperation from the general public and affected user groups” (National Research Council 2001).

- The DFG’s marine region division currently employs 57 law enforcement officers throughout the state. Specifically in the Santa Barbara and Ventura county area, 3 lieutenants and 4 warden/boarding officer positions are funded.
  - A 54-foot patrol boat is stationed in Dana Point and assists with enforcement in the Channel Islands. A second DFG patrol boat is now stationed in Ventura specifically for reserve patrols.
  - 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.
- CINMS donates funds directly to the DFG to enhance enforcement capabilities in sanctuary waters. This funding is estimated at \$30,000 per year, and is expected to continue.
  - The sanctuary conducts aerial surveys for marine mammal and vessel monitoring, and is currently working on a memorandum of understanding with the state to broaden enforcement measures for the reserves using aerial surveys as another enforcement tool.
- Channel Islands National Park (CINP) employs six full time rangers stationed on the islands. These rangers enforce all federal, state, and county laws and regulations in the national park, within one nautical mile of the shoreline.
  - The national park has three patrol boats stationed at the islands that are used exclusively for public safety and the enforcement of marine laws and regulations.
  - Three additional national park boats are based in Ventura and provide surveillance.

### **Boundaries**

Clear delineation of spatial boundaries is important so that both managers and users know where structured management has been implemented.

- Refer to DFG (2002) for draft boundary coordinates of the proposed reserves.
- The proposed reserves include some areas with existing regulations, and, where necessary, these regulations (such as the brown pelican fledgling area on Anacapa Island) are specifically included in the new proposal. 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.

### Legislation and/or Regulation

MPA establishment is typically authorized by existing legislation, but implementation frequently requires new regulations. Existing legislation may guide and/or provide context for MPA processes.

A variety of state and federal laws and regulations are relevant to the Channel Islands Reserve process.

- State legislation:
  - State Interagency Marine Managed Areas Workgroup (1998-2000):
    - The Resources Agency of California established the state interagency marine managed areas (MMA) workgroup to evaluate MMA classifications and recommend improvements.
  - Marine Life Management Act (MLMA) (1998):
    - The MLMA states that fishery management plans will form the primary basis for managing the state's sport and commercial fisheries. The act mandated that the DFG prepare a status report on state-managed fisheries and a master plan for developing fishery management plans by September 2001. The act stresses using the best available science and an adaptive approach to decision making, including collaboration from a wide array of perspectives and expertise.
  - Marine Life Protection Act (MLPA or Assembly Bill 993) (1999):
    - The MLPA sets goals for a comprehensive MPA program in California's marine waters; establishes criteria for selecting MPA sites, including fully protected marine reserves; requires development by 2005 of a statewide MPA master plan; and creates processes that require a sound scientific basis for the master plan and involvement by interested parties. *(Note: In the Channel Islands Marine Reserve process, the FGC used existing authority and not the MLPA. In the California Code of Regulations, FGC has the authority to create ecological reserves (refer to sections 200, 203.1, 205(c), 219, and 220 of California Fish and Game Code). While the MLPA calls upon FGC to create a statewide network of MPAs, it does not create or change existing authority (Hastings, Personal Communication, 2003).*
  - Marine Managed Areas Improvement Act (Assembly Bill 2800) (2001):
    - Based on the work of the state interagency work group, this act establishes a new classification system for marine managed areas (MMAs) that consolidates over a dozen classifications into six and simplifies terminology. The act incorporates existing MMAs into the new system, without changing existing resource protection, in a manner consistent with the MLPA; eliminates the use of existing classifications by January 2002; and establishes a consistent designation process to be used by all state entities for MMAs.
      - The six new classifications are state marine reserve, state marine park, state marine conservation area, state marine cultural preservation area, state marine recreational management area, and state water quality protection area.
- Federal Legislation:
  - Organic Act of the National Park Service (1916): To conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment for the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations. Channel Islands National Monument was expanded and declared a national park in 1980 by public law.
  - The National Marine Sanctuaries Act (NMSA) (1972): Authorizes the secretary of commerce to designate and manage areas of the marine environment with special national significance due to

their conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, or esthetic qualities as National Marine Sanctuaries (NMS). The Channel Islands were declared a national marine sanctuary in 1980.

- Since the act was put into effect in 1972, it has been amended and reauthorized in 1980, 1984, 1988, 1992, 1996, and 2000.

### **Media/Public Outreach**

Entities involved in MPA designation processes frequently undertake a variety of public outreach and education activities.

Sources of media/public outreach used throughout the Channel Islands Marine Reserve process include the following:

- The CINMS Marine Reserves Web site ([www.cinms.nos.noaa.gov/marineres/main.html](http://www.cinms.nos.noaa.gov/marineres/main.html)) and the California Department of Fish and Game's Marine Region Web site ([www.dfg.ca.gov/mrd/channel\\_islands/index.html](http://www.dfg.ca.gov/mrd/channel_islands/index.html)) were used to disseminate information, and have continued to be updated throughout the process.
  - The California Environmental Quality Act (CEQA) document describing the preferred alternative (also referred to as the "proposed project") and the five alternatives is available on DFG's Marine Region Web site, and hard copies were also made available in Santa Barbara and Ventura public libraries.
  - The draft reserve network map is available on DFG's Marine Region Web site, and the draft proposal was featured in local, regional, and national newspapers.
- DFG made hard copies of "Draft Environmental Document, Marine Protected Areas in NOAA's Channel Islands National Marine Sanctuary" available at numerous locations, including the following: the California Fish and Game Commission (FGC) office in Sacramento; the California Department of Fish and Game (DFG) offices in Sacramento, Redding, Yountville, Rancho Cordova, Fresno, Los Alamitos, San Diego, Santa Barbara, Morro Bay, Monterey, Menlo Park, Bodega Bay, Fort Bragg, and Eureka; the State Clearinghouse at the Governor's Office of Planning and Research; the county libraries in areas that may be affected; and DFG's Marine Region Web site.
- A document compiled by the Channel Islands National Marine Sanctuary (2001), and located at the sanctuary office in Santa Barbara, contains copies of 124 articles of print media coverage, primarily from Santa Barbara and Ventura counties, on the Channel Islands Marine Reserves process from 1997 through August 20, 2001.
- Several radio talk shows, as well as local televised news channels covered the Channel Islands Marine Reserve process in their broadcasts.

Refer to Appendix B for a listing of additional readings.

## References

Note: All World Wide Web addresses listed in this section were accessible on January 31, 2003, and accurately reflected information referenced here and in the text. Site content at these links may change, or the links may become inactive at any time.

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**APPENDIX A. Public Hearings, Workshops, and Meetings [Channel Islands]**

**Public Meeting Dates and Locations**

<b>Date</b>	<b>Public Meeting</b>	<b>Location</b>
March 25, 1999	Sanctuary Advisory Council	Oxnard, California
April 2, 1999	CA Fish and Game Commission	Long Beach, California
May 20, 1999	Sanctuary Advisory Council	Santa Barbara, California
July 7, 1999	Marine Reserves Working Group	Santa Barbara, California
July 22, 1999	Sanctuary Advisory Council	Ventura, California
October 5, 1999	Sanctuary Advisory Council	Santa Barbara, California
October 21, 1999	Marine Reserves Working Group	Santa Barbara, California
November 10, 1999	Marine Reserves Working Group	Santa Barbara, California
November 18, 1999	Sanctuary Advisory Council	Oxnard, California
December 9, 1999	Marine Reserves Working Group	Santa Barbara, California
January 10-11, 2000	Marine Reserves Working Group	Santa Barbara, California
January 18, 2000	Sanctuary Advisory Council Conservation Working Group	Santa Barbara, California
January 20, 2000	Sanctuary Advisory Council	Oxnard, California
February 23, 2000	Marine Reserves Working Group	Santa Barbara, California
March 15, 2000	Sanctuary Advisory Council	Santa Barbara, California
March 16, 2000	Marine Reserves Working Group	Santa Barbara, California
April 13, 2000	Marine Reserves Working Group	Santa Barbara, California
April 19, 2000	Sanctuary Advisory Council	Ventura, California
May 17, 2000	Sanctuary Advisory Council	Santa Barbara, California
May 30, 2000	Sanctuary Advisory Council	Oxnard, California
June 8, 2000	Marine Reserves Working Group	Santa Barbara, California
June 14, 2000	Sanctuary Advisory Council	Goleta, California
June 22, 2000	Marine Reserves Working Group	Santa Barbara, California
July 18, 2000	Marine Reserves Working Group	Santa Barbara, California
August 16, 2000	Sanctuary Advisory Council	Ventura, California
August 22, 2000	Marine Reserves Working Group	Santa Barbara, California
September 19, 2000	Sanctuary Advisory Council Conservation Working Group	Santa Barbara, California
September 20, 2000	Sanctuary Advisory Council	Lompoc, California
September 26-27, 2000	Marine Reserves Working Group	Santa Barbara, California
October 18, 2000	Marine Reserves Working Group	Santa Barbara, California
November 14, 2000	Sanctuary Advisory Council Conservation Working Group	Santa Barbara, California
November 15, 2000	Marine Reserves Working Group	Santa Barbara, California
November 16, 2000	Sanctuary Advisory Council	Ventura, California
December 14, 2000	Marine Reserves Working Group	Santa Barbara, California
January 17, 2001	Marine Reserves Working Group	Santa Barbara, California
January 18, 2001	Sanctuary Advisory Council Conservation Working Group	Santa Barbara, California
February 9, 2001	Sanctuary Advisory Council	Goleta, California
February 15, 2001	Marine Reserves Working Group	Santa Barbara, California
February 21, 2001	Marine Reserves Working Group	Santa Barbara, California

March 12, 2001	Sanctuary Advisory Council Conservation Working Group	Santa Barbara, California
March 14, 2001	Sanctuary Advisory Council	Oxnard, California
March 21, 2001	Marine Reserves Working Group	Santa Barbara, California
April 18, 2001	Marine Reserves Working Group	Santa Barbara, California
May 14, 2001	Sanctuary Advisory Council Fishing Working Group	Santa Barbara, California
May 16, 2001	Marine Reserves Working Group	Santa Barbara, California
May 21, 2001	Sanctuary Advisory Council Conservation Working Group	Santa Barbara, California
May 23, 2001	Marine Reserves Working Group & Sanctuary Advisory Council	Santa Barbara, California
June 19, 2001	Sanctuary Advisory Council	Santa Barbara, California
August 24, 2001	Sanctuary Advisory Council & CA Department of Fish and Game	Santa Barbara, California
October 4, 2001	CA Fish and Game Commission	San Diego, California
October 18, 2001	Sanctuary Advisory Council	Ventura, California
December 6, 2001	CA Fish and Game Commission	Long Beach, California
January 9, 2002	Sanctuary Advisory Council	Santa Barbara, California
February 8, 2002	CA Fish and Game Commission	Sacramento, California
March 7, 2002	CA Fish and Game Commission	San Diego, California
March 15, 2002	Sanctuary Advisory Council	Ventura, California
April 4, 2002	CA Fish and Game Commission	Long Beach, California
May 8, 2002	Sanctuary Advisory Council	Santa Barbara, California
July 12, 2002	Sanctuary Advisory Council	Ventura, California
August 1, 2002	CA Fish and Game Commission	San Luis Obispo, California
October 23, 2002	CA Fish and Game Commission	Santa Barbara, California
February 6, 2003	CA Fish and Game Commission	Sacramento, California

### **Marine Reserves Working Group Public Forums**

<b>Date</b>	<b>Location</b>	<b>Number of Participants</b>
January 20, 2000	Oxnard, California	Approximately 200 in attendance
October 12, 2000	Goleta, California	Approximately 300 in attendance
March 21, 2001	Santa Barbara, California	Approximately 300 in attendance
May 23, 2001	Santa Barbara, California	Approximately 300 in attendance

**APPENDIX B. Additional Readings [Channel Islands]**

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**APPENDIX C. Advisory Group and Panel Members [Channel Islands]**

**Sanctuary Advisory Council (SAC) Members (1998 to present)**

Name	Representation
Michael Hanrahan	Business
Rebecca Roth	California Coastal Commission
Brian Baird	California Resources Agency
Harry Liquornik	Commercial Fishing
Linda Krop	Conservation
Diane Meester	County of Santa Barbara
Lyn Krieger	County of Ventura
Patricia Wolf	Department of Fish and Game
Larry Manson	Education
Jon Clark	General Public
Matthew Cahn	General Public
Robert Duncan	General Public
Drew Mayerson	Minerals Management Service
Mark Helvey	National Marine Fisheries Service
Tim Setnicka	National Park Service
Jim Brye	Recreation
Robert Warner	Research
Jeannette Webber	Tourism
Lt. J. Wade Russell	U.S. Coast Guard
Alex Stone	U.S. Department of Defense

**APPENDIX C. Advisory Group and Panel Members (continued)**

**Marine Reserves Working Group (MRWG) Members (June 1999 – May 2001)**

Name	Affiliation	Representation
Patricia Wolf (Co-Chair)	California Department of Fish and Game	California Department of Fish and Game
Deborah McArdle	California Sea Grant	California Sea Grant
Ed Cassano (Former Co-Chair)	Former Sanctuary Manager	Channel Islands National Marine Sanctuary
Matthew Pickett (Co-Chair)	Sanctuary Manager	Channel Islands National Marine Sanctuary
Chris Miller	California Lobster Trappers Association	Consumptive
Dale Glanz	ISP Alginates Inc.	Consumptive
Neil Guglielmo	Squid Seiner and Processor	Consumptive
Tom Raftican	United Anglers	Consumptive
Marla Daily	Sanctuary Advisory Council	General Public
Craig Fusaro	Sanctuary Advisory Council	General Public
Robert Fletcher	Sportfishing Association of California	Marina/Business
Mark Helvey	National Marine Fisheries Service	National Marine Fisheries Service
Dr. Gary Davis	National Park Service	National Park Service
Steve Roberson	Channel Islands Marine Resource Restoration Committee	Nonconsumptive
Warner Chabot (Replaced by Greg Helms)	Ocean Conservancy	Nonconsumptive
Greg Helms	Ocean Conservancy	Nonconsumptive
Alicia Stratton (Replaced by Mr. Kelly)	Surfrider Foundation	Nonconsumptive
Shawn Kelly	Surfrider Foundation	Nonconsumptive
Michael McGinnis	UCSB Ocean and Coastal Policy Center (Resigned)	Nonconsumptive
Locky Brown	Channel Islands Council of Divers	Sport Diving

**APPENDIX C. Advisory Group and Panel Members (continued)**

**Science Advisory Panel Members (June 1999 – May 2001)**

<b>Name</b>	<b>Affiliation</b>	<b>Disciplines</b>
Peter Haaker	California Department of Fish and Game	Invertebrate Zoology, Marine Ecology, Fisheries Management
Dan Richards	Channels Islands National Park	Invertebrate Zoology, Marine Ecology
Dr. Matthew Cahn (Chair)	California State University Channel Islands	Public Policy
Dr. Steven Murray	California State University Fullerton	Invertebrate Zoology, Phycology, Marine Ecology
Dr. Russ Vetter	National Marine Fisheries Service	Ichthyology, Reserve Design/ Management, Rock Fish, Larval Transmission
Dr. Ed Dever	Scripps Institute	Physical Oceanography
Dr. Joan Roughgarden	Stanford University	Invertebrate Zoology, Statistical Modeling, Population Dynamics, Larval transmission
Dr. Allan Stewart-Oaten	University of California Santa Barbara	Statistical Modeling, Population Dynamics
Dr. Bruce Kendall	University of California Santa Barbara	Population Dynamics
Dr. Daniel Reed	University of California Santa Barbara	Phycology, Marine Ecology, Statistical Modeling, Reserve Design/ Management
Dr. Dave Siegel	University of California Santa Barbara	Physical Oceanography
Dr. Libe Washburn	University of California Santa Barbara	Physical Oceanography
Dr. Robert Warner	University of California Santa Barbara	Ichthyology, Marine Ecology, Population Dynamics, Reproduction
Dr. Steve Gaines	University of California Santa Barbara	Invertebrate Zoology, Marine Ecology, Statistical Modeling, Population Dynamics, Larval Transmission
Dr. Steve Schroeter	University of California Santa Barbara	Invertebrate Zoology, Marine Ecology, Statistical Modeling, Reproduction, Larval Transmission
Dr. Mark Carr	University of California Santa Cruz	Ichthyology, Marine Ecology, Rock Fish

**Socioeconomic Panel Members (June 1999 – May 2001)**

<b>Name</b>	<b>Affiliation</b>	<b>Industries Researched</b>
Dr. Bob Leeworthy	NOAA Special Projects Office	Commercial Fisheries
Peter Wiley	NOAA Special Projects Office	Recreational Fisheries
Dr. Craig Barilotte	Sea Foam Enterprises	Commercial Fisheries
Dr. Charles Kolstad	UC Santa Barbara	Charter/ Party Boats
Dr. Carolyn Pomeroy	UC Santa Cruz	Squid Fishery

**APPENDIX D. Examples of Public Concerns Expressed throughout the Process (DFG 2002b)**  
 [Channel Islands]

General Concerns	<ul style="list-style-type: none"> <li>• Are other management alternatives for protection more appropriate?</li> <li>• Do reserves allow use of public trust resources?</li> <li>• Boundaries need to be clear and easily recognizable.</li> </ul>
Science Concerns	<ul style="list-style-type: none"> <li>• Is there a scientific method to determine appropriate reserve sizes and locations?</li> <li>• Is it more appropriate to take a species-specific versus a habitat or ecosystem approach?</li> <li>• Will the extra pressure on non-reserve areas create crowding or congestion of fishing effort?</li> </ul>
Administrative Concerns	<ul style="list-style-type: none"> <li>• Is there adequate funding for administration, monitoring and evaluation and enforcement of reserves?</li> <li>• Cooperation between state and federal resource management agencies is critical to the success of reserves.</li> <li>• It is critical to keep the community involved after the reserves are established.</li> </ul>
Economic Concerns	<ul style="list-style-type: none"> <li>• International competition may eliminate markets if U.S. fishermen can not supply during closed seasons.</li> <li>• Will there be financial mitigation to displaced commercial fisheries?</li> <li>• Increased cost-of-living in coastal areas creates a need for more income.</li> </ul>

**Gulf of Mexico Grouper Closures  
(Madison/Swanson and Steamboat Lumps Marine Reserves)**



- A: Swanson and Madison site;**
- B: Steamboat Lumps**

Source: ([www.research.fsu.edu/researchr/2000/abstracts/images/gulf.jpg](http://www.research.fsu.edu/researchr/2000/abstracts/images/gulf.jpg))

*Note: Each case study uses the terminology adopted by that particular process, and is not based on a consistent definition.*

## Abstract

In June 2000, the National Marine Fisheries Service implemented a series of management actions to prevent the overfishing of grouper species off the coast of Florida in the Gulf of Mexico. The agency took these steps after stock assessments revealed that gag grouper populations were in danger of becoming overfished, and the National Marine Fisheries Service listed gag grouper as ‘approaching an overfished condition’. New actions and rules to protect grouper spawning aggregations and to prevent overfishing were proposed in the Gulf of Mexico Fishery Management Council’s August 1999 regulatory amendment to the *Reef Fish Fishery Management Plan to Set 1999 Gag/Black Grouper Management Measures*. These actions included size limits, seasonal closures, and area closures that are closed to all fishing except for highly migratory species, such as tunas, swordfish, oceanic sharks, and billfishes.

## Introduction

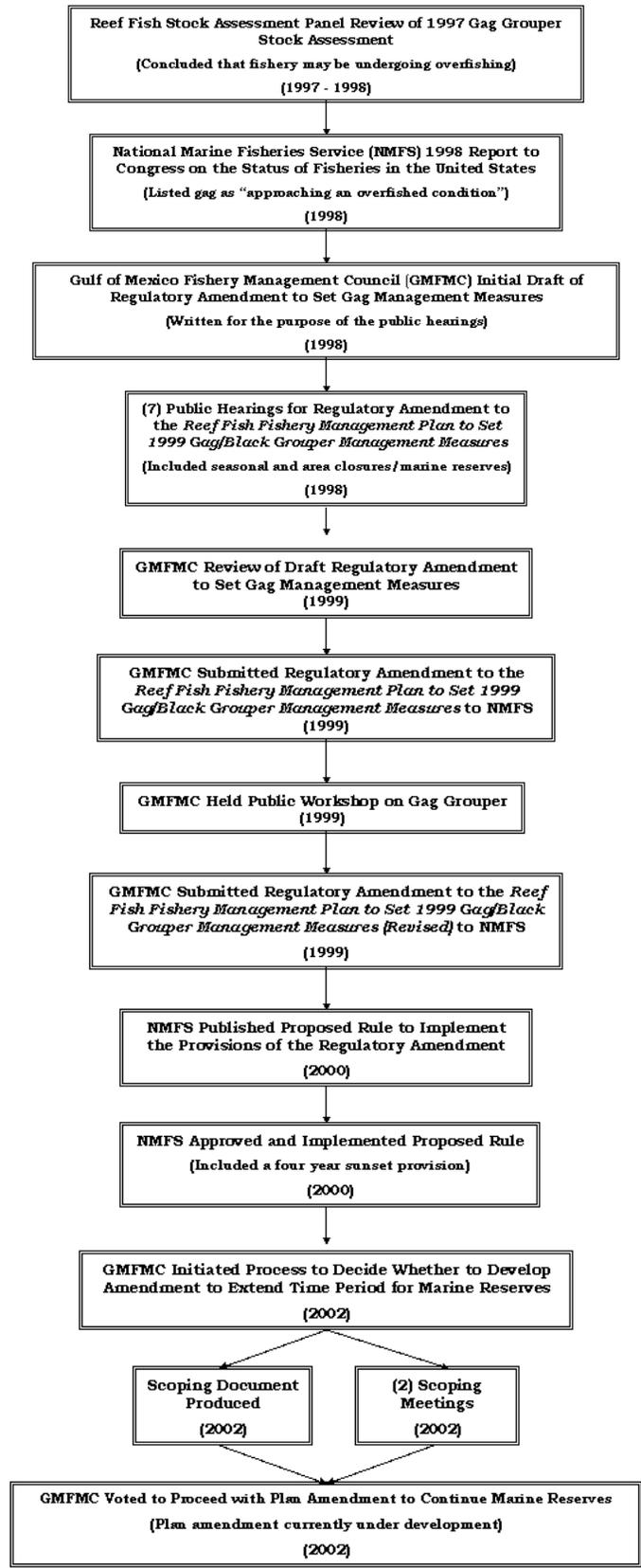
“Many economically important reef fish species share a suite of life history characteristics that make them particularly susceptible to overexploitation. In addition, their behavioral characteristics exacerbate the problem” (Coleman and others 2000). Because of these facts, conventional management practices have not been effective for reef fish management (Coleman and others 2000). To prevent overfishing, the Gulf of Mexico Fishery Management Council (GMFMC) proposed new rules and regulations to protect gag grouper spawning aggregations, including the use of seasonal and area closures. Significantly, the Gulf of Mexico grouper closures are the first management plans in use designed to preserve the social structure and the sex ratio of grouper populations. According to Jim Bohnsack, research fisheries biologist with the NMFS Southeast Fisheries Science Center, “this is also the first plan to take an ecological approach to conservation by adopting the ‘umbrella species’ concept in a fishery management plan. Closing gag spawning sites, in effect, uses gag as an ‘umbrella species’ since protection is also provided for a variety of other reefs species in addition to critical spawning habitat used by gag” (Personal Communication, 2003). “To study the potential effects of area closures on gag grouper spawning aggregations, the Gulf of Mexico Fishery Management Council selected two areas for year-round closure to all fishing where gag spawning is known to occur” (GMFMC 2002a). Combined, the two closed areas cover approximately one fifth of the area identified as dominant spawning grounds for gag, and they provide contrasting habitats. The Madison/ Swanson site (115 square nautical miles in size) lies south of Panama City, Florida, near the northern part of the primary spawning range, and has high relief habitat. The Steamboat Lumps site (104 square nautical miles in size) lies west of Tarpon Springs, Florida, near the southern part of the primary spawning range, and has low relief habitat. “This would allow evaluation of the effectiveness of area closures as well as the relative importance of site type (high versus low relief)” (GMFMC 2002a).

## Process Diagram

“An important factor in the establishment of MPAs is the process by which they are nominated and designated” (Brody 1998).
--

The Grouper closure process to date has occurred as follows (next page):

*Terminology Note: The GMFMC refers to the Madison/Swanson and Steamboat Lumps sites as both “area closures” and “marine reserves.”*



## Timeline (1984 to present)

This section details the sequence of events in the establishment process.

- Overview of Reef Fish Management (1984 to 2000):
  - November 1984: Reef Fish Fishery Management Plan (FMP) was implemented (Reef fish include snapper-grouper complex).
  - 1990 to 2000: Amendments I through XVII implemented. These amendments made numerous changes to the FMP, including the following:
    - Imposed size limits, bag limits, and catch quotas.
    - Established a moratorium on new reef fish permits for a maximum of three years.
    - Established restrictions on the use of fish traps in the Gulf of Mexico exclusive economic zone (EEZ), as well as a ten-year phase-out for the fish trap fishery.
    - Established reef fish dealer permitting and record keeping requirements.
    - Created a special management zone with gear restrictions off the Alabama coast.
    - Implemented a new reef fish permit moratorium for a maximum of five years while the council considered limited access for the reef fish fishery.
    - Imposed an aggregate bag limit of 20 reef fish for all reef fish species not having a bag limit.
    - Extended the commercial reef fish permit moratorium for another five years.
- Gag Grouper (1993 to 2002):
  - August 1993: The Reef Fish Stock Assessment Panel (RFSAP) reviewed available landings data as well as a literature review on gag grouper. (Note: The RFSAP is composed of biologists who are trained in the field of population dynamics. They advise the GMFMC on the status of stocks and, when necessary, recommend a level of allowable biological catch needed to prevent overfishing or to effect a recovery of an overfished stock. They may also recommend catch restrictions needed to attain management goals.)
    - Concern was expressed over a reduction in catches of male gag and potential changes in sex ratio over time due to fishing on spawning aggregations (Atran, Personal Communication, 2002). For this reason, the RFSAP recommended that a stock assessment be conducted on gag grouper.
  - August 1994: The RFSAP reviewed the first gag stock assessment and concluded that the stock was not overfished. However, the practice of fishing on spawning aggregations caused concern (Atran, Personal Communication).
  - October 1995: The concept of marine reserves was taken into consideration because the RFSAP thought that “the reserve area concept was interesting and could be tested in small areas in the Gulf of Mexico” (Atran, Personal Communication, 2002). At that time, however, no specific recommendations on the reserve area concept were made due to a lack of data on the relationship between reserve size and fishery stock protection (Atran, Personal Communication, 2002).
  - October 1997: The RFSAP reviewed a second gag grouper stock assessment prepared by the National Marine Fisheries Service (NMFS) in October 1997.
    - According to Atran (Personal Communication, 2002), the continuing problem of fishermen targeting spawning aggregations had resulted in a greater emphasis on large breeders within the fishery, a decrease in the proportion of males, possible disruption of spawning groups, and the apparent loss of some spawning groups.
    - The RFSAP made a recommendation that the GMFMC close an area of recognized spawning habitat for gag through the use of no-take fishery reserves. In addition, a request was made for additional time to review the stock assessment results.
  - August 1998: The RFSAP completed its review of the 1997 stock assessment.

- The RFSAP concluded that “gag are not considered to be in an overfished state at this time, but the fishery may be undergoing overfishing” (Atran, Personal Communication, 2002).
  - RFSAP noted that “some evidence indicates that fishing on spawning aggregations can disrupt spawning, result in a reduction in size of spawning fish, and even result in a loss of an entire aggregation” (Atran, Personal Communication, 2002). As a result, another recommendation was made for the GMFMC to consider spatial and/or temporal closures to protect the integrity of gag aggregations.
- September 1998: Besides increasing the size limit to 24 inches, the Reef Fish Advisory Panel recommended that gag management measures be left at status quo. The Standing and Special Reef Fish Scientific and Statistical Committee (SSC) acknowledged the acceptable biological catch recommendations in the RFSAP report as the best available scientific information, and made no further management recommendations (Atran, Personal Communication, 2002).
- October 1998: NMFS listed gag grouper as “approaching an overfished condition” in their *Report to Congress on the Status of Fisheries in the U.S.*
  - This designation is used when NMFS estimates a stock will become overfished within two years. The designation triggered a requirement based on the Magnuson-Stevens Act that the GMFMC take action within one year and implement rules to prevent overfishing from occurring (GMFMC 1999i).
- In preparation for the public hearings, the GMFMC drafted a preliminary regulatory amendment for gag grouper, which included management options such as minimum size limits, bag limits, commercial trip limits, seasonal closures, and year-round area closures.
- December 1998: GMFMC held seven public hearings (approximately 385 attendees overall) for the regulatory amendment to the *Reef Fish Fishery Management Plan to Set 1999 Gag/Black Grouper Management Measures*. (Refer to Appendix A for dates and locations of public hearings)
  - “Public comments included both support and opposition for the positions of no area closures, two to four month area closures, and year-round area closures” (Atran, Personal Communication, 2002).
- January 1999: The GMFMC reviewed the draft regulatory amendment.
- March 1999: The GMFMC received public testimony on the gag grouper regulatory amendment, in addition to scientific information on the gag grouper fishery from NMFS, Dr. Bob Chapman of the South Carolina Department of Natural Resources, and Dr. Lew Bullock of the Florida Department of Environmental Protection.
- March 1999: The GMFMC voted to include marine reserve sites identified as “40 Fathom Contour West of the Florida Middle Grounds” and “Steamboat Lumps.” The sites would be closed to all reef fishing year-round.
  - The GMFMC simplified the coordinates to facilitate enforcement, creating a single contiguous area totaling 422.6 square nautical miles.
  - At this time, the four-year sunset provision was not included in the proposed regulatory amendment.
- April 1999: Before the regulatory amendment was published, several members of the GMFMC filed minority reports to object to the proposed actions. Objections were made because the needs of fishing communities had not been considered, the proposed restrictions were not distributed fairly and equitably among the sectors of the fishery, and the proposed restrictions were not based on the best scientific information available (Atran, Personal Communication, 2002; Kenchington 1999).
- May 1999: The GMFMC submitted the regulatory amendment to the *Reef Fish Fishery Management Plan to Set 1999 Gag/Black Grouper Management Measures* to the NMFS.
  - As a result of the concerns raised in April, the GMFMC voted to re-evaluate the gag grouper regulatory amendment during its July meeting.

- June 1999: The GMFMC held a public workshop on gag grouper in Panama City, Florida (approximately 67 attendees).
  - A presentation was given by Dr. Chris Koenig of Florida State University on the status and spawning biology of gag grouper, followed by a response to the biological information on gag by Dr. Trevor Kenchington of Gadus Associates, on behalf of the Southeastern Fisheries Association.
  - Members of the public were then invited to speak. Nineteen speakers, representing commercial fishermen, environmental organizations, recreational fishermen, and seafood dealers, made presentations about various issues related to gag grouper.
- July 1999: The GMFMC received public testimony on the gag grouper regulatory amendment. The GMFMC voted to apply a sunset provision, proposing year-round closure of the “Madison/Swanson” and “Steamboat Lumps” sites for a period of four years. The GMFMC also voted to apply the closure to all fishing under the jurisdiction of the council rather than just to reef fish fishing.
  - NOAA’s Office of General Counsel reminded the GMFMC that highly migratory species are under the jurisdiction of the Highly Migratory Species (HMS) division of NMFS, and recommended that they forward a letter to the HMS division to coordinate efforts for the closed areas.
  - “By a roll call vote, the motion to forward the gag regulatory amendment as modified to NMFS for implementation carried by a vote of 9 to 6 with two members absent” (GMFMC 1999d).
- August 1999: The GMFMC submitted the regulatory amendment to the *Reef Fish Fishery Management Plan to Set 1999 Gag/Black Grouper Management Measures (Revised)* to the NMFS.
  - Proposed measures include the following:
    - Increase the minimum size limit of gag for the commercial fishery from 20 inches total length to 24 inches, effective immediately upon implementation.
    - Increase in the minimum size limit of gag for the recreational fishery from 20 inches total length to 22 inches, effective upon implementation; then increase the minimum size limit for the recreational fishery at a rate of 1 inch per year until the minimum size limit reaches 24 inches total length.
    - Implement a seasonal closure on the commercial harvest of gag, black, and red grouper from February 15 to March 15, and a prohibition on the commercial sale of these species during this closed season.
    - Establish two no-take marine reserves (Madison/Swanson and Steamboat Lumps) within which all fishing – except for highly migratory species – is prohibited for four years.
  - As part of the regulatory amendment, the GMFMC prepared an initial regulatory flexibility analysis (IRFA) that described the impact this proposed rule would have on small entities. By definition, the term small entity includes small businesses or small organizations. A summary of the IRFA can be found in the *Federal Register* (January 26, 2000).
- September 1999: The GMFMC sent a letter to the HMS division of NMFS to request that fishing for species under its jurisdiction, including tunas, swordfish, oceanic sharks, and billfishes, be prohibited in the proposed closed areas.
- October 1999: A conference call was held by the RFSAP to review the scientific information presented by Dr. Chris Koenig and Dr. Trevor Kenchington at the last workshop.
  - The RFSAP endorsed the closures, but emphasized that there is a lot about closed areas that is not known. The panel also recommended that funding be in place for the evaluation studies, and that the objectives, response variables, and evaluation criteria be identified prior to initiating any projects (Atran, Personal Communication, 2002).

- October 1999: After reviewing a summary of the conference call, the Standing and Special Reef Fish SSC found that “there was sufficient knowledge and opinion that closures will increase the abundance of male gag, at least within the limits of the experiments, to justify the establishment of year-round closed areas as proposed by the GMFMC, and that a scientific monitoring plan should be also be prepared and approved to assure that performance of this management action can be evaluated” (Atran, Personal Communication, 2002).
- November 1999: Summaries of the RFSAP conference call and SSC meeting were presented to the GMFMC, but no action was taken at that time.
- January 2000: NMFS published a proposed rule in the *Federal Register* to implement the provisions of the regulatory amendment, which included the seasonal and area closures. The comment period ended on February 10, 2000. The following comments were expressed:
  - NMFS Southeast Fisheries Science Center expressed the following concerns:
    - “Existing baseline data are inadequate to evaluate changes in gag populations that could be attributed to the closure;
    - The duration of the closure (four years) is too short to expect measurable benefits and changes resulting from the closure;
    - No criteria are proposed with which to judge the success or failure of the closure;
    - Gulf-wide conclusions about the efficacy of closed areas would necessitate an experimental design utilizing replicate closed areas and controls.”  
(*Federal Register*, January 26, 2000)
  - GMFMC members opposing portions of the regulatory amendment submitted three minority reports. These reports made the following arguments:
    - “The proposed measures are insufficient to prevent overfishing and would place a greater share of the burden from the reduction in harvest on the recreational sector;
    - The one-month closure of the commercial fishery was too short to be effective;
    - The closure of the two areas to all fishing unnecessarily restricts fishing for species other than reef fish;
    - The closure should apply only to reef fish fishing and bottom fishing with gear capable of catching reef fish;
    - The delay in increasing the recreational minimum size limit to 24 inches is unjustified, and an immediate increase to 24 inches is recommended;
    - The measures in the regulatory amendment are not based upon the best available science, specifically the comments by a consultant hired by the commercial industry;
    - The one-month closure of the commercial fishery only is unfair and the recreational fishery should also be closed; and
    - The regulatory amendment fails to reduce bycatch in the recreational fishery.”  
(*Federal Register*, January 26, 2000)
  - NMFS received over 600 comments on the proposed rule.
    - Some comments stated that closing two areas to all fishing is too restrictive, and that the economic impacts on fishing communities were not adequately considered. Still, other comments gave strong support to the two closed areas;
    - “A total of 273 individuals questioned the effectiveness of a one-month closure, with some noting that the closure should be extended to encompass the entire spawning season (3 to 4 months).”  
(*Federal Register*, May 19, 2000)
- May 2000: NMFS prepared a final regulatory flexibility analysis (FRFA) on May 12, 2000, that describes the impact of the final rule on small entities. The FRFA addresses the issues raised by public comments on the IRFA. A summary of the FRFA can be found in the *Federal Register* (May 19, 2000).

- May 2000: NMFS published the final rule in the *Federal Register* (May 19, 2000) to implement the provisions of the regulatory amendment, including closure of the Madison/Swanson and Steamboat Lumps sites to all fishing except for highly migratory species.
    - After considering the comments received on the proposed rule, NMFS partially approved the regulatory amendment. However, NMFS rejected the additional proposal to continue increasing the recreational minimum size limit for gag and black grouper by 1 inch per year until it reached 24 inches total length because it was felt that it would have a disproportionate impact on the recreational fishery versus the commercial fishery.
  - June 2000: Final rule implemented on June 19, 2000.
    - A four-year sunset clause was included in the proposed alternative. “As a result, if GMFMC chooses to continue the Madison/Swanson and Steamboat Lumps marine reserves beyond June 2004, it must do so through a reef fish plan amendment. On the other hand, non-action will result in the two reserves expiring on June 19, 2004, and the areas reopening to all fishing” (GMFMC 2002a). (See “Current Status/Outcome” for further discussion.)
  - August 2000: Coastal Conservation Association (CCA) filed a suit in federal district court in Tampa against NMFS with the stated purpose of protecting the rights of recreational fishermen.
  - June 2001: On June 7, 2001, a settlement was reached between CCA and NMFS, which allows recreational anglers to troll for pelagic species, such as billfish and tunas, while still prohibiting bottom fishing for stressed gag grouper stocks. (See “Conflicts” for further discussion.)
    - Under the settlement, NMFS will perform a two year research project on the potential impacts of recreational trolling on deep reef fish in the areas. The results of that research will be presented to the GMFMC at their May 2003 meetings (Atran, Personal Communication, 2002).
  - June 2002: The GMFMC held scoping meetings to solicit input on whether to continue the marine reserves, and on what issues should be taken into consideration. (Refer to Appendix A for dates and locations of meetings.)
  - July 2002: Comments received at the public scoping meetings were presented to the GMFMC, at which time the GMFMC voted to proceed with a plan amendment to continue the reserves. According to GMFMC staff, the amendment (Amendment 21) is under development (Atran, Personal Communication, 2002).
- During the closure development process, a separate public education process took place.
    - July–August 1999: GMFMC conducted an educational process to provide information to the public about the concept of marine reserves.
      - July 1999: Two documents were produced: *Marine Reserves for Fishery Management: Questions and Answers* and the *Marine Reserves Technical Document: A Scoping Document for the Gulf of Mexico*.
      - August 1999: GMFC conducted ten public workshops in ten coastal communities. The purpose of the workshops was twofold—first, to provide information on the concept of marine reserves and the role they have played as management tools elsewhere; second, to begin to identify (with public help) the critical issues and concerns individuals may have with regard to their use within the Gulf of Mexico.
        - Refer to Appendix A for dates and locations of public workshops.
        - Over 400 statements concerning uses, criteria, and problems with reserves were made at the public workshops. Refer to Appendix D for a summary of comments.
      - September 1999: A final report was prepared by the facilitator: *Public Responses to Marine Reserves as a Potential Management Tool for the Gulf of Mexico*.

## Objectives

In most cases, an MPA will have multiple objectives. These may include protection of representative habitats, conservation of rare species, fish stock restoration or enhancement, or safeguarding of historical sites, among others.

Objectives established for the grouper closures include the following:

- To protect some habitat known to be spawning areas for gag grouper along with other groupers and snappers.
- To protect a portion of the male gag population, which appears to have declined drastically in recent years (although gag change sex from female to male, males tend to stay offshore year-round while females redistribute closer to shore outside of spawning season).
- To protect representative spawning habitat and known gag assemblages as a conservation experiment on the effectiveness of closed areas.
- (Seasonal closure) “To reduce the commercial gag and black grouper landings by around seven percent (under the assumption that commercial fishing effort will not shift in response to this measure)” (*Federal Register*, January 26, 2000).

## Current Status/Outcome

This section describes the current status of the MPA process, and includes information on any ongoing research that will help evaluate effectiveness.

Currently, the grouper closures

- Prohibit all fishing except trolling for Atlantic highly migratory species (tuna, marlin, oceanic sharks, sailfishes, and swordfish).
- Include a four-year sunset provision where the no-take areas expire June 19, 2004. This provision allows the GMFMC time to evaluate their effectiveness before deciding whether to allow them to continue, and time to stop possible negative impacts if the objectives are not met (GMFMC 2002a; NOAA 2002).
  - In June 2002, GMFMC prepared a scoping document intended to provide background information to the public during a series of scoping meetings on the question of whether to initiate development of a plan amendment to continue the Madison/Swanson and Steamboat Lumps reserves, and if so, what scope of alternatives should be considered.
  - Additionally, GMFMC held two scoping meetings in June 2002 on the issue of whether they should begin developing an amendment to the Reef Fish Fishery Management Plan to extend the time period for the Madison/Swanson and Steamboat Lumps marine reserves.
    - Refer to Appendix A for dates and locations of scoping meetings.
    - Dr. Chris Koenig, Florida State University, who is one of the researchers studying the marine reserves, gave a presentation on his research to date (GMFMC 2002a).
  - Comments received at the public scoping meetings were presented to the GMFMC in July 2002, at which time the GMFMC voted to proceed with a plan amendment to continue the reserves. At the present time, this amendment is under development.

A number of research efforts have been conducted in the closed areas since they were designated:

- Sustainable Seas Expedition

- Scientific studies have been conducted as part of the NOAA Islands in the Stream Sustainable Seas Expedition. Findings are reported on the Web site at <http://oceanexplorer.noaa.gov/explorations/islands01/log/jun20/jun20.html>.
  - During the Sustainable Seas Expeditions, efforts were concentrated in the Madison/Swanson reserve because of existing knowledge about the location of spawning aggregation sites.
  - “One study focuses on whether the closed area protects male gag, thus allowing them to recover from their current low population levels” (GMFMC 2002a).
- NMFS Southeast Fisheries Science Center (SEFSC) Research
  - “NMFS in cooperation with the United States Geological Survey, the Minerals Management Service, the University of New Hampshire, and the National Ocean Survey, has been conducting detailed mapping operations of the Madison/Swanson and Steamboat Lumps sites” (GMFMC 2002a).
    - Multi-beam mapping has been completed in the Steamboat Lumps site, as well as a majority of the Madison/Swanson site, and a control area in-between referred to as Twin Ridges.
  - Research has been conducted during February and April 2001, using panoramic video camera arrays, digital cameras, chevron traps, and an underwater remotely operated vehicle (ROV).
    - “At Madison/Swanson, spawning aggregations of gag and/or scamp were confirmed at 11 sites and suspected at 5 others through surveillance from 20 ROV dives” (GMFMC 2002a).
    - “Histological and otolith samples were taken from 59 fish for reproductive and aging studies” (GMFMC 2002a).
- Florida State University Research
  - In May 2001, Dr. Chris Koenig presented his research to date on the Madison/Swanson and Steamboat Lumps sites to the GMFMC. Objectives for this research include the following (GMFMC 2002a):
    - Develop acoustic mapping using side-scan sonar or multi-beam.
    - Locate spawning aggregations of gag grouper.
    - Track aggregation demographics over time.
      - It is possible that gag grouper males might remain within the spawning sites or in their vicinity throughout the year.
    - Examine the sex ratios, size, and age structure within the aggregations.
    - Determine movements of all economically important species relative to the MPAs by tagging.
  - In June 2001, Dr. Koenig and his team went out again to further characterize the habitats.

### **Stakeholders**

MPA establishment may impact a wide range of individuals and entities. This means a diversity of stakeholders have an interest in participating in the process.

Stakeholders interested in or affected by the establishment of the grouper closures include the following:

- Charter boat industry
- Commercial fishermen
- General public
- Recreational fishermen
- Restaurants
  - Florida Restaurant Association

- Scientists
  - Florida State University
- Seafood retail and wholesale
  - Apalachicola (Water Street Seafood)
- Nongovernmental organizations
  - Coastal Conservation Association of Florida
  - Environmental Defense Fund
  - Gulf Restoration Network
  - Organization for Artificial Reefs
  - ReefKeeper International
  - Southeastern Fisheries Association
  - Southern Offshore Fishing Association
  - The Ocean Conservancy (Formerly the Center for Marine Conservation)
- Government agencies
  - State agencies
    - Alabama Department of Conservation and Natural Resources
      - Marine Resources Division
    - Florida Department of Environmental Protection
    - Florida Fish and Wildlife Conservation Commission
    - Louisiana Department of Wildlife and Fisheries
    - Mississippi Department of Marine Resources
    - Texas Parks and Wildlife Department
  - Gulf States Marine Fisheries Commission
  - Gulf of Mexico Fishery Management Council
  - U.S. Department of Commerce
    - National Oceanic and Atmospheric Administration
      - National Marine Fisheries Service
        - Highly Migratory Species Division
        - Southeast Fisheries Science Center
        - Southeast Regional Office (St. Petersburg, Florida)
      - National Ocean Service
      - Office of Oceanic and Atmospheric Research
        - National Sea Grant College Program

### **Advisory Groups**

Advisory committees may be used during an MPA development process. The establishment of an advisory committee representing various interest groups and affected parties will facilitate local participation throughout the MPA establishment process, and may help to form partnerships by ensuring that all interests are represented in the final proposal (Brody 1998).

No advisory groups were established specifically for the grouper closure process. However, when reviewing potential rule changes, the council draws upon the services of knowledgeable people from other state and federal agencies, universities, and the public who serve on the following panels and committees:

- “Advisory panels (APs) consist of recreational and commercial fishermen, charter vessel and party boat operators, representatives of conservation groups, and other resource users and persons with a nonscientific expertise or interest in the Gulf of Mexico fisheries. The APs review the provisions of

proposed amendments to FMPs, as well as stock assessment information used by the council to set the total allowable catch (TAC) for a stock and the measures necessary to prevent TAC from being exceeded, i.e., bag limits, size limits, quotas, seasonal closures, etc.” (GMFMC 2000a). (Refer to Appendix C for a listing of Reef Fish Advisory Panel members.)

- “Scientific and statistical committees (SSCs) consist of biologists, economists, sociologists, and natural resource attorneys who are knowledgeable about the technical aspects of fisheries in the Gulf. They advise the council on the scientific validity of analyses supporting the provisions of all amendments to FMPs, as well as for stock assessment information used by the council. The Standing SSC meets for nearly every SSC meeting. The species SSCs meet in conjunction with the Standing SSC when appropriate to the species being considered” (GMFMC 2000a). (Refer to Appendix C for a listing of SSC committees and members.)

### Economic Factors

<p>“The acceptability of a MPA to the general public and to direct marine resource users will depend significantly on whether the perceived benefits are greater with or without the MPA” (National Research Council 2001).</p>
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The following are economic factors taken into consideration regarding the establishment of the grouper closures:

- “GMFMC determined that 242 commercial vessels historically fishing in the Gulf of Mexico EEZ would be negatively affected by the seasonal and year-round area closures” (*Federal Register*, May 19, 2000).
- (Seasonal closure) Logbook data of the approximate percentage of total commercial landings of gag, black, and red grouper made between February 15 and March 15 for the years 1993 to 1998 were used to calculate economic impacts (GMFMC 1999i).
  - Assuming no changes in the distribution of effort, the seasonal closure would reduce commercial landing of gag, black, and red grouper by 9.9 percent, 9.9 percent, and 7.4 percent, respectively, using the 1993 to 1998 as a base period.
  - Applying the percent reduction in landings to the 1990 to 1998 average total revenues for each of the three species, the resulting reductions in commercial revenues would be approximately \$0.43 million for gag, \$0.13 million for black grouper, and \$0.97 million for red grouper.
  - The seasonal closure would not directly affect the recreational fishery because it applies only to the commercial sector. Indirectly, the recreational sector would stand to benefit from the commercial closure because fishing competition between the commercial and recreational sectors would be reduced, at least in those areas where both sectors fish. (GMFMC 1999i)
- (Year-round closure) Exacted economic impacts cannot be properly assessed in the absence of necessary information on fishing activities in the subject areas (GMFMC 1999i).
  - If the closure contributes significantly to the long-term sustainability of the stock, then it will be perceived as beneficial. However, results are still waiting to be seen. “The economic issue can be characterized as a tradeoff between the short-term (and long-term) costs of having an area closed to fishing and the future benefits from that management measure” (GMFMC 1999i).

## Areas of Conflict/Difficulty

“MPA proposals often raise significant controversy...” (National Research Council 2001).

The following are areas of conflict or difficulty that arose during the establishment of the grouper closures:

- The council’s initial intent was to prohibit the use of all fishing gear within the closed areas in order to maximize enforceability of the closed area, as well as to minimize the negative impact from incidental catch and release of reef fish while targeting other species (GMFMC 2002a).
  - GMFMC asked that the NMFS HMS Division implement a compatible closed area for the species under its management jurisdiction (tunas, swordfish, oceanic sharks, and billfishes) (GMFMC 2002a).
  - “This led to a legal challenge from a recreational fishing organization (Coastal Conservation Association, or CCA). CCA felt that the no-take areas unfairly restricted access to the resource by recreational fishermen, and that restrictions on fishing for migratory species higher up in the water column were unwarranted because they would have no impact on the bottom reef fish species” (GMFMC 2002a).
  - “As part of a settlement to the legal challenge, NMFS agreed to hold the council’s request to implement an HMS closure in abeyance, while research is conducted into the impact of the no-take areas, the effect of pelagic trolling on and ability to reach reef fish species, and the impact on enforceability by allowing pelagic trolling in the no-take areas” (GMFMC 2002a).

## Technology-Based Decision-Support Tools

“MPA formulation and operation require, and benefit from, higher levels of technology in information handling and onsite management... Computer assisted mapping tools, used in storing, retrieving, processing, and displaying spatial data may be particularly useful” (Salm and others 2000).

Technology-based decision-support tools were not utilized during the establishment of the grouper closures.

## Enforcement

“Effective enforcement is essential to achieve MPA objectives and sustain cooperation from the general public and affected user groups” (National Research Council 2001).

- The grouper closures are enforced by the U.S. Coast Guard, but rely heavily on self-policing.
  - There is also potential for vessel monitoring systems (VMS) to monitor commercial vessel locations in the future.
    - Amendment 16A to the Reef Fish FMP, submitted to NMFS in June 1998, was partially approved and implemented on January 10, 2000. The approved measures provided that “...NMFS establish a system design, implementation schedule, and protocol to require implementation of a vessel monitoring system (VMS) for vessels engaged in the fish trap fishery, with the cost of the vessel equipment, installation, and maintenance to be paid or arranged by the owners as appropriate...” (GMFMC 2002b).
- During the Sustainable Seas Expedition, while the NOAA Ship *Gordon Gunter* cruised the reserve, commercial vessels were spotted actively engaged in fishing near the spawning sites. The U.S. Coast Guard intercepted two of these vessels and found reef fish on board (GMFMC 2002a).

## Boundaries

Clear delineation of spatial boundaries is important so that both managers and users know where structured management has been implemented.

- Refer to the *Reef Fish Fishery Management Plan to set 1999 Gag/Black Grouper Management Measures (Revised)* and/or the *Federal Register* (January 26, 2000) for boundary coordinates.

## Legislation and/or Regulation

MPA establishment is typically authorized by existing legislation, but implementation frequently requires new regulations. Existing legislation may guide and/or provide context for MPA processes.

- Magnuson-Stevens Fishery Conservation and Management Act works to set a national standard for fishery conservation and management, and apply those national standards by authorizing regional fishery management councils to prepare fishery management plans for each fishery.
  - Closed areas will continue to be considered as part of the development of the council's Reef Fish Plan Amendment 18, which is intended to be an overall review of grouper management in general.
- February 15 through March 15 closure: "no one is allowed to buy or sell gag, black, or red grouper and no one aboard a vessel who holds only a commercial permit for Gulf reef fish may possess any of these three species in the Gulf. However, people who hold charter vessel or headboat permits in addition to commercial Gulf reef fish permits may continue to retain gag, black, and red grouper under the recreational bag and possession limit, provided the vessel is operating as a charter vessel or headboat" (NOAA 2000).

## Media/Public Outreach

Entities involved in MPA designation processes frequently undertake a variety of public outreach and education activities.

Sources of media/public outreach used throughout the grouper closure process include the following:

- NMFS news releases
- NOAA press releases
- A toll-free twenty-four hour hotline is provided for reporting violations. Violation reports and questions are addressed to the Florida Fish and Wildlife Conservation Commission, or the NOAA Fisheries Office of Law Enforcement.
- GMFMC educational process on marine reserves:
  - Publications available on the GMFMC Web site ([www.gulfcouncil.org](http://www.gulfcouncil.org)):
    - *Marine Reserves for Fishery Management: Questions and Answers*
    - *Marine Reserves Technical Document: A Scoping Document for the Gulf of Mexico*
  - Public Workshops

Refer to Appendix B for a listing of additional readings.

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Note: All World Wide Web addresses listed in this section were accessible on January 31, 2003, and accurately reflected information referenced here and in the text. Site content at these links may change, or the links may become inactive at any time.

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**APPENDIX A. Public Hearings, Workshops, and Meetings [Gulf of Mexico Grouper Closures]**

**Public hearings for the regulatory amendment to the *Reef Fish Fishery Management Plan to Set 1999 Gag/Black Grouper Management Measures* (which included the proposed closures)**

<b>Date</b>	<b>Location</b>
December 7, 1998	Key West, Florida
December 8, 1998	Steinhatchee, Florida
December 9, 1998	Madeira Beach, Florida
December 10, 1998	Fort Meyers, Florida
December 14, 1998	Panama City, Florida
December 15, 1998	Orange Beach, Alabama
December 17, 1998	Larose, Louisiana

**Public workshops during marine reserves educational process**

<b>Date</b>	<b>Location</b>
August 9, 1999	Brownville, Texas
August 10, 1999	Port Aransas, Texas
August 11, 1999	Galveston, Texas
August 12, 1999	New Orleans, Louisiana
August 16, 1999	Biloxi, Mississippi
August 17, 1999	Orange Beach, Alabama
August 18, 1999	Panama City Beach, Florida
August 19, 1999	Steinhatchee, Florida
August 23, 1999	Key West, Florida
August 24, 1999	Tampa, Florida

**Public scoping meetings for continuation of reserves**

<b>Date</b>	<b>Location</b>
June 19, 2002	Panama City, Florida
June 20, 2002	Tampa, Florida

**APPENDIX B. Additional Readings** [Gulf of Mexico Grouper Closures]

Environmental Defense. 2002. “Gulf of Mexico: Fishery Management Council Creates MPAS.” Austin, Texas. June 19. Web site:  
 <[www.environmentaldefense.org/documents/2138\\_fisherymanagement.pdf](http://www.environmentaldefense.org/documents/2138_fisherymanagement.pdf)>.

Gulf of Mexico Fishery Management Council (GMFMC). 2002. “Scoping Meetings Scheduled on Continuation of Madison/Swanson and Steamboat Lumps Marine Reserves.” In *Louisiana RodnReel.com*. May 30. Web site:  
 <[www.rodnreel.com/news/news.asp?cmd=view&NewsID=894](http://www.rodnreel.com/news/news.asp?cmd=view&NewsID=894)>.

National Marine Fisheries Service. 2000. “New Regulations Announced for the Gulf of Mexico Gag, Black, and Red Grouper Fisheries.” St. Petersburg, Florida. June 13.

**APPENDIX C. Advisory Panel and Committee Members** [Gulf of Mexico Grouper Closures]

**Reef Fish Advisory Panel Members**

<b>Name</b>	<b>State</b>	<b>Representation</b>
Philip Horn, Chair	Mississippi	Processor
Robert Shipp, V. Chair	Alabama	Science/ Academia
Ralph Allen	Florida	Charterboat
Gary Bonanno	Louisiana	Charterboat
Michael Dolfi	Texas	Processor
Marty Harris	Florida	Commercial Fishermen
Chris Jenkins	Louisiana	Recreational Fishermen
Gus Loyal	Florida	Charterboat
Gilmer Nix	Florida	Recreational Fishermen
Mike Rowell	Alabama	Charterboat
Eric Schmidt	Florida	Commercial Fishermen
Robert Spaeth	Florida	Commercial Other
Frank Stephenson	Florida	Recreational Fishermen
Ed Thompson	Florida	Charterboat
Eddie Toomer	Florida	Commercial Fishermen
Bill Tucker	Florida	Commercial Fishermen
Tom Turke	Florida	Charterboat
William Ward	Florida	Commercial Fishermen
Wayne Werner	Louisiana	Commercial Fishermen
Bob Zales, II	Florida	Charterboat

**APPENDIX C. Advisory Panel and Committee Members (continued)**

**Standing Scientific and Statistical Committee (SSC) Members**

<b>Name</b>
Stephen Thomas, Chair
Walter Keithly, V. Chair
Charles Adams
Robert L. Colura
James H. Cowan, Jr.
Sandra L. Diamond
Billy F. Fuls
James Geaghan
Douglas Gregory, Jr.
Albert Jones
Frank Kennedy, Jr.
John Roussel
Mike Wascom
James G. Wilkins
Charles Wilson, III.

**Special Reef Fish SSC Members**

<b>Name</b>
Page Campbell
Gary Fitzhugh
Gene Huntsman
Rick Kasprzak
Bill Lindberg

**Ad Hoc Marine Reserves SSC**

<b>Name</b>
Walter Milon, Chair
James Bohnsack
Billy Causey
Felicia Coleman
Christopher Koenig
Don Levitan
Eugene Proulx
Stephen Thomas
John "Wes" Tunnell, Jr.
Fredrick C. Whitrock

**APPENDIX D. Stakeholder Responses to Questions on Marine Reserves**  
 [Gulf of Mexico Grouper Closures]

*Note: Most Common Responses in **Bold***

**Appropriate Uses: The following are categorized responses to the prompt:**  
**“An appropriate use for a marine reserve would be...”**

<b>Research</b>
<b>Habitat Protection</b>
<b>Spawning Area Protection</b>
Protection of Biological Entities
Biodiversity
Management
Artificial Reefs
Ecotourism
Protection of Marine Ecosystems
Ensuring Survivability
Protection of Critical Life-Stages
Promote Inter-Jurisdictional Cooperation
Provide Incentives
Reduce Bycatch
Benefit Users
Provide Socioeconomic Benefits

**Criteria: The following are categorized responses to the prompt: “What criteria need to be considered if marine reserves were to be established in the Gulf of Mexico?”**

<b>Siting/Location</b>
<b>Socioeconomic</b>
<b>Enforcement</b>
Evaluation
Management
Compensation for Loss of Activity
Stakeholder Involvement
Science
Inter-Jurisdictional Cooperation
Size
Artificial Reefs
Degree of Human Use
Sunset Provision
Common Sense
Public Interest
Conservation Not Preservation

**APPENDIX D. Stakeholder Responses to Questions on Marine Reserves (continued)**

**Problems:** The following are categorized responses to the prompt: “What problems do the council need to consider if marine reserves are to be established in the Gulf of Mexico?”

<b>Enforcement</b>
<b>Displacement</b>
<b>Credibility/Mistrust</b>
Unnecessary Management
Promise More Than Deliver
Uncertainties
Adequate Data
Jurisdiction
“NIMBY”
Compression Into Limited Areas
Disrupt Predator/Prey Relations
Conflict of Interests
Navigation
Migratory Species
Incorporation of Local Knowledge
Education
Compensation

## San Juan County Bottomfish Recovery Zones



Source: ([www.co.san-juan.wa.us/mrc/ntz.html](http://www.co.san-juan.wa.us/mrc/ntz.html))

*Note: Each case study uses the terminology adopted by that particular process, and is not based on a consistent definition.*

## **Abs tract**

In 1996, the San Juan County Marine Resources Committee created a Bottomfish Recovery Program in an effort to protect declining bottomfish populations in Washington State. This program created eight voluntary no-take areas called bottomfish recovery zones, and consists of an education/outreach program as well as a monitoring program. The effectiveness of the recovery zones for protecting fisheries has not yet been demonstrated given that fisheries impacts take a long time to quantify. However, the Bottomfish Recovery Program has led to a sense of stewardship in the county, where people recognize, value, and actively protect their resources.

## **Introduction**

In an effort to protect declining bottomfish populations in Washington State, a local entity, the San Juan County Marine Resources Committee, established eight voluntary bottomfish recovery zones in 1996. This local process occurred after a failed attempt to create a National Marine Sanctuary, and after a state initiative implemented five marine reserves known as the San Juan Island Marine Preserves. Overlapping with, and stemming from, this local process has been a regional effort that led to the Northwest Straits Marine Conservation Initiative. While this case study will focus on the establishment of the bottomfish recovery zones, the local process will be set within the broader context of these other federal, state, and regional activities.

Rising human populations are causing alterations to the natural resources and native ecosystems of Northwest Washington. Activities such as over-harvesting, pollution, and destruction and alteration of habitats have caused declines in many species living in the Northwest Straits marine ecosystem. While federal and state regulations have provided some protection to resources, there is little evidence to suggest that current management policies have slowed or reversed the trends of resource decline (Murray-Metcalf Northwest Straits Citizens Advisory Commission 1998). Beginning in the 1980s, attempts were made to establish a National Marine Sanctuary in the Northwest Straits. “These efforts failed as many citizens and local governments opposed the idea of federal control – leaving the region with significant natural resource issues and limited means for addressing them” (Winger 2001).

When the sanctuary efforts failed, local citizens who wanted the protection that a federal program could have provided were left with concern for their deteriorating local marine resources (Winger 2001). The San Juan Board of County Commissioners (BOCC) decided that protection of the area’s natural resources could be managed at the local level and, as a result, established the San Juan County Marine Resources Committee (MRC). Representing the community’s interests regarding marine resource issues, the MRC took action to protect the declining bottomfish populations by initiating the San Juan County Bottomfish Recovery Program (BFRP). BFRP established eight voluntary no-take areas called bottomfish recovery zones (BRZs) and consists of an education/outreach program as well as a monitoring program. The most common types of bottomfish found in the islands include lingcod, cabezon, and several species of rockfish. The recovery areas are intended to help assure the survival of spawners in bottomfish populations because they are expected to produce an increase in offspring in recovery areas, as well as in adjacent areas through a spillover effect.

The process by which the BRZs were created was simple, with little formal structure, which is why the process was thought to have worked so well (Slocomb, Personal Communication, 2002). Additionally, because this program depends largely on voluntary participation, it will only succeed through the goodwill of fishermen who recognize the value of allowing spawners to survive in the protected areas (Osborne and others 2001). As an alternative to typical regulations, voluntary marine protected areas (MPAs) have no legal standing and therefore can be proposed or changed at any point in time, as well as

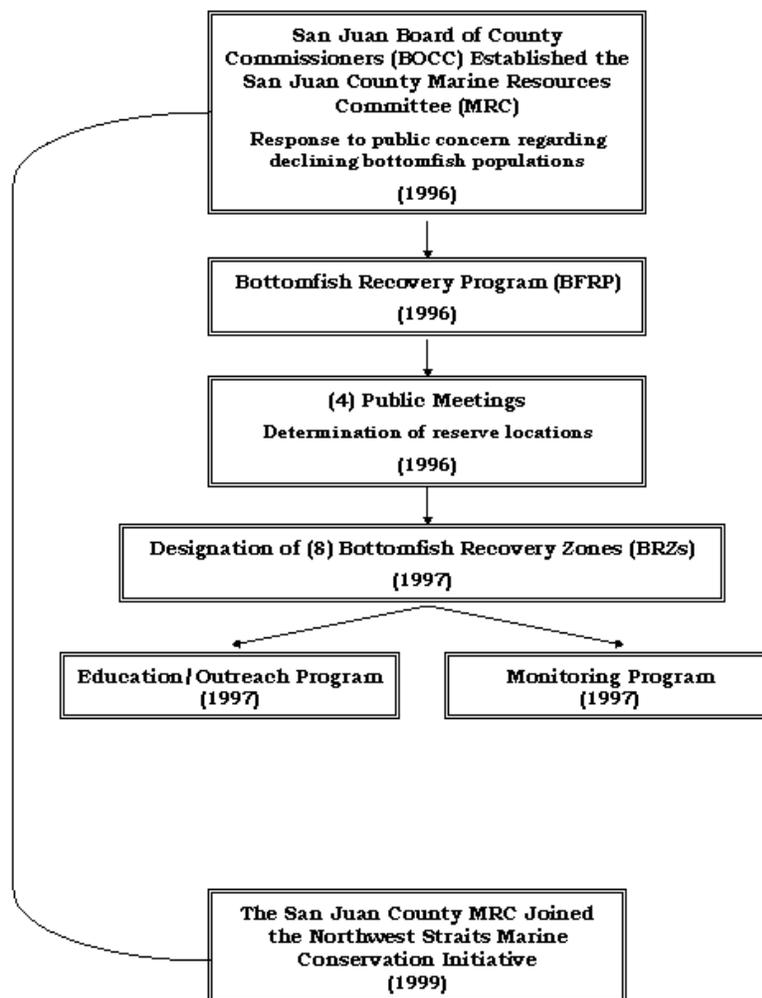
put into practice more quickly (Koski 2001). Therefore, voluntary MPAs provide the flexibility required to adjust management strategies when needed, and are thought to do so with less cost and better compliance (Osborne and others 2001).

Both the MRC process and the original sanctuary proposal served as a catalyst for the development of the Northwest Straits Marine Conservation Initiative, a state-based program that coordinates local action through the establishment of county-based MRCs. As the first local group of its kind, the San Juan County MRC served as a model for the other six counties that have since joined the Northwest Straits Marine Conservation Initiative (Winger 2001).

### Process Diagram

“An important factor in the establishment of MPAs is the process by which they are nominated and designated” (Brody 1998).

The San Juan County Bottomfish Recovery Zone process has occurred as follows:



## Timeline: (1972 to present)

This section details the sequence of events in the establishment process.

- Federal and State MPA Initiatives:
  - Federal Initiative (1972 to 1996):
    - The National Marine Sanctuaries Act (NMSA) of 1972 authorizes the secretary of commerce to designate and manage areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, or aesthetic qualities as National Marine Sanctuaries.
    - In 1983, the National Oceanic and Atmospheric Administration (NOAA) published a proposed site evaluation list (SEL) based on a program development plan, program regulations, and recommendations made by regional resource evaluation teams.
    - In the SEL, published on August 4, 1983 (*Federal Register*, September 15, 1999), the Northwest Straits site was listed as “Washington State Nearshore” and included the following seven counties: Whatcom, Skagit, Snohomish, Island, San Juan, Clallam, and Jefferson.
      - “The proposed designation was based on the natural beauty of the area, and perceived value of the local biological resources, and the anticipated threats to their persistence posed by increasing urbanization” (Klinger 2001).
    - The Northwest Straits site was chosen from the SEL as an active candidate for designation, listed as “Northern Puget Sound” by the 1988 reauthorization of the Marine Protection, Research, and Sanctuaries Act of 1972 (*Federal Register*, September 15, 1999).
    - In 1993, a discussion paper was drafted for public review that presented the rationale for a federal sanctuary entirely in state waters, as well as a description of ways in which the sanctuary could address threats to marine resources.
    - Throughout 1995, NOAA, in conjunction with the Washington State Department of Ecology, held focus group meetings and workshops to ensure that the information under consideration was accurate before developing a draft environmental impact statement/management plan.
    - In 1996, NOAA decided to end the sanctuary consideration process in the Northwest Straits. The agency stated, “for reasons related to designation guidance contained in the 1996 reauthorization of the NMSA, the findings of a Congressionally-convened Northwest Straits Citizens Advisory Commission and limited agency resources, NOAA is withdrawing from consideration at this time the site for designation as a national marine sanctuary” (*Federal Register*, September 15, 1999).
      - While local citizens were initially interested in the sanctuary designation, opinions changed because NOAA was unable to explain exactly how the sanctuary designation would affect the community (Winger 2001; Slocomb, Personal Communication, 2002).
        - Dennis Willows, director of the University of Washington’s Friday Harbor Labs, said that although fishermen in the Northwest Straits were encouraged to attend meetings throughout the sanctuary process, they felt they were asked to agree with someone else’s ideas and not contribute their own (Personal Communication, 2002).
      - Many government officials and business leaders in San Juan County strongly opposed the National Marine Sanctuary because they viewed it as a federal power grab over their local waters (Moriarty 1999).
        - “Every city, county, town and port—except Port Townsend—signed resolutions opposing the sanctuary designation” (Winger 2001).

- State Initiative – San Juan Island Preserves (1969 to present):
  - The Washington Department of Fish and Wildlife (WDFW) has established a total of 18 marine sites as either Marine Preserves or Conservation Areas. Five of these sites are located in the San Juan Islands.
    - The first area protected by WDFW was Edmonds Underwater Park, which was adopted at the request of local divers and the city of Edmonds in 1969.
  - In the late 1980s, University of Washington staff at Friday Harbor Laboratories (FHL) approached WDFW with a proposal for eight no-take marine preserves in the San Juan Islands.
  - After considering FHL’s proposal, WDFW developed a proposal for five sites to be partially closed to harvest.
  - The Department of Fisheries included the proposed areas in the annual regulation hearings, during which a large number of concerns and issues were raised.
    - Criticisms raised led to reconsideration of the proposal over the next three years. Some local residents did not want their area or fishery closed to harvest and did not understand why it was needed. Others saw this as only benefiting the University of Washington, which was not only the initiator of the proposal, but the owner of the land adjoining the sites (Mills, Personal Communication, 2002).
  - As a result of hearings, testimony, and letters, the five preserve sites were modified in various ways and eventually adopted in 1990.
    - The preserves were established to protect marine biodiversity and to provide undisturbed habitats for scientific research in an area that is considered to be heavily affected by fishing.
    - Fishing restrictions vary among the preserve sites, but in general, they restrict all forms of fishing except for salmon, herring, and in some areas, crab.
  - The preserves are patrolled sporadically by commissioned WDFW officers. However, no enforcement program has been developed specifically for the sites.
- San Juan County Initiative (1996 to present):
  - The San Juan County Marine Resources Committee (MRC) was established in 1996.
    - “The debate over the National Marine Sanctuary had raised the citizens’ awareness levels regarding the area’s resources and the community was vocalizing their concerns to the Board of County Commissioners (BOCC)” (Winger 2001). In an effort to prove that resource management could be handled locally, the San Juan BOCC initiated the MRC, which was designed to be a citizen-based committee for advising the BOCC on marine issues (Winger 2001).
    - The MRC’s overall goals were to protect the existing high quality of the marine resources in San Juan County as a healthy habitat for indigenous marine species and to assure sustainable uses of the marine waters by county residents and visitors (San Juan County Board of Commissioners, Resolution Number 35-1996).
    - The MRC was given the following five tasks:
      - Assess the effectiveness of current state and federal regulations and programs that have an impact on the county’s marine resources;
      - Recommend appropriate methods of handling issues that affect the marine environment;
      - Recommend the best approach to create a plan for San Juan County marine resources while taking existing laws and political entities into consideration;
      - Propose programs, regulations and actions;
      - Establish and encourage nongovernmental efforts with county support, but without monetary support from the county itself. (San Juan County Board of Commissioners, Resolution Number 35-1996).

- Members of the MRC have special knowledge about marine resource issues or are citizens concerned with the quality of the marine environment and its uses (Winger 2001). (Refer to Appendix C for a listing of MRC members.)
- San Juan County Bottomfish Recovery Program (1996 to present)
  - “Rockfish and lingcod population have been in decline since the 1970’s, with continued long-term declines in abundance” (Palsson and others 1997). “Declining stock trends have continued despite enacting traditional restrictions on commercial and recreational fisheries. Because of this, alternative strategies have been sought to rebuild rockfish populations and have led to an investigation of no-take refuges as a fisheries management tool” (Palsson 1998).
  - As a result of this evidence, the MRC made depleted bottomfish populations the first priority and established the Bottomfish Recovery Program (BFRP).
  - (~March 1997) Approximately one year was spent developing a program that was modeled after other MPA success stories from the region, such as Edmonds Underwater Park.
  - The MRC consulted with scientists, resource managers, and government specialists to better understand the problem of overfishing and use of marine reserves as a fishery management tool.
  - The MRC held four public meetings with interested local stakeholder groups on each of the major islands to determine possible locations for the marine reserves.
    - The meetings took place concurrently on San Juan, Orcas, Lopez and Shaw Islands. (Refer to Appendix A for dates and locations of public meetings.)
      - Attendance was low for all of these meetings. Approximately six to seven people attended the meeting in San Juan Island, while approximately fifteen people attended the meeting at Shaw Island. However, attendance is unknown for the meetings on Orcas and Lopez Islands (Davis, Personal Communication, 2002).
    - Meeting attendees, who were mostly fishermen, were asked the following question: “Where did you catch fish in past years, but cannot at this time, because of probable ‘fished-out’ status of the location?” (Kaill 1999; 2001).
      - In response to this question, attendees noted locations with tick marks on a chart.
        - Dennis Willows, director of the University of Washington’s Friday Harbor Labs, noted that using this technique to identify sites allowed the attendees to feel they had “nothing to lose” (Personal Communication, 2002).
      - The largest assemblages of tick marks were identified as the most popular site candidates, and biologists were consulted to screen the appropriateness of these potential sites.
    - Ultimately, eight sites were selected as recovery areas (Refer to Table 1 for BRZ site locations and descriptions.)
      - “The number and sizes of the reserves were based on political feasibility” (Klinger 2001).
  - After meeting with managers from the WDFW, the MRC learned it was unrealistic to get protection for the BRZs in a timely manner through conventional fishing regulations. As a result, the MRC asked the community to respect these reserve areas on a voluntary basis (Kaill 1999; 2001).
  - In June 1997, after receiving recommendations from the MRC, the BOCC passed a resolution officially designating eight voluntary no-take reserves, or bottomfish recovery zones (BRZs), for the protection and recovery of bottomfish species (San Juan County Board of Commissioners, Resolution Number 49-1997).

- The reserves are relatively small, ranging from about 12 to 60 hectares, and protect less than one percent of the shoreline within the county (San Juan County Marine Resources Committee, unpublished data, in Klinger 2001).
- The BFRP contains two program elements that operate simultaneously: 1) education/outreach and 2) monitoring:
  - Under the education/outreach program, the public is informed through advertising and making personal contact.
    - Advertising the benefits and limitations of the program to residents and visitors is seen as essential to achieving overall compliance (Koski 2001).
    - “This program cannot succeed without public support and participation” (Koski 2001).
  - Under the monitoring program, research divers use established procedures to systematically count fish and fish species in the reserve and reference areas.
    - To evaluate if the BFRP has been effective in increasing numbers, species, and age classes of bottomfish, it is necessary to first establish a baseline from which to compare (Koski 2001).
    - Life history characteristics associated with bottomfish indicate that it may be a decade or longer before results of such a program could be detectable. For this reason, the effectiveness of these efforts has not yet been demonstrated (Klinger 2001). However, a reduction in fishing effort within the BRZs has been noted as public awareness and support of the program continues to grow (Klinger 2001).
  - A coordinator was hired through an EPA grant to oversee both program elements.
- The MRC continues to support and develop the BFRP, and is evaluating the scope of each program element under the constraints of limited funding.

**Table 1. Bottomfish Recovery Zones (BRZs): Locations and descriptions (Kaill 1999; 2001)**

Zone 1	Lawrence Point	Located on the east side of Orcas Island. Zoned on northeast side, running from the point northwesterly to the round marker (1500 yards).
Zone 2	Bell Island	Located at the east end of Wasp Passage. Zoned on east side from the round marker on the north end, southerly to the reef (300 yards).
Zone 3	Charles Island	Located at the southwest end of Lopez Island. Zoned on southwest side, from the west point southeasterly to the round marker (600 yards).
Zone 4	Pile Point	Located on the west side of San Juan Island. Zoned from Pile Point northwesterly to the round marker (600 yards).
Zone 5	Lime Kiln Lighthouse	Located on the west side of San Juan Island. Zoned from the lighthouse north to the round marker and south to a second round marker (300 yards each direction).
Zone 6	Kellett Bluff	Located on the southwest side of Henry Island. Zoned from navigation light on bluff northerly to the round marker (800 yards).
Zone 7	Gull Rock	Located on the northwest side of Flattop Island. The entire shoreline of Gull Rock is zoned. Round marker is located on top of rock.
Zone 8	Bare Island	Located north of Waldron Island. The entire shoreline of Bare Island is zoned. Round marker is located on top of the island.

- Northwest Straits Marine Conservation Initiative (1997 to present):
  - “The overall goal of the Northwest Straits Marine Conservation Initiative is to reverse the decline of the region’s marine resources through sound science and local-level support” (Winger 2001).

- In 1997, U.S. Senator Patty Murray and U.S. Congressman Jack Metcalf convened a diverse panel of citizens called the Northwest Straits Citizens Advisory Commission (CAC) to assess the ecological health of the Northwest Straits marine ecosystem and to recommend steps to improve the region's sustainability.
- The CAC initiated meetings in May 1997.
- In August 1998, after a year of research and discussion, the CAC issued the *Report to the Convenors*. The report concluded that a coordinated effort, blending good science with grassroots consensus building, would be the best approach to conserving local marine resources.
  - The CAC made a recommendation to create a federally-funded, regional, voluntary program for the seven counties bordering the Northwest Straits, modeled after the program established in San Juan County in 1996.
  - "A network of local, county-based Marine Resources Committees (MRCs) would be established in each of the seven Northwest Straits counties to protect and restore marine resources" (Northwest Straits Marine Conservation Initiative, 2000 through 2001).
    - The MRCs would utilize existing state and local authorities, and would base their actions on sound scientific information, as well as on the overall needs of the ecosystem.
    - The MRCs would coordinate their activities through the Northwest Straits Commission (NWSC), which was to be formed to provide technical assistance, integrate scientific information, develop ecosystem-level coordination, and guide funding.
- Also in 1998, the Northwest Straits Marine Conservation Initiative was adopted by the U.S. Congress, providing a mechanism for local, tribal, state, and community representatives to collaborate for the purpose of protecting local marine resources.
  - Performance of the initiative would be measured using the eight benchmarks for performance identified in the "Report to the Convenors."
  - The authorization for this local marine conservation initiative expires in six years and includes an authorization for funding to support the effort.
- The initiative became effective in March 1999, when funds were received and available for spending.
  - "Congress passed a \$350,000 appropriation to support the initiative with funds made available through NOAA and administered by Terry Stevens, the Director of Padilla Bay National Estuarine Research Reserve" (Northwest Straits Marine Conservation Initiative, 2000 through 2001).
- In March 1999, San Juan County reauthorized its MRC, changing some provisions to conform to the requirements of the Northwest Straits Marine Conservation Initiative.
- Throughout the months of May and June, Skagit, Island, Whatcom, Clallam, and Jefferson counties passed resolutions establishing their MRCs and joining the initiative. Snohomish County passed its ordinance in September.
  - "The elected legislators from all seven counties passed their legislation unanimously, demonstrating their interest in protecting and restoring the vital marine resources in the Northwest Straits" (Northwest Straits Marine Conservation Initiative, 1999 through 2000).
- The counties solicited volunteers for their MRCs, and then made appointments by the fall of 1999, with the exception of Snohomish County, whose executive and council made its appointments in January 2000.
- "Congress appropriated \$652,000 for the initiative's second year that was made available in May 2000" (Northwest Straits Marine Conservation Initiative, 2000 through 2001).

## Objectives

In most cases, an MPA will have multiple objectives. These may include protection of representative habitats, conservation of rare species, fish stock restoration or enhancement, or safeguarding of historical sites, among others.

Objectives established for the BRZs include the following:

- To restore and conserve the bottomfish resources of San Juan County.
- To foster a sense of stewardship in the people of San Juan County, in that they recognize, value, and protect the resources of the waters surrounding the county.

## Current Status/Outcome

This section describes the current status of the MPA process, and includes information on any ongoing research that will help evaluate effectiveness.

- The voluntary, no-take status of the BRZs refers to all marine life, except salmon. Some of the educational and research efforts under the BFRP are detailed below.

A number of educational efforts have been conducted that pertain to the closed areas:

- Hayashi (2001) surveyed the effectiveness of past education and outreach efforts under the BFRP.
- The University of Washington's Friday Harbor Lab is supporting the program with courses, education, and outreach.
- In conjunction with the San Juan Nature Institute, the MRC has had grants approved to develop additional educational materials (Murray 1998b).
- A one-page public opinion survey was completed during 1999 to determine familiarity and support of the BFRP. Refer to Kaill (1999) for detailed survey results.
- Refer to "Media/ Public Outreach" for a full listing of educational and public outreach activities.

A number of research efforts have been conducted in the closed areas since they were designated:

- Two sites (Bell Island and Lime Kiln Lighthouse) are used as long-term monitoring sites to document changes in fish density sites (Kaill 2001).
- In the fall of 2000, a study using sonar tags was initiated to better understand the behavior of certain fish in the reserve areas (Griffin 2000). This method will allow scientists to determine the location of a tagged fish at any given time, and over time, to further understand if the reserve areas are in the right places and of the appropriate size (Koski 2001).
- According to Laura Arnold, a member of the MRC, the Whale Museum was contracted in 2001 to coordinate an effort using acoustic tagging techniques to investigate whether the size of the Lime Kiln site (as one sample) was large enough to be effective for lingcod (Personal Communication, 2002).
- "A complete inventory of the eight BRZs was undertaken to assess the signs in each of the reserves" (Koski 2001).
- A San Juan County Bottomfish Recovery Program Biological Assessment Project was conducted in 2001, which includes "twelve months of data collection on bottomfish abundance, demographics, and seasonal habitat use for the purpose of establishing an ecological baseline at three of the eight BRZs" (Northwest Straits Marine Conservation Initiative, 2000 through 2001).

- Funding has continued for the acoustic tagging work, targeting copper rockfish and some larval sampling, to see if the BRZs are large enough to work as reserves (Arnold, Personal Communication, 2002).
  - According to Eric Eisenhardt, fisheries biologist at the University of Washington, “the acoustic tag study has shown that for some species of rockfish the bottomfish recovery zones are indeed large enough (contrary to some popular opinions)” (Slocumb, Personal Communication, 2003).
- Social science research is also being conducted. “Fishers are surveyed on their knowledge and support of the program to evaluate the effectiveness of outreach efforts and to determine overall participation by fishers” (Koski 2001).

### **Stakeholders**

MPA establishment may impact a wide range of individuals and entities. This means a diversity of stakeholders has an interest in participating in the process.

Stakeholders interested in or affected by the establishment of the BRZs include the following:

- Charter boat operators
- General public
- Port operators
- Recreational boaters
- Recreational fishermen
- Scientists
  - University of Washington (Friday Harbor Labs)
- Treaty tribes (*Note: Treaty tribes were not initially included in the BRZ process; however, they are now represented on the MRC.*)
- Nongovernmental organizations
  - Friends of the San Juan’s
  - People for Puget Sound
  - Whale Museum (Soundwatch)
- Government agencies
  - County
    - San Juan Board of County Commissioners
  - State agencies
    - Department of Fish and Wildlife
    - Department of Natural Resources
    - Department of Ecology
    - Puget Sound Water Quality Action Team
    - State Parks and Recreation Commission
- Washington Sea Grant Program

## Advisory Groups

Advisory committees may be used during an MPA development process. The establishment of an advisory committee representing various interest groups and affected parties will facilitate local participation throughout the MPA establishment process, and may help to form partnerships by ensuring that all interests are represented in the final proposal (Brody 1998).

An advisory group was utilized during the establishment of the BRZs. Just as advisory groups are used in a federal process to gather input from stakeholders, the MRC played an equivalent role throughout this bottom-up process.

- The twelve members of the MRC have special knowledge about marine resource issues or are citizens concerned with the quality of the marine environment and its uses (Winger 2001).
  - MRC membership includes
    - Representatives from the environmental/naturalist sector
    - Representatives from the business/commercial sector
    - Representatives from the Town of Friday Harbor, the Port of Friday Harbor, and the San Juan County government.
  - All committee members are appointed by the BOCC.

## Economic Factors

“The acceptability of a MPA to the general public and to direct users will depend significantly on whether the perceived benefits are greater with or without the MPA”  
(National Research Council 2001).

No formal economic analysis was completed during the establishment of the BRZs.

## Areas of Conflict/Difficulty

“MPA proposals often raise significant controversy...” (National Research Council 2001).

The following are areas of conflict or difficulty that arose during and after the establishment of the BRZs:

- Sites are thought to be too small to achieve fishery protection objectives; however, now that the community supports them, they might be easier to expand.
  - “Now that the MRC is realizing that the areas are too small to achieve protection objectives, they will probably have the support to expand them” (Atkinson and Hart 2001).
- Not excluding salmon trolling from the BRZs has led to bycatch problems because bottomfish do not survive capture and release (Arnold, Personal Communication, 2002; Kaill 1999; 2001).
- “Out of ignorance, the MRC and county did not consult the tribes before or during the site identification and adoption process” (Arnold, Personal Communication, 2002).
  - The tribes are now represented on the MRC as well as the NWSC.
  - Dialogue continues between the tribes and federal, state, and local entities in marine resource management efforts, such as MPA establishment.
- Boundaries are unclear since each zone is identified only on the shoreline by landmarks and small signs, with no markers in the water (Koski, Personal Communication, 2002). In addition, the program logo is ambiguously interpreted, and the signs marking each site are too small to be effective (Fluharty, Personal Communication, 2002; Koski, Personal Communication, 2002).

## Technology-Based Decision-Support Tools

“MPA formulation and operation require, and benefit from, higher levels of technology in information handling and onsite management. . . Computer assisted mapping tools, used in storing, retrieving, processing, and displaying spatial data may be particularly useful” (Salm and others 2000).

Technology- based decision-support tools were not utilized during the establishment of the BRZs.

## Enforcement

“Effective enforcement is essential to achieve MPA objectives and sustain cooperation from the general public and affected user groups” (National Research Council 2001).

- The no-take status is voluntary. However, the BFRP is supported through education and monitoring efforts, which have led to increased compliance.
- The Whale Museum's Soundwatch Boater Education Program was created to respond to boat traffic in the San Juan Islands and its effects on marine species. Although known primarily for educating whale-watching boaters, Soundwatch also patrols the boundaries of marine protected areas, such as the BRZs.

## Boundaries

Clear delineation of spatial boundaries is important so that both managers and users know where structured management has been implemented.

- The zone's boundaries are marked on the adjacent shoreline of each reserve, and indicated by signs bearing the project logo, a rockfish held in two hands (Figure 1).
- All zones extend seaward one-quarter mile (approximately 400 yards) from the shoreline.
- Recent sign enhancement (2002): A marine reserve “bumper sticker” is being attached to existing signs. In addition, a second sign will be added to Bell Island and Pile Point, as well as Kellet Bluff upon approval from the Coast Guard.

**Figure 1. Project Logo**



## Legislation and/or Regulation

MPA establishment is typically authorized by existing legislation, but implementation frequently requires new regulations. Existing legislation may guide and/or provide context for MPA processes.

The following is a review of the legal and institutional framework for the management of the BRZs:

- WDFW has management authority over all fish and wildlife species, while several regulations and programs have specifically contributed to the establishment and management of marine protected areas in Puget Sound.
  - Since the outset of the county's BFRP program, there has been close cooperation with WDFW through research and networking in the groundfish program.

## Media/Public Outreach

Entities involved in MPA designation processes frequently undertake a variety of public outreach and education activities.

Resource users have been the prime target for outreach efforts since they have the most impact on the recovery zones, and their compliance with the BFRP guidelines is what makes the voluntary program successful (Hayashi 2001). Sources of media/public outreach used over the last few years include the following (Hayashi 2001; Koski 2001):

- BFRP brochures/posters are displayed and disseminated at local businesses, public marinas, boat launches and fuel stations.
- A BFRP Web page is accessible to the public.
- Signs mark the BRZs on the water. (See Figure 1.)
- The Whale Museum has an annual display booth at the San Juan County Fair and has incorporated the BFRP as part of its programs on display. In addition, the BFRP traveling exhibit is displayed annually at the Return of the Orcas Festival in Roche Harbor.
- A radio station in Bellingham runs BFRP public service announcements regularly during the morning talk show.
- The on-line publication of *San Juan Guide* includes a section of information on the BFRP.
- Public forums have been held on some of the islands in the county to increase general awareness of marine protected areas.
- The BFRP coordinator has given presentations to local clubs, such as the San Juan Kiwanis Club, San Juan Elderhostel Groups, and San Juan Cub Scouts.
- Local elementary school students learned about fish and the BFRP while creating artwork and a BFRP message that is now displayed at the Whale Museum.
- Local newspapers print articles related to the BFRP.
- Video cameras were deployed to survey the bottomfish habitat, and then made available to the public.
- The Emerald Seas Dive shop provides divers with opportunities to learn about and dive in the reserves through a "Dive the Reserve" program.
- Annually, the Port of Friday Harbor mails materials to port patrons. In 2001, this included BFRP brochures. Brochures were also included in pre-event mailers to yachting events at Friday Harbor and Roche Harbor.
- Soundwatch, a local organization focused on education of whale watching guidelines, monitors many of the BRZs while out on the water. Soundwatch approaches people fishing in the reserves,

distributes information about the BFRP, and asks the fishermen to respect the program by fishing in another area. Fishermen are also surveyed as to their knowledge and support of the program.

- Soundwatch has incorporated the BFRP message into regular regional boater education presentations.
- Through the Shorewatch Program, “Shorewatchers” are volunteers trained to estimate and monitor fishing pressure within the BRZs, as well as reference areas.
- The BFRP is present at the Einar Nielson Fishing Derby and Bayliner Convention held at Roche Harbor during the summer. An agreement was made to minimize possible damage to rockfish by
  - Removing rockfish as prize-winning species;
  - Preparing for BFRP presence at the award ceremonies, banquet, weigh-in station, and setting up space and facilities for a BFRP table at the show; and
  - Lobbying the organizers to be sympathetic to the goals of BFRP.
  - Soundwatch monitors the reserves during the derby days, talking with fishermen and monitoring by-catch from salmon trolling in the reserves.
- Various boater education classes around the county, such as Power Squadron, Mountaineers Paddling class, Camp Orkila’s Seasonal Kayak Staff Training, and the Whale Museum’s marine naturalist training classes have BFRP components to them.
- The MRC worked with local businesses to buy an ad on the back cover of the WDFW sport fishing regulations booklet for 2000 and 2001 (~750,000 copies). (*Note: This advertising program is an ongoing effort.*)
  - The ad includes the MRC and Bottomfish logos, a map of the reserve areas, and the logos of sponsors, and asks that fishermen support the program by not fishing in the BRZs.

Refer to Appendix B for a listing of additional readings.

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Note: All World Wide Web addresses listed in this section were accessible on January 31, 2003, and accurately reflected information referenced here and in the text. Site content at these links may change, or the links may become inactive at any time.

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**APPENDIX A. Public Scoping Meetings** [San Juan County Bottomfish Recovery Zones]

<b>Date</b>	<b>Location</b>
November 23, 1996	San Juan Island – Community Theater
November 23, 1996	Orcas Island – Doty's A-1 Cafe
November 23, 1996	Lopez Island – Firehouse
November 23, 1996	Shaw Island – Community Center

**APPENDIX B. Additional Readings** [San Juan County Bottomfish Recovery Zones]

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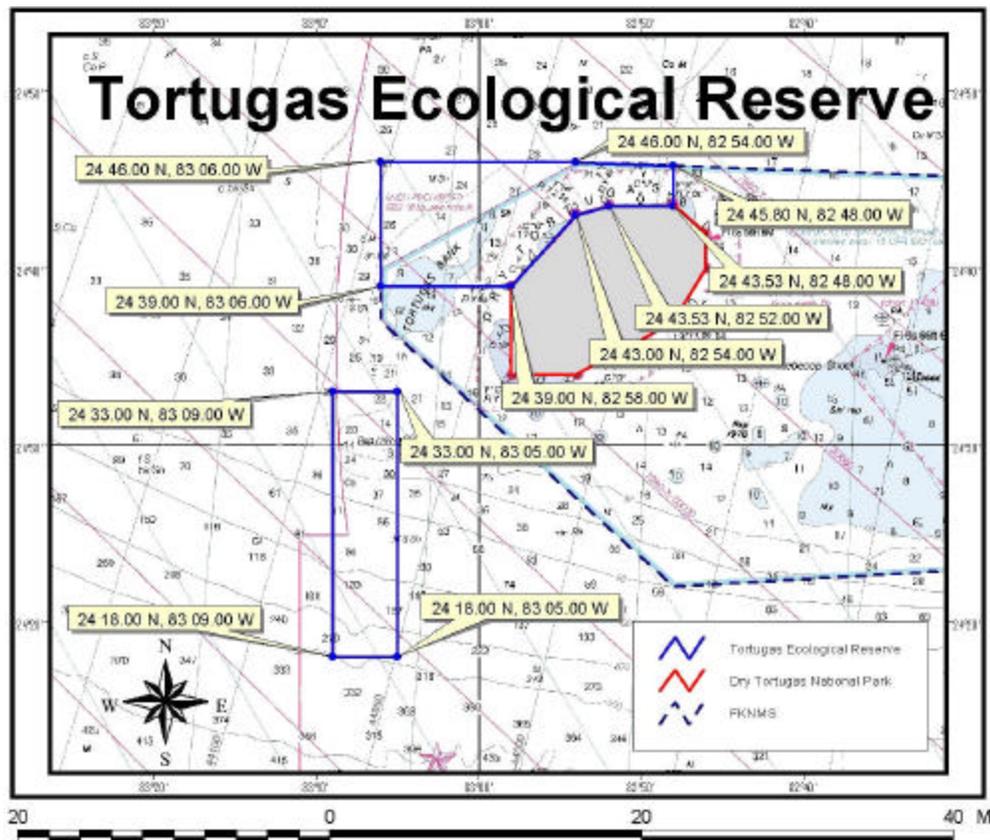
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**Appendix C. MRC Members** [San Juan County Bottomfish Recovery Zones]

<b>Name</b>	<b>Representation</b>
Jim Slocomb, Chair	Experience in the marine repair business, and knowledgeable about commercial and recreational boating issues
Mary Masters	Environmental consultant with experience in environmental engineering in the public and private sectors
David Loyd	Operator of Waldron Freight, and a member of the Island Oil Spill Association.
Brian Calvert	Commissioner with the Port of Friday Harbor and a yacht broker, diver and boater
Rich Osborne	Curator of science services at the Whale Museum on San Juan Island
Terrie Klinger	Researcher and instructor at the University of Washington's Friday Harbor Laboratories
Kelley Balcomb-Bartok	Associated with the Center for Whale Research, co-founder of The Orca Conservancy, and conducts field research on killer whales
Dennis Willows	Professor of Zoology at the University of Washington and the director of the UW Friday Harbor Laboratories
Kit Rawson	Senior Fishery Management Biologist for the Tulalip Tribes
Laura Arnold	San Juan County Planning Director
Mike Bertrand	Land Use Administrator for the Town of Friday Harbor
Kevin Ranker	Pacific Northwest Regional Coordinator of the Surfrider Foundation, a steering committee member of the Ocean Wilderness Network, and a member of the Olympic Coast National Marine Sanctuary and UC Davis Marine Ecosystem Health Program advisory boards
Tom McMillen	Owns and operates Salish Sea Charters, a whale and wildlife tour company
Jean Van Leuven	Operates Western Prince Cruises, a whale and wildlife tour company
Peter Fromm	Worked as a deckhand on tugs and fishing boats, and as a naturalist and captain on charter and whale watching boats. Author and publisher of "Whale Tales, Human Interactions with Whales," volumes I & II

## Tortugas Ecological Reserve



Source: ([www.fknms.nos.noaa.gov/graphics/maps/tortugas.jpg](http://www.fknms.nos.noaa.gov/graphics/maps/tortugas.jpg))

*Note: Each case study uses the terminology adopted by that particular process, and is not based on a consistent definition.*

## **Abstract**

The National Oceanic and Atmospheric Administration's National Ocean Service, working in cooperation with the State of Florida, Gulf of Mexico Fishery Management Council, and the National Marine Fisheries Service, established a 151 square nautical mile "no take" ecological reserve to protect the critical coral reef ecosystem of the Tortugas, a remote area in the western part of the Florida Keys National Marine Sanctuary. The reserve consists of two sections, Tortugas North and Tortugas South, and required an expansion of the sanctuary boundary to protect important coral reef resources in the areas of Sherwood Forest and Riley's Hump. The ecological reserve in the Tortugas was designed to preserve the richness of species and health of fish stocks in the Tortugas and throughout the Florida Keys by prohibiting all extractive uses. Restrictions on vessel discharge and anchoring will protect water quality and habitat complexity. The reserve's geographical isolation will help scientists distinguish between natural and human-induced changes to the coral reef environment. The Tortugas Ecological Reserve complements a parallel process undertaken by the National Park Service to provide similar protection in the Dry Tortugas National Park.

## **Introduction**

Marine zoning was implemented in the Florida Keys National Marine Sanctuary (FKNMS) to address several key management issues, such as the protection of biological diversity of the marine environment, reduction of user conflicts, and preservation of sensitive habitats and wildlife. As a management tool, marine zoning allows the sanctuary to focus management efforts on a small portion of the sanctuary while addressing issues in the broader, unzoned areas. The sanctuary, which encompasses approximately 2900 square nautical miles, currently uses five different marine zoning types. In addition to the Existing Management Areas (including Key Largo and Looe Key National Marine Sanctuaries, National Wildlife Refuges, state aquatic preserves, and state parks), Wildlife Management Areas, Ecological Reserves (including Western Sambo and Tortugas), Sanctuary Preservation Areas, and Special-Use Areas are zone types that have been established to ensure protection of sanctuary resources while allowing some uses to occur. (Refer to Appendix G for definitions of each zone type.) As defined in the FKNMS management plan, an Ecological Reserve is "designed to minimize human influences, to provide natural spawning, nursery, and permanent residence areas for the replenishment and genetic protection of marine life, and also to protect and preserve natural assemblages of habitats and species within areas representing the full range of diversity of resources and habitats found throughout the sanctuary" (USDOC 1996).

The Tortugas Ecological Reserve (151 square nautical miles in size) was created to protect the coral reef ecosystem of the Tortugas region, which lies in the western portion of the FKNMS. Due to its remote location, 70 miles west of Key West and more than 140 miles from Florida's mainland, the Tortugas region is viewed as having the best water quality in the sanctuary. Baitfish populations support seabird communities such as sooty and noddy terns, masked boobies, and the largest roosting population of frigate birds in the continental U.S. Additionally, the Tortugas have a high potential for producing and exporting the larvae of fish, lobster, and other marine organisms downstream to the Keys and east and west coasts of Florida due to their location at the juncture of major ocean currents (USDOC 2000b). Despite the Tortugas' beauty and productivity, studies show that decades of human use have led to resource loss and degradation, and recommend protection of the area's unique habitats (USDOC 2000b).

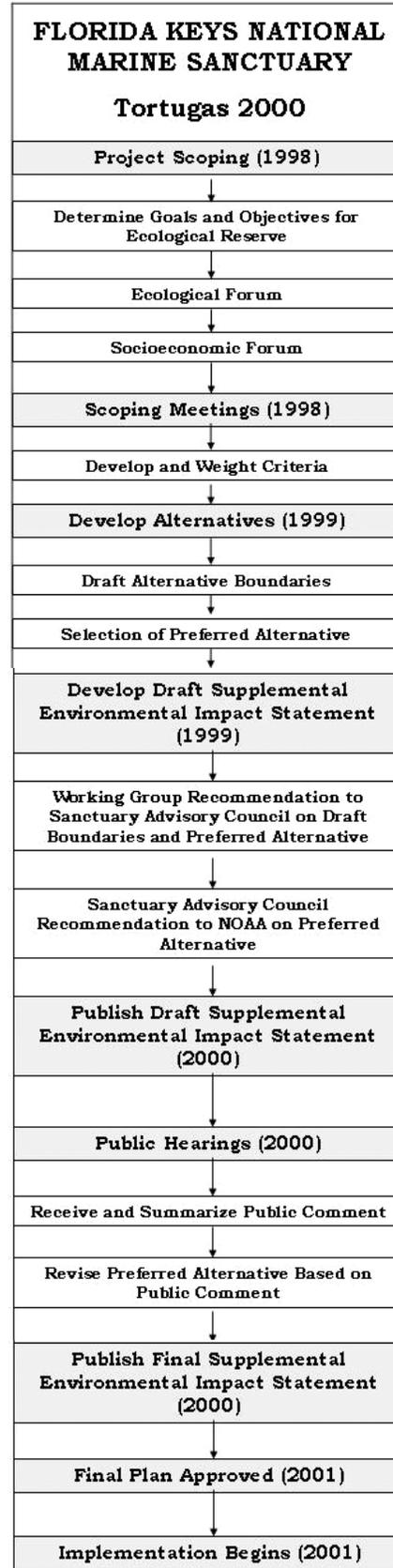
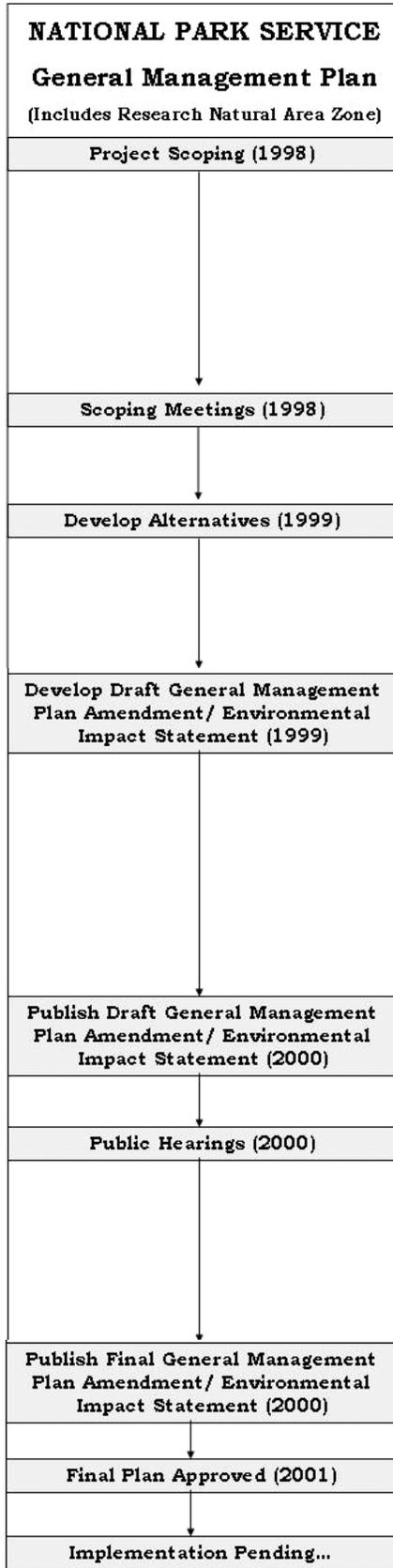
The Tortugas Ecological Reserve consists of two sections, Tortugas North and Tortugas South. Creation of the reserve required an expansion of the sanctuary boundaries to protect important coral reef resources in the areas known as Sherwood Forest, a site with abundant coral heads, and Riley's Hump, a low relief

coral bank that serves as a spawning aggregation site. Tortugas North and Tortugas South now fully protect all marine life through regulations that prohibit all extractive activities in these zones. Tortugas North is open to non-extractive diving, and the sanctuary has installed mooring buoys to protect the fragile coral reefs of the area from anchor damage. Tortugas South is open only to vessels in transit, and researchers and educators holding a valid sanctuary permit. Diving is prohibited in this section to protect fish spawning aggregations from possible disruption. In addition, the sanctuary is able to address anchor damage and water pollution from vessel discharges in the reserve (NOAA 2001).

### **Process Diagram**

<p>“An important factor in the establishment of MPAs is the process by which they are nominated and designated” (Brody 1998).</p>
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The Tortugas Ecological Reserve establishment process (“Tortugas 2000”), which was the culmination of a ten-year planning effort, has occurred as follows (next page). The National Park Service’s General Management Plan revision, which occurred parallel with the Tortugas Ecological Reserve design process is also shown:



## Timeline (1990 to 2001)

This section details the sequence of events in the establishment process.

- Establishment of the Florida Keys National Marine Sanctuary and Initial Planning for the Tortugas Ecological Reserve (1990 to 1997):
  - In 1990, the FKNMS was created by an act of Congress, and the Florida Keys National Marine Sanctuary and Protection Act was signed into law November 16, 1990 by President Bush.
  - From 1990 to 1996, sanctuary managers worked within the community and with local, state, and national agencies with interests in the Florida Keys marine environment to develop a comprehensive and integrated management plan for the 2800 square nautical mile sanctuary. A co-management agreement with the State of Florida was adopted, and a citizen-based Sanctuary Advisory Council was established to guide management plan development and promote public input.
  - In July 1997, the sanctuary implemented its *Final Management Plan*, which contained ten action plans to conserve and protect sanctuary resources. One strategy implemented at that time was a marine zoning plan that featured five marine zone types. Three of these marine zone types (Ecological Reserves, Sanctuary Preservation Areas, and Special-Use Areas) are fully protected zones that prohibit extractive activities. Twenty-three zones, encompassing 14.2 square nautical miles (one-half of one percent of sanctuary waters) were designated in 1997. Four of these areas allow catch-and-release fishing.
  - In the Draft Environmental Impact Statement and Management Plan released in April 1995, the National Oceanic and Atmospheric Administration (NOAA) proposed a fully protected reserve (110 square nautical miles in size) in the Tortugas region. This proposed reserve was not established because public comments indicated that 1) the proposed boundaries did not include the most significant coral reef resources, 2) the reserve would cause economic harm to several constituent groups, including commercial fishermen (USDOC 2000b), and 3) in order to be effective, waters in the Dry Tortugas National Park would also need to be protected in coordination with the Florida Keys National Marine Sanctuary (Bohnsack, Personal Communication, 2003).
  - The Final Environmental Impact Statement and Management Plan committed to undertaking a collaborative initiative to establish an Ecological Reserve in the most appropriate area. This process would include the National Park Service (NPS), which was revising its management plan for the Dry Tortugas National Park, and determine which areas of the Tortugas region needed protection and what degree of protection was appropriate. Although FKNMS and NPS have distinct missions and different management strategies, the agencies joined in a collaborative planning process by linking Web sites, holding joint scoping/ public meetings, and coordinating documents with the intention of minimizing confusion and maximizing public involvement (see process diagram on previous page) (National Park Service 2000).
  - The collaborative process known as “Tortugas 2000” was initiated in 1998 in compliance with the 1997 FKNMS Final Environmental Impact Statement and Management Plan (USDOC 1996).
- Tortugas 2000 (1998 to 2001):
  - February 1998: The Sanctuary Advisory Council (SAC), an advisory group to the sanctuary managers, established an *ad-hoc* working group composed of various stakeholders to recommend the size, shape, and placement of an Ecological Reserve in the Tortugas area. According to Billy Causey, Superintendent of the Florida Keys National Marine Sanctuary, “The concept of utilizing the SAC and a working group of the SAC was to broaden the amount of public input into the process. The working group provided the necessary conduit to the waterfront community”

(Personal Communication, 2003). (Refer to Appendix C for a listing of SAC and working group members).

- Working group members met five times over the course of 13 months to define operating goals, set ground rules, develop and weight criteria for the reserve, evaluate draft boundaries, and reach consensus on a recommended preferred boundary (USDOC 2000b).
- Working group meetings were publicly noticed and open to members of the community. The meeting agenda allowed time for caucusing between working group members and constituents present (Delaney, Personal Communication, 2003).
- All working group meetings were held in Key West, where the fishermen who would be most affected docked their vessels and sold their catch (Causey, Personal Communication, 2003).
- Individual meetings are chronicled below; however, consult the Tortugas 2000 Web site ([www.fknms.nos.noaa.gov/tortugas/](http://www.fknms.nos.noaa.gov/tortugas/)) for detailed meeting minutes. (Refer to Appendix A for dates and locations of public meetings.)
- In the beginning of the process, a foundation of knowledge on the Tortugas region was established using scientific and anecdotal information, personal knowledge, as well as knowledge passed on by constituents and users of the region (USDOC 2000b).
  - NOAA's National Ocean Service and the National Park Service created a site characterization document composed of three white papers. Topics, including physical oceanography and recruitment, fisheries, and benthic communities, were chosen for their relevance to reserve design (Cowie-Haskell and Delaney 2003).
  - In addition, Dr. Bob Leeworthy, a NOAA Economist, led an effort to gather socioeconomic data from the commercial and recreational users of that area. Information was obtained on the number of users, catch, trips, and costs (USDOC 2000b).
  - With help from the Florida Marine Research Institute and Monroe County, information contained in these analyses was used to create geographic information system (GIS)-based maps of the region to illustrate location of resources, where activities were occurring, and at what intensity (USDOC 2000b). Later in the process, this information was used to inform the working group about the resources and use of the Tortugas region.
- April 1998: The working group first convened to establish ground rules for the process (making the decision to use a consensus process) and to determine goals and objectives for the Tortugas Ecological Reserve.
- April and June 1998: Ecological and socioeconomic forums were held in April and June of 1998 respectively to 1) present the best available scientific information and traditional knowledge from the Tortugas area, 2) provide an outlet for community members to share their knowledge and experience in the region, and 3) provide information about the area's uses (Cowie-Haskell and Delaney 2003).
  - Ecological Forum—April 16 to 17, 1998: Panels of scientists and citizens who had worked in the area were convened to present their findings and observations to the working group (refer to Appendix C for panel members and affiliations). The panels represented the following topics:
    - Physical characterization
    - Local knowledge
    - Benthic characterization
    - Fish community
    - Lobster, seagrass, and megafauna
  - Socioeconomic Forum—June 22, 1998: Panels of scientists and citizens who were knowledgeable about human activities in the area were convened to discuss their activities with the working group (refer to Appendix C for panel members and affiliations). The panels represented the following topics:
    - Overview of uses

- Recreational fishing and diving
  - Commercial fishing
  - Socioeconomic considerations
- June 1998: The Tortugas 2000 Web site ([www.fknms.nos.noaa.gov/tortugas/](http://www.fknms.nos.noaa.gov/tortugas/)) became available on-line and was used to disseminate information throughout the process.
  - October and November 1998: A series of scoping meetings were held to give members of the public an opportunity to comment on the types of protection needed for the Tortugas and learn about the Tortugas 2000 process.
    - The sanctuary held these meetings in conjunction with the NPS and used an innovative open-house format that encouraged asking questions and offering constructive comments (Delaney, Personal Communication, 2003).
    - The meeting locations were scattered throughout the Keys, south Florida, and Washington. This gave stakeholders at local, regional, and national levels broader access to the public process (Causey, Personal Communication, 2003). (Refer to Appendix A for dates and locations of public scoping meetings.)
    - Diverse formats for input during the scoping process were also used to encourage public participation (Delaney, Personal Communication, 2003).
    - “A total of 223 comments were received: 89 percent of which were in support of the idea of establishing a reserve, 9 percent were opposed, and 2 percent were undecided” (USDOC 2000b).
  - January 1999: In preparation for the upcoming decision on appropriate boundaries and regulations for the reserve, sanctuary staff provided each working group member a binder of information relevant to reserve design.
    - Each workbook contained the following information: white papers, peer-reviewed science papers, definition and regulations for an Ecological Reserve as defined in the FKNMS management plan (1997), color GIS maps, transparent grid overlays, design criteria, newspaper articles on the Tortugas process, and meeting summaries (USDOC 2000b).
    - These workbooks were intended to serve as references. Therefore, as the process unfolded and information became available, it was added to the workbooks (Cowie-Haskell and Delaney 2003).
  - February 1999: The working group selected criteria for the reserve to address specific ecological and socioeconomic concerns. The group then developed objectives for each of the following seven criteria (refer to Appendix D for reserve criteria and objectives):
    - Biodiversity and habitat
    - Fisheries sustainability
    - Sufficient size
    - Allowable activities
    - Socioeconomic impacts
    - Monitoring
    - Enforcement/compliance
  - April 1999: On April 7, a packet of geographic information system (GIS) maps (generated by the Florida Keys National Marine Sanctuary and the Monroe County Division of Marine Resources) was given to each working group member. Members were instructed to overlay a grid cell transparency on each map in order to develop their own map of key concerns. From this map, each member formulated a draft alternative to bring to the April meeting (USDOC 2000b).
  - April 1999: On April 22 to 23, the working group ranked the criteria to facilitate the selection of appropriate boundaries and regulations, and then drafted potential alternatives.
    - The criteria were first prioritized by the working group as a whole.
    - The facilitator then divided the group into those who supported change (those who tended to support different or new uses such as wilderness experiences or recreational diving) and those who supported the status quo (those who tended to support extractive uses) (Bohnsack,

- Personal Communication, 2003). At this point, the criteria were reprioritized, producing less protective and more protective profiles. The end result of this exercise was a matrix of three criteria profiles (less protective, mid-range, and more protective), which were used to develop the draft alternatives (refer to Appendix E for criteria profiles).
- To draw the alternatives, the facilitator split the working group into four groups of varied interests and instructed them to develop an alternative for each criteria profile.
  - Twelve potential alternatives were drafted representing a range of protection (USDOC 2000b).
- May 1999: On May 22, the working group selected two of the twelve alternatives for further discussion. Members of the working group then proposed a compromise using these two alternatives. After careful consideration, the working group endorsed the compromise, thereby reaching consensus on a preferred alternative for proposed boundaries and regulations for the Tortugas Ecological Reserve. The working group presented several rationales for the compromise alternative, including the following:
    - Protects biological diversity and achieves fisheries sustainability through sufficient reserve size;
    - Facilitates enforcement with simple boundaries;
    - Protects a range of contiguous neighboring habitats that include shallow areas in the Dry Tortugas National Park;
    - Leaves the southern half of Tortugas Bank open as a reference site to gauge impacts of fishing on the ecosystem (USDOC 2000b).
    - According to Dr. Jim Bohnsack, research fisheries biologist with the NMFS Southeast Fisheries Science Center and working group member, “The working group also supported the compromise alternative to avoid unnecessary conflict and polarization during the public review process as had occurred during the development of the original FKNMS management plan. Participants favoring less protection agreed not to ‘hack and whack’ during the review process while those favoring more protection agreed not to ‘add and pad’ the alternatives. Participants also agreed not to attempt to circumvent the review process through political or other means.”
  - June 1999: A presentation on the working group’s process and recommended preferred alternative was given to the Sanctuary Advisory Council (SAC).
  - The SAC voted unanimously to adopt the working group’s proposal, and in turn recommended the same preferred boundary to the National Oceanic and Atmospheric Administration (NOAA) and the State of Florida (USDOC 2000b). *Note: The Florida Keys National Marine Sanctuary, Dry Tortugas National Park, State of Florida, National Marine Fisheries Service, South Atlantic Fishery Management Council, and Gulf of Mexico Fishery Management Council all have jurisdiction in the Tortugas area. (Refer to Appendix F for each agency’s jurisdictional responsibilities.)*
  - November 1999: NOAA’s National Ocean Service and National Marine Fisheries Service (NMFS) requested that the Gulf of Mexico Fishery Management Council (GMFMC) take steps to prohibit fishing under its authority consistent with the purposes and proposed location of the Ecological Reserve. The GMFMC accepted the request and developed an Essential Fish Habitat Amendment in the Gulf of Mexico Fishery Management Plan that includes the area of the reserve.
  - May 2000: A Draft Supplemental Environmental Impact Statement/Supplemental Management Plan (DSEIS/SMP) was completed to describe the proposed reserve and to solicit public comments on the proposal.
  - June and July 2000: The sanctuary held six public hearings on the reserve proposal in conjunction with the National Park Service, the Florida Fish and Wildlife Conservation Commission, and the Gulf of Mexico Fishery Management Council.

- Like the scoping meetings held in 1998, these hearings were held throughout the Keys, south Florida, and Washington in order to broaden stakeholder participation at all levels. (Refer to Appendix A for dates and locations of public hearings.)
- Also like the scoping meetings, the public hearings offered a round-table setting and multiple formats (including e-mail) for submitting comments to encourage public input into the Tortugas 2000 process (Delaney, Personal Communication, 2003).
- More than 4,000 comments were received on the DSEIS/SMP and the Tortugas Ecological Reserve proposal (USDOC 2000b):
  - 3,000 comments were form letters expressing general support for the creation of the Tortugas Ecological Reserve;
  - 245 persons commented by signing a petition;
  - Approximately 50 other comments are summarized, with agency responses, in the Final Supplemental Environmental Impact Statement/Final Supplemental Management Plan (USDOC 2000b).
- July 10 to 13, 2000: Before final action was taken, public testimony was also given to the GMFMC. Following public testimony, the GMFMC adopted the *Generic Amendment for Addressing Essential Fish Habitat Requirements for Fishery Management Plans of the Gulf of Mexico* (also referred to as the Tortugas Amendment), which amended seven fishery management plans to provide additional protection in the portion of Tortugas North that resides within the Gulf of Mexico exclusive economic zone, and in Tortugas South which resides entirely within the exclusive economic zone.
  - “The approved measures of the Tortugas Amendment prohibit fishing for any species, other than Atlantic highly migratory species, within these marine reserves. Additionally, the amendment prohibits anchoring by all fishing vessels within the marine reserves. These fishing and anchoring prohibitions are intended to achieve the maximum benefits from the two marine reserves over their initially anticipated duration of 10 years” (*Federal Register*, February 7, 2002). (*Note: NMFS later issued regulations that prohibited the catch of Atlantic highly migratory species within the reserve.*)
- November 2000: A Final Supplemental Environmental Impact Statement/Final Supplemental Management Plan was completed by NOAA, responding to public comments received during the previous phase, and developing federal and state rules to implement the reserve.
- March 2001: NOAA’s National Marine Sanctuary Program announced that the reserve was effective for federal waters.
- April 2001: On April 24, Florida’s Governor and Cabinet gave unanimous approval to include state waters in the Tortugas Ecological Reserve.
- The Tortugas Ecological Reserve was fully implemented on July 1, 2001.

### Objectives

In most cases, an MPA will have multiple objectives. These may include protection of representative habitats, conservation of rare species, fish stock restoration or enhancement, or safeguarding of historical sites, among others.

Objectives established for the Tortugas Ecological Reserve included (but were not limited to) the following:

- To protect biodiversity and ecosystem integrity.
- To protect natural spawning, nursery, and permanent residence areas, including Riley’s Hump.

- To protect unique coral formations and areas of high coral cover, including Sherwood Forest.
- To protect and enhance commercially and recreationally important fish species, as well as endangered, threatened, or rare species.
- To protect areas with physical oceanographic characteristics that will enhance larval dispersal.
- To provide a reference area in order to discriminate between human-induced and natural changes, as well as to monitor the effects of both extractive and non-extractive activities on ecosystem structure and processes.

### **Current Status/Outcome**

This section describes the current status of the MPA process, and includes information on any ongoing research that will help evaluate effectiveness.

#### Currently:

- The Tortugas Ecological Reserve is the largest fully protected marine reserve in U.S. waters (Cowie-Haskell and Delaney 2003; NOAA 2001).
- Tortugas North remains open to non-extractive diving and snorkeling; however, visitors are required to obtain a simple, no-cost, phone-in permit to ensure that all vessels have access to mooring buoys, to ease enforcement, and to assist in monitoring visitor impacts. (There is no limit to the number of permits granted.) Regulations prohibit all taking of marine life, restrict vessel discharges to cooling water and engine exhaust, prohibit anchoring, and prohibit the use of mooring buoys by vessels more than 100 feet in combined length.
- Tortugas South prohibits all taking of marine life and restricts vessel discharges. Regulations also prohibit diving (the majority of which is beyond normal recreational diving depth) to protect potentially sensitive spawning aggregations from disruption, and require vessels to be in continuous transit through the area with fishing gear stowed. However, researchers and educators holding a sanctuary permit may utilize this region.
- The NPS, in collaboration with NOAA and FKNMS, was working to designate a type of no-take area called a Research Natural Area within the Dry Tortugas National Park that would be compatible with the Tortugas Ecological Reserve. However, actions by the NPS and the Department of Interior (DOI) are on hold until the State of Florida resolves its question concerning ownership of the submerged lands inside the Dry Tortugas National Park. While Florida supports an area that would protect all resources from extractive uses, it contests federal ownership of the submerged lands. Until the ownership issue is resolved, DOI will not approve, and NPS will not enforce, the proposed regulations for the Research Natural Area (Davis, Personal Communication, 2002).

A number of research efforts were conducted in the area during the planning process and have continued since its designation as an Ecological Reserve. Research has focused on establishing baseline reference information from both inside and outside the Ecological Reserve.

- Drs. Jim Bohnsack of NMFS and Jerry Ault of the University of Miami are conducting studies on reef fish populations and habitat utilization.
- Dr. Steven Miller of the National Undersea Research Center is conducting rapid assessments on benthic communities.
- Dr. Mark Fonseca of the NOAA Center for Coastal Fisheries and Habitat Research is conducting a study on trophic cascades to gain data on reserve effects.
- Bob Glazer of the Florida Fish and Wildlife Commission's Florida Marine Research Institute (FMRI) has conducted plankton surveys for conch larvae throughout the Tortugas region, specifically near Riley's Hump. John Hunt, Lyn Cox, Dr. Rod Bertelsen, and other scientists from FMRI are

monitoring the lobster populations inside the Tortugas Ecological Reserve and the Dry Tortugas National Park.

- The Reef Environmental Education Foundation (REEF) organized a volunteer diving program that conducts fish counts in several sites within no-take zones, including Sherwood Forest in Tortugas North.
- The Florida Institute of Oceanography, under the SEAKEYS program, provides oceanographic data, such as sea temperature and salinity, and meteorological data, such as wind speed, direction, and air temperature, to researchers and managers in the South Florida region.
- NOAA's Atlantic Oceanographic and Meteorological Laboratory and the University of Miami are conducting bimonthly oceanographic cruises to document variability of coastal currents in the region.
- Several other institutions and universities, including NOAA, FMRI, the United States Geological Survey, U.S. Environmental Protection Agency, University of South Florida, State University of New York at Buffalo, Mote Marine Laboratory, the American Museum of Natural History, and The Ocean Conservancy have continued or begun research in the Tortugas region. Projects include surveys of macrobenthic organisms, mollusks, deepwater fishes, and coral diseases, condition, and abundance. Reef connectivity, habitat mapping, relict reef geology, and reef fish abundance and spawning are also being studied.

### Stakeholders

MPA establishment may impact a wide range of individuals and entities. This means a diversity of stakeholders has an interest in participating in the process.
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Stakeholders interested in or affected by the establishment of the Tortugas Ecological Reserve include the following:

- Boating industry
- Conservationists
- Commercial fishermen
- Divers
- Educators
- General public
- Recreational fishermen
- Scientists
  - Florida State University
  - Florida Institute of Oceanography
  - Florida International University
  - Florida Fish and Wildlife Conservation Commission's Florida Marine Research Institute
  - National Undersea Research Center
  - University of Miami
  - University of South Florida
- Nongovernmental agencies
  - National Audubon Society
  - The Ocean Conservancy
  - The Nature Conservancy – Florida Keys Initiative
  - ReefKeeper International
  - World Wildlife Fund
- Government agencies
  - U.S. Department of Commerce
    - National Oceanic and Atmospheric Administration

- National Marine Sanctuary Program
    - Florida Keys National Marine Sanctuary
  - National Marine Fisheries Service
- U.S. Department of the Interior
  - National Park Service
  - U.S. Fish and Wildlife Service
- Environmental Protection Agency
- State of Florida
  - Florida Department of Environmental Protection
  - Florida Fish and Wildlife Conservation Commission
    - Florida Division of Marine Resources
  - Florida Governor and Cabinet
- Gulf of Mexico Fishery Management Council
- South Atlantic Fishery Management Council

### **Advisory Groups**

Advisory committees may be used during an MPA development process. The establishment of an advisory committee representing various interest groups and affected parties will facilitate local participation throughout the MPA establishment process, and may help to form partnerships by ensuring that all interests are represented in the final proposal (Brody 1998).

Advisory groups were utilized during the establishment of the Tortugas Ecological Reserve.

- The Florida Keys National Marine Sanctuary Advisory Council (SAC) consisted of 19 voting members and 19 alternates, whose members represented the following:
  - Boating industry
  - Commercial fishermen
  - Conservationists
  - Divers
  - Education/Outreach
  - General public (lower, middle, and upper Keys)
  - Local government officials
  - Recreational fishermen
  - Research/Monitoring
  - Submerged and cultural resources
  - Tourism (lower and upper Keys)
- The Tortugas 2000 Working Group consisted of 25 members, including 8 members from the SAC. Working group membership was designed to represent the full range of stakeholder perspectives and included representatives from the following:
  - Charter boat operators
  - Commercial fishermen
  - Conservationists
  - Divers
  - General public
  - Recreational fishermen
  - Resource managers
  - Scientists

(Note: In February 1999 (one year into the process), two new members joined the Tortugas 2000 Working Group, which added representation for commercial handline fishermen and recreational fishermen.)

- The Ecological Forum Panel consisted of 20 participants, who represented the following topics:
  - Physical characterization
  - Local knowledge
  - Benthic characterization
  - Fish community
  - Lobster, seagrass, and megafauna
- The Socioeconomic Forum Panel consisted of 12 participants, who represented the following topics:
  - Overview of uses
  - Recreational fishing and diving
  - Commercial fishing
  - Socioeconomic considerations

### **Economic Factors**

“The acceptability of a MPA to the general public and to direct users will depend significantly on whether the perceived benefits are greater with or without the MPA”  
(National Research Council 2001).

The following are economic factors taken into consideration during the establishment of the Tortugas Ecological Reserve:

- The Tortugas 2000 Working Group adopted socioeconomic impacts as one of the criteria for the reserve, with the objective to choose an area and craft recommendations that minimize adverse socioeconomic impacts on established users of resources in the area.
- A thorough socioeconomic analysis was undertaken that described and quantified the effects of the proposed “no take” reserve regulations on users of the Tortugas. Benefits (non-extractive uses, and scientific and educational values, among others) were also articulated (USDOC 2000b).
- The socioeconomic analysis further described potential mitigating and offsetting factors of economic losses to assess short versus long-term costs and benefits to displaced Tortugas users (USDOC 2000b).
- “Socioeconomic data was gathered from over 80 percent of all Tortugas users” (Leeworthy and Wiley 2000 IN Delaney 2003).
- The socioeconomic analysis indicated that the reserve would have moderate impacts on fishermen, primarily lobster and handline fishermen (Leeworthy and Wiley 2000; USDOC 2000b).
  - Catches of king mackerel, lobster, reef fish, and shrimp could be impacted by 14 percent, leading to an 844 thousand dollar loss in harvest revenue.
- Minimal to no impacts on recreational fishermen, commercial shippers, and treasure salvors were identified in the analysis (Leeworthy and Wiley 2000; USDOC 2000b).
  - In the socioeconomic analysis, recreational activity was broken down into extractive recreation (including diving for lobster, spearfishing, and hook-and-line fishing), and non-extractive recreation (i.e., non-extractive diving). All of these activities are conducted from 12 charter/party boat (for hire) operations. No private household boats were observed in the Tortugas Ecological Reserve site (Leeworthy and Wiley 2000; USDOC 2000b).
  - Nine of the 12 charter boat operations would be potentially affected.

- Direct business revenues were projected to decline 26.6 percent for lobster diving, 20.0 percent for spearfishing, and 6.3 percent for hook-and-line fishing. Across all three extractive recreational activities, 11.7 percent of revenue would be affected.

### **Areas of Conflict/Difficulty**

“MPA proposals often raise significant controversy...” (National Research Council 2001).
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The following are areas of conflict or difficulty that arose during the establishment of the Tortugas Ecological Reserve:

- Initial boundaries proposed for the reserve in the early 1990s were not established because public comments indicated that the proposed boundaries did not include the most significant coral reef resources and would cause economic harm to commercial fishermen.
- During Tortugas 2000, concerns were raised that with Billy Causey, Florida Keys National Marine Sanctuary, and Ed Conklin, Florida Department of Environmental Protection, as co-chairs of the working group, it might appear that the state and federal governments were controlling the process, rather than it being a collaborative effort (Tortugas 2000 Working Group, 1998).
- Concern was expressed over whether diving should be allowed in Tortugas South. It was ultimately determined that except for research and monitoring, diving should not be allowed.
  - The Gulf of Mexico Fishery Management Council (GMFMC) had previously established a seasonal closure in this area to protect fish spawning aggregations from fishing and allow stocks to rebuild. It was widely acknowledged that diving during coral spawning events had become a major activity; however, no scientific data were available regarding the possible disruptive impacts of large numbers of divers on fishes during spawning events (Bohnsack, Personal Communication, 2003).
  - In the end, “the working group chose a precautionary approach because it was concerned that increased diving in Tortugas South could be disruptive to spawning aggregations and compromise FKNMS and GMFMC management goals” (Bohnsack, Personal Communication, 2003).
- The FKNMS had difficulty gaining representation as well as participation from stakeholder groups such as recreational fishermen, Hispanic fishermen, and shrimp fishermen in the Tortugas 2000 working group (Delaney, Personal Communication, 2003).
- Individuals representing two stakeholder groups, including shrimp fishermen and commercial sport fishermen, were concerned that they would suffer economic losses greater than those projected in the initial economic analysis that was contained in the Draft Supplemental Environmental Impact Statement/Supplemental Management Plan (SEIS/SMP). As a result, NOAA conducted an additional analysis using economic data that was supplied by those constituents, and published the revised results in the Final SEIS/SMP (Delaney, Personal Communication, 2003).
- “Although NOAA adopted an incremental approach to reserve design that included early groundwork in communication, group process, and consensus building, building trust among working group members, who represented a broad range of interests, was a challenge throughout the Tortugas 2000 process” (Delaney, Personal Communication, 2003).
- “Despite the participation by a local representative on the working group, a state-wide recreational fishermen’s group that was backed by a national parent organization opposed the creation of the reserve throughout the process and lobbied state policy-makers to not adopt regulations for the area” (Delaney, Personal Communication, 2003).

## Technology-Based Decision-Support Tools

“MPA formulation and operation require, and benefit from, higher levels of technology in information handling and onsite management... Computer assisted mapping tools, used in storing, retrieving, processing, and displaying spatial data may be particularly useful” (Salm and others 2000).

Technology-based decision-support tools were utilized during the establishment of the Tortugas Ecological Reserve.

- Geographic information systems (GIS) maps of resources with consistent scales and grid cells were produced so comparisons could be made of uses and resources over space and time.
- “By using digital versions of NOAA nautical charts as base layers in GIS maps, the relevant data were displayed in a familiar context for fishermen” (Cowie-Haskell and Delaney 2003).

## Enforcement

“Effective enforcement is essential to achieve MPA objectives and sustain cooperation from the general public and affected user groups” (National Research Council 2001).

- An enforcement contract between NOAA’s National Marine Sanctuary Program and the State of Florida Fish and Wildlife Conservation Commission states that Florida is the co-trustee for a significant portion (60 percent) of the waters and marine resources within the reserve, and will co-manage these resources with the FKNMS. The sanctuary funds 17 state enforcement officers, 7 of which are dedicated to the Tortugas Ecological Reserve.
- The FWCC Sanctuary Enforcement Team is cross-deputized to enforce all sanctuary regulations throughout the FKNMS. They are also authorized to enforce the Magnuson-Stevens Act, Lacey Act, Endangered Species Act, and the Marine Mammal Act.
- The NMFS manages fisheries in federal waters (40 percent) of the reserve. The Office of Law Enforcement has responsibility for enforcing fishing regulations and has assets and technology to use for enforcement.
- The U.S. Coast Guard (USCG) also has responsibility for enforcing fishing regulations in federal waters. The USCG has several large offshore patrol vessels based in Key West that could be used in conjunction with sanctuary patrol vessels for enforcement of the reserve areas.
- A permit issuance and tracking system was implemented in 2001 with reserve designation.
  - In Tortugas North, the sanctuary can ensure that all vessels visiting the reserve have access to mooring buoys by issuing permits. In addition, permitted vessels are required to call in upon entering and leaving the reserve.
  - In Tortugas South, vessels are required to be in continuous transit unless a sanctuary permit for research or education is granted.
- Enforcement efforts in the Tortugas Ecological Reserve have yielded over 12,500 pounds of illegal catch in 2002 ([www.fknms.nos.noaa.gov/news/](http://www.fknms.nos.noaa.gov/news/)).

## Boundaries

Clear delineation of spatial boundaries is important so that both managers and users know where structured management has been implemented.

- Refer to the *Federal Register* (January 17, 2001) for the Tortugas Ecological Reserve boundary coordinates.
- The Tortugas Ecological Reserve expanded the boundary of the sanctuary in the northwestern corner by approximately 36 nautical miles, and added a noncontiguous portion of approximately 60 nautical miles to include significant coral reefs known as Sherwood Forest and Riley's Hump.
- According to Joanne Delaney, Research Interpreter for the Florida Keys National Marine Sanctuary, "The working group considered enforcement and compliance one of the important criteria for the reserve, and to that end, agreed that boundaries aligned along meridians (latitude and longitude) were important to facilitate interpretation of reserve boundaries and compliance" (Personal Communication, 2003).

## Legislation and/or Regulation

MPA establishment is typically authorized by existing legislation, but implementation frequently requires new regulations. Existing legislation may guide and/or provide context for MPA processes.

Note: The Florida Keys National Marine Sanctuary, Dry Tortugas National Park, State of Florida, National Marine Fisheries Service, South Atlantic Fishery Management Council, and Gulf of Mexico Fishery Management Council all have jurisdiction in the Tortugas area. (Refer to Appendix F for each agency's jurisdictional responsibilities.)

- Several regulatory efforts were conducted in conjunction with Tortugas 2000 to ensure comprehensive protection of the unique resources of the Tortugas region.
  - Under the National Marine Sanctuaries Act, the Secretary of Commerce is authorized to designate and manage areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, or esthetic qualities as National Marine Sanctuaries (NMS).
  - The Florida Keys National Marine Sanctuary and Protection Act designated the Florida Keys National Marine Sanctuary in 1990. The primary goal of this act is to protect the health of the fragile ecosystem of the Florida Keys.
  - Under the Magnuson-Stevens Fishery Conservation and Management Act, the GMFMC developed and adopted a *Generic Amendment for Addressing Essential Fish Habitat Requirements for Fishery Management Plans of the Gulf of Mexico* (also referred to as the Tortugas Amendment), which is consistent with the Tortugas Ecological Reserve and the regulations governing Ecological Reserves within the FKNMS.
  - NMFS issued regulations for federal waters consistent with the no-take status of the Tortugas Ecological Reserve for species managed by the GMFMC, and for highly migratory species such as Atlantic tunas, swordfish, sharks, and Atlantic billfishes. These regulations became effective August 19, 2002.
  - The State of Florida promulgated fishing regulations to prohibit fishing in those portions of Tortugas North that lie within state waters.
  - NPS revised its General Management Plan, developing a "Preferred Alternative to create a Research/Natural Area" (RNA) within the park, which has not yet been accepted or enforced

(Refer to “Current Status/Outcome”). The proposed boundaries and regulations of the RNA are compatible with the Tortugas Ecological Reserve.

### **Media/Public Outreach**

Entities involved in MPA designation processes frequently undertake a variety of public outreach and education activities.

In addition to opportunities for members of the public to provide input into the Tortugas Ecological Reserve design process, the FKNMS conducted extensive public outreach and education during Tortugas 2000. These efforts include the following:

- The Tortugas 2000 Web site ([www.fknms.nos.noaa.gov/tortugas](http://www.fknms.nos.noaa.gov/tortugas)) was used to disseminate information and was constantly updated throughout the process. The Web site still serves as an important resource for visitors to the sanctuary and Tortugas region.
- Two public forums were held for the working group where scientists and knowledgeable local residents were invited to present information on ecological aspects and socioeconomic uses of the Tortugas region.
- Multiple press releases were issued to the local and national media, and articles were published in newsletters, journals, and magazines as appropriate. (Refer to the Tortugas Web site for links to press releases, newspaper articles, and research updates.)
- Media and press tours were offered to interpret and highlight all steps of the reserve process.
- Editorial Board meetings were held throughout the process.
- A brochure that details the regulations and boundaries for the Tortugas Ecological Reserve, the locations and numbers of mooring buoys, and unique ecological features in the area is under development.
- "Sanctuary staff had numerous formal consultation meetings and briefings with both the South Atlantic and Gulf of Mexico Fishery Management Councils during the development of the Tortugas Ecological Reserve. In addition, Sanctuary staff conducted more than five formal consultation briefings before the State of Florida Fish and Wildlife Conservation Commission and the former State of Florida Marine Fisheries Commission" (Causey, Personal Communication, 2003).

Refer to Appendix B for a listing of additional readings.

## References

Note: All World Wide Web addresses listed in this section were accessible on January 31, 2003, and accurately reflected information referenced here and in the text. Site content at these links may change, or the links may become inactive at any time.

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**Appendix A. Public Hearings, Workshops, and Meetings [Tortugas Ecological Reserve]**

**Public Scoping Meetings**

<b>Date</b>	<b>Location</b>
October 27, 1998	Washington, D.C.
October 29, 1998	Fort Myers, Florida
November 9, 1998	Key West, Florida
November 10, 1998	Marathon, Florida
November 17, 1998	Miami, Florida

**Public Hearings on Reserve Proposal**

<b>Date</b>	<b>Location</b>
June 12, 2000	Homestead, Florida
June 13, 2000	Naples, Florida
June 14, 2000	St. Petersburg, Florida
June 21, 2000	Marathon, Florida
June 22, 2000	Key West, Florida
July 11, 2000	Washington, D.C.

**Public Meeting Dates and Locations**

<b>Date</b>	<b>Public Meeting</b>	<b>Location</b>
April 16 – 17, 1998	Working Group	Key West, Florida
June 22, 1998	Working Group	Key West, Florida
December 15, 1998	Sanctuary Advisory Council	Marathon, Florida
February 16, 1999	Sanctuary Advisory Council	Marathon, Florida
February 4 – 5, 1999	Working Group	Key West, Florida
April 20, 1999	Sanctuary Advisory Council	Marathon, Florida
April 22 – 23, 1999	Working Group	Key West, Florida
May 22, 1999	Working Group	Key West, Florida
June 15, 1999	Sanctuary Advisory Council	Marathon, Florida
August 17, 1999	Sanctuary Advisory Council	Marathon, Florida
October 19, 1999	Sanctuary Advisory Council	Marathon, Florida
December 7, 1999	Sanctuary Advisory Council	Key Colony Beach, Florida
February 15, 2000	Sanctuary Advisory Council	Marathon, Florida
April 18, 2000	Sanctuary Advisory Council	Marathon, Florida
June 20, 2000	Sanctuary Advisory Council	Marathon, Florida
August 15, 2000	Sanctuary Advisory Council	Marathon, Florida
December 12, 2000	Sanctuary Advisory Council	Marathon, Florida
February 20, 2001	Sanctuary Advisory Council	Marathon, Florida
April 17, 2001	Sanctuary Advisory Council	Marathon, Florida

**Appendix B. Additional Readings** [Tortugas Ecological Reserve]

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**Appendix C. Advisory Group and Panel Members** [Tortugas Ecological Reserve]

**Sanctuary Advisory Council Members (1998-2001)**

<b>Name</b>	<b>Representation</b>
Joan Appelt	Boating Industry
Mike Collins	Charter Fishing – Flats/ Guide
Andy Griffiths	Charter Fishing – Sport Fishing
Don DeMaria	Commercial Fishing – Marine/Tropical
Tony Iarocci	Commercial Fishing – Shell/Scale
Debra Harrison	Conservation and Environment
Dave Holtz	Conservation and Environment
Rob Blesser	Diving
Victoria Weeks	Diving
Irene Hooper	Education/Outreach
Robert DeHaven	General Public (Lower Keys)
Fran Decker	General Public (Middle Keys)
Karen Lee	General Public (Upper Keys)
Jack London	Local Elected Official
Thomas N. Davidson	Recreational Fishing
Dr. Erich Mueller	Research/Monitoring
David Paul Horan	Submerged Cultural Resources
Sheri Appellis	Tourism (Lower Keys)
Ginna Thomas Drake	Tourism (Upper Keys)

**Appendix C. Advisory Group Members (continued)**

**Tortugas 2000 Working Group Members (1998-2001)**

<b>Name</b>	<b>Affiliation</b>
Peter Gladding	Commercial fishing/handline representative
Richard Diaz	Commercial fishing/lobster representative
Bruce Buckson	Division of Law Enforcement, Florida Department of Environmental Protection
Gene Proulx	Enforcement, National Marine Fisheries Service
Ed Conklin	Florida Department of Environmental Protection
Billy Causey	Florida Keys National Marine Sanctuary
Ben Cowie -Haskell	Florida Keys National Marine Sanctuary
Russell Nelson	Florida Marine Fisheries Commission
Dr. Felicia Coleman	Gulf of Mexico Fishery Management Council, Florida State University
Dr. Jim Bohnsack	National Marine Fisheries Service
Dr. Joe Kimmel	National Marine Fisheries Service
Dr. Robert Brock	National Park Service
Alex Stone	Recreational diver representative
John Brownlee	Recreational fishing representative
Andy Griffiths	Sanctuary Advisory Council: charter boat representative
Don DeMaria	Sanctuary Advisory Council: commercial fishing
Tony Iarocci	Sanctuary Advisory Council: commercial fishing
Debra Harrison	Sanctuary Advisory Council: conservation
Dave Holtz	Sanctuary Advisory Council: conservation
Don Kincaid	Sanctuary Advisory Council: diving representative
Fran Decker	Sanctuary Advisory Council: general public
Dr. Erich Mueller	Sanctuary Advisory Council: research community
Peter Moffitt	South Atlantic Fishery Management Council
BMC Bob Thomas	United States Coast Guard
Dr. Nick Funicelli	United States Geological Survey

**Appendix C. Advisory Group Members (continued)**

**Ecological Forum Panel Participants**

<b>Panel</b>	<b>Name</b>	<b>Affiliation</b>
Benthic Characterization	Dr. Michael Crosby	National Oceanic and Atmospheric Administration
Benthic Characterization	Dr. Steven Miller	National Undersea Research Center
Benthic Characterization	Walt Jaap	Florida Marine Research Institute
Benthic Characterization	Jenny Wheaton	Florida Marine Research Institute
Fish Community Panel	Dr. Jim Bohnsack	National Marine Fisheries Service
Fish Community Panel	Dr. Jerry Ault	University of Miami
Fish Community Panel	Don DeMaria (For Ann Marie Eklund)	Florida State University
Fish Community Panel	Laddie Akins	Reef Environmental Education Foundation (R.E.E.F.)
Lobster, Seagrass and Megafauna	Dr. Gary Davis	Channel Islands National Park
Lobster, Seagrass and Megafauna	Dr. Rod Bertelsen	Florida Marine Research Institute
Lobster, Seagrass and Megafauna	Dr. Jim Fourqurean	Florida International University
Lobster, Seagrass and Megafauna	Ben Cowie -Haskell (For Skip Snow)	Everglades National Park
Local Knowledge	Karen DeMaria	Anecdotal Reports by Residents - Changes in the Florida Keys Marine Ecosystem
Local Knowledge	Peter Gladding	Commercial handliner
Local Knowledge	Don DeMaria	Commercial spearfisherman
Local Knowledge	Wayne Hoffman	National Audubon Society, Key West
Physical Characterization	Dr. Tom Lee	University of Miami – Current regime
Physical Characterization	Dr. Joan Browder	National Marine Fisheries Service
Physical Characterization	Dr. Ron Jones	Florida International University – Water quality
Physical Characterization	Dave Mallinson	University of South Florida

**Socioeconomic Forum Panel Participants**

<b>Panel</b>	<b>Name</b>	<b>Affiliation</b>
Commercial Fishing	Peter Gladding	Commercial handliner
Commercial Fishing	Tony Lanassa	Commercial lobsterman
Commercial Fishing	Armando Gonzalez	Commercial handliner
Commercial Fishing	Richard Diaz	Commercial lobsterman and king mackerel fishermen (multi-fishery)
Overview of Uses	Reed Detring	Chief Ranger, Everglades National Park
Overview of Uses	Dr. Bob Leeworthy	NOAA economist
Recreational Fishing and Diving	Bob Demauro	Charter spearfisherman
Recreational Fishing and Diving	Rick Pitts	Charter boat fishing
Recreational Fishing and Diving	Vicki Weeks	Recreational divers
Socioeconomic Considerations	Dr. Daniel Suman	University of Miami
Socioeconomic Considerations	Alex Stone	ReefKeeper International
Socioeconomic Considerations	Tom Murray	Consulting economist

**Appendix D. Reserve Criteria and Objectives [Tortugas Ecological Reserve]**

<b>Criteria</b>	<b>Objective</b>
Biodiversity and habitat	Choose an area that contains the greatest level of biological diversity and widest range of contiguous habitats.
Fisheries sustainability	Choose an area that provides the greatest benefit in protecting and enhancing commercially and recreationally important fish species.
* Spawning areas	Choose an area that includes significant fish spawning aggregation sites.
* Full life cycles	Choose an area that encompasses all the habitats required to support the full life cycle of commercially and recreationally important fish.
Sufficient size	Choose a boundary that encompasses an area large enough to meet the criteria listed above and to achieve the potential benefits and goals of an ecological reserve.
Allowable activities	Choose to allow only activities in the ecological reserve that are compatible with achieving its goals.
Socioeconomic impacts	Choose an area and craft recommendations that minimize adverse socioeconomic impacts on established users of resources in the area.
Reference area/ monitoring	Choose an area that serves as a reference or control area to facilitate the monitoring of anthropogenic impacts and to evaluate the consequences of establishing the ecological reserve.
Enforcement/ compliance	Choose a boundary and craft recommendations that facilitate enforcement and encourage compliance.

**Appendix E. Reserve Criteria Profiles [Tortugas Ecological Reserve]**

<b>Criteria Weighting Profile (Less Protective)</b>	<b>Criteria Weighting Profile (Mid-Range)</b>	<b>Criteria Weighting Profile (More Protective)</b>
Fisheries Sustainability 25%	Biodiversity and Habitat 27%	Sufficient Size 50%
Socioeconomic Impacts 25%	Fisheries Sustainability 26%	Fisheries Sustainability 20%
Enforcement and Compliance 20%	Enforcement and Compliance 17%	Biodiversity and Habitat 15%
Biodiversity and Habitat 15%	Sufficient Size 16%	Reference Area and Monitoring 5%
Reference Area and Monitoring 10%	Socioeconomic Impacts 9%	Enforcement and Compliance 5%
Sufficient Size 5%	Reference Area and Monitoring 5%	Socioeconomic Impacts 5%
Total 100%	Total 100%	Total 100%

Table slightly modified from USDOC 2000b.

**Appendix F. Resource Management Agencies with Jurisdictions in the Tortugas Region**  
[Tortugas Ecological Reserve]

	<b>Agency</b>	<b>Responsibility</b>
Department of Commerce/ NOAA	National Ocean Service/ Florida Keys National Marine Sanctuary	Managing and protecting natural and cultural resources within the sanctuary
Department of Commerce/ NOAA	National Marine Fisheries Service	Approving and implementing Gulf of Mexico Fishery Management Council's fishery management plans for fishery resources in the exclusive economic zone of the Gulf of Mexico, for preparing and implementing fishery management plans for Atlantic highly migratory species, and for protecting marine mammals and threatened and endangered species
Department of Commerce/ NOAA	Gulf of Mexico Fishery Management Council	Preparing fishery management plans (including joint management plans with the South Atlantic Fishery Management Council) for fishery resources in the exclusive economic zone of the Gulf of Mexico, and for recommending fishery regulations for the sanctuary
Department of Commerce/ NOAA	South Atlantic Fishery Management Council	Preparing fishery management plans (specifically joint-management plans with the Gulf Council) for lobster and mackerel, both of which were impacted by the Tortugas Ecological Reserve
Department of Interior/ National Park Service	Dry Tortugas National Park	Protecting and interpreting the Dry Tortugas National Park (DRTO), a subtropical terrestrial and marine ecosystem with an intact coral reef ecosystem
State of Florida	Department of Environmental Protection	Managing the sanctuary's resources as a co-trustee with NOAA
State of Florida	Fish and Wildlife Conservation Commission	Managing fish and wildlife resources within state waters
State of Florida	Governor and Cabinet	Managing all public lands of the State of Florida, including sovereign submerged lands owned by Florida citizens

Table modified from USDOC 2000b.

**Appendix G. Definitions of Marine Zones Used within the FKNMS [Tortugas Ecological Reserve]**

Zone Type	Definitions
Existing Management Areas	This zone identifies areas that are managed by other agencies where restrictions already exist. These zones delineate the existing jurisdictional authority of other agencies (i.e. State parks, aquatic preserves, sanctuaries, and other restricted areas). Management of these areas within the sanctuary may require additional regulations or restrictions to adequately protect resources. Any additional management measures will be developed and implemented in coordination with the agency having jurisdictional authority. Their function is not to establish another layer of bureaucracy, but to recognize established management areas and, at a minimum, to complement the existing management programs, ensuring cooperation and coordination with other agencies.
Wildlife Management Areas	These areas are established to minimize disturbance to especially sensitive wildlife populations and their habitats to ensure protection and preservation consistent with the sanctuary designation and other applicable laws governing the protection and preservation of wildlife resources in the sanctuary. Such areas include bird nesting, resting, or feeding areas and turtle nesting beaches. Regulations governing access are designed to protect endangered or threatened species or their habitats, while providing opportunities for public use. Access restrictions include no-access buffer zones, no-motor zones, idle speed only/no wake zones, and closed zones.
Ecological Reserves	These areas are designed to encompass large, contiguous diverse habitats. They are intended to provide natural spawning, nursery, and permanent residence areas for the replenishment and genetic protection of marine life and to protect and preserve all habitats and species particularly those not protected by fishery management regulations. These reserves are intended to protect areas that represent the full range of diversity of resources and habitats found throughout the sanctuary. These objectives are met by limiting consumptive activities, while continuing to allow activities that are compatible with resource protection, providing the opportunity for these areas to evolve in a natural state, with a minimum of human influence. These zones protect a limited number of areas that provide important habitat for sustaining natural resources such as fish and invertebrates.
Sanctuary Preservation Areas	These areas focus on the protection of shallow, heavily used reefs where conflicts occur between user groups, and where concentrated visitor activity leads to resource degradation. They are designed to enhance the reproductive capabilities of renewable resources, protect areas critical for sustaining and protecting important marine species, and reduce user conflicts in high-use areas. A prohibition of consumptive activities exists within these areas. They have been chosen based on the status of important habitat, the ability of a particular area to sustain and protect the habitat, the level of visitor use, and the degree of conflict between consumptive and nonconsumptive users. The actual size and location of these zones was determined by examination of user patterns, aerial photography, and groundtruthing of specific habitats.
Special-Use Areas	These zones are used to set aside areas for scientific research and educational purposes, restoration, monitoring, or to establish areas that confine or restrict activities such as commercial personal watercraft operations and establish live-aboard mooring fields. These areas minimize impacts on sensitive habitats and reduce user conflicts. Special management programs (e.g., monitoring, research, special-use permits and restoration) are conducted without impediment in these areas. They have been used to set aside areas for specific uses such as long-term research and monitoring.

Source: FKNMS Web site ([www.fknms.nos.noaa.gov/regs/zoning.html](http://www.fknms.nos.noaa.gov/regs/zoning.html)); USDOC 1996



## Findings

The case study phase of the “lessons learned” project was conducted to document a variety of U.S. MPA processes. The purpose of this report is not to suggest that following these approaches will always lead to a successfully established and managed MPA, but rather just to summarize the events, issues, and participants of each process. These case studies are intended to contribute to future MPA establishment efforts by providing a factual foundation about the structure and events of recent MPA processes to interested parties. The following sections recount some of the challenges encountered while assembling the case studies, and outline some of the commonalities found across the processes.

### *Challenges in documenting the processes*

MPA establishment processes are the series of actions taken to establish an MPA site or to implement zoning within an existing MPA site. These processes have many variables and are influenced by elements identified in the case studies (i.e., stakeholders, objectives, media/public outreach, etc.) As a result, MPA processes are complex in nature, and accurately documenting each case study proved a challenging task.

In addition to their inherent complexity, some of the documented processes were imbedded within other management regimes, such as fishery management plans. Identifying an MPA process within this larger process was a challenge in itself. It was difficult to tease out the actions specifically related to the MPA process from the larger context.

In order to depict an MPA process accurately and completely, each action that contributed to that process has to be identified. However, in a majority of the case studies these actions are not well documented. In many cases, the literature contained current information about an MPA site, highlighting its objectives, location, and specific restrictions, but did not detail the process that led to its establishment. For this reason, some process elements, such as objectives, stakeholders, and boundaries, were easy to characterize, but gaps remained within the timeline of events. This lack of detailed information about the process made it challenging to create the entire picture of what happened as an MPA site went from nomination to designation.

Another challenge to overcome was conflicting or contradictory information. For some of the case studies, detailed information was available about the process, but different sources had contradicting facts and statistics. In some cases published information seemed to capture the process accurately, but the review process revealed inaccuracies.

The challenge of clarifying conflicting information, as well as filling in gaps in information, was complicated by the fact that people remember processes differently. In some cases this may be a result of time, while in other cases this may be a matter of perspective. Individuals’ different memories of the same process emphasized the need to consult with multiple participants from each site in an attempt to clarify information.

### *Commonalities across the case studies*

Although each MPA process must be tailored to local issues, stakeholders, and environmental conditions, several common elements were found across the case studies documented. Five commonalities are discussed below:

- ◇ MPA establishment processes take time: All of the documented case studies were multiple-year processes. Clearly, MPA establishment processes take considerable time to complete and, as a result, require careful planning and realistic time frames.
- ◇ Stakeholder involvement is essential: MPA literature continually emphasizes the need for stakeholder involvement in MPA processes, and while each case study incorporated different mechanisms for stakeholder participation, multiple players representing a wide-range of interests were involved at some level throughout each of the processes.
- ◇ Conflicts exist over what should and should not be allowed within MPAs: In all the case studies, there was conflict over what should be allowed or not allowed within that MPA. This finding is at the core of why MPAs are so hotly debated, demonstrating that stakeholders have different views as to what restrictions should be established, and as to what extent these restrictions will inhibit certain activities. This type of conflict can be expected in an MPA process and further emphasizes the importance of having a structured process in order to work through these types of conflicts.
- ◇ Each process utilized similar sources for media/public outreach: Many of the same sources for media/public outreach were utilized across the case studies. Each process included participatory mechanisms such as public scoping meetings, forums, or workshops to receive public comment throughout the process. Newspaper articles and press releases were used to distribute information to the public for a variety of purposes, including publicizing upcoming public meetings, requesting public feedback on a proposal, or educating the public about implementation of new regulations. Web sites also played a role in each case study, whether they were used to disseminate information or to receive feedback from the public.
- ◇ History and political environment are important influencing factors: A final commonality, and one that provides an important lesson learned from these case studies, is that history and political environment are key influencing factors on any MPA process. Unlike a recipe, where specific ingredients lead to a specific result, different MPA processes may contain many of the same elements but lead to a variety of conclusions depending on how history and political environment influence the process.

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## MPA-Related Conferences and Meetings Attended

California and the Worlds Oceans Conference – Santa Barbara, October 2002

Investigation of MPA Process – San Juan Islands, Washington State, August 2002

## **APPENDIX A**

### Individuals Serving as Internal Reviewers

Kimberly Cohen	Donna McCaskill
Gerald Esch	Greg Moretti
Mark Finkbeiner	Geno Olmi
Tom Fish	Jeff Payne
Cindy Fowler	Heidi Recksiek
Hansje Gold	Nicholas Schmidt
Hanna Goss	Paul Scholz
Ginger Hinchcliff	Hamilton Smillie
Darcee Killpack	Dave Stein
Jan Kucklick	Bill Stevenson
Tony LaVoi	Megan Treml
Lisc Lott	Pace Wilber

## **APPENDIX B**

### Individuals Serving as External Reviewers

#### **Carl N. Schuster Horseshoe Crab Reserve**

David Dow, National Marine Fisheries Service (NMFS) Northeast Regional Office

Tom Meyer, NMFS, Office of Intergovernmental and Recreational Fisheries

Paul Perra, NMFS, Office of Intergovernmental and Recreational Fisheries

Carrie Selberg, Horseshoe Crab Faculty Mentor Program Coordinator, Atlantic States Marine Fisheries Commission

#### **Channel Islands Marine Reserves**

Satie Airame, Science Advisor, Channel Islands National Marine Sanctuary

Gary Davis, Visiting Chief Scientist, Ocean Programs, U.S. National Park Service

Sean Hastings, Policy Coordinator, Channel Islands National Marine Sanctuary

Scott Hill, Associate Regional Administrator, NMFS Southwest Regional Office

Tom Meyer, NMFS, Office of Intergovernmental and Recreational Fisheries

### **Gulf of Mexico Grouper Closures**

Steve Atran, Population Dynamics Statistician/Network Administrator, Gulf of Mexico Fishery Management Council

Michael Barnette, NMFS Southeast Regional Office

Jim Bohnsack, NMFS, Miami Fisheries Science Center

Felicia Coleman, Florida State University (FSU)/NMFS Institute for Fishery Resource Ecology

Chris Koenig, FSU/NMFS Institute for Fishery Resource Ecology

### **San Juan County Bottomfish Recovery Zones**

Yvonne deReynier, NMFS Northwest Regional Office

Dave Fluharty, University of Washington

Kari Koski, Soundwatch Boater Education Program, Friday Harbor Whale Museum

Mary Lou Mills, MPA Coordinator, Washington Department of Fish and Wildlife

Kevin Ranker, Pacific Northwest Regional Coordinator, Surfrider Foundation/San Juan County Marine Resources Committee

Jim Slocomb, Chair, San Juan County Marine Resources Committee

### **Tortugas Ecological Reserve**

Jim Bohnsack, NMFS, Miami Fisheries Science Center

Billy Causey, Superintendent, Florida Keys National Marine Sanctuary

Ben Cowie-Haskell, Operations and Program Coordinator (current position), Stellwagen Bank National Marine Sanctuary

Joanne Delaney, Operations and Program Coordinator, Florida Keys National Marine Sanctuary

Brian Keller, Science Coordinator, Florida Keys National Marine Sanctuary

Lessons Learned  
from  
Recent Marine Protected Area Designations in  
the United States

A Report to:  
The National Marine Protected Areas Center NOAA

By:

Brock Bernstein, The National Fisheries Conservation Center  
Suzanne Iudicello, The National Fisheries Conservation Center  
Charles Stringer, Law Offices of Charles M. Stringer  
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FINAL REPORT  
June 11, 2004

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## 1.0 Executive Summary

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In the United States and around the globe, governmental agencies use marine protected areas (MPAs) as a tool to manage human impacts in ecologically and culturally sensitive areas. Defined in the U.S. as "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein" (E.O. 13158, Federal Register, 2000), MPAs are designated through various processes that attempt – some more successfully than others – to merge the prerogatives of often disparate stakeholder groups with the physical needs of complex ecological systems.

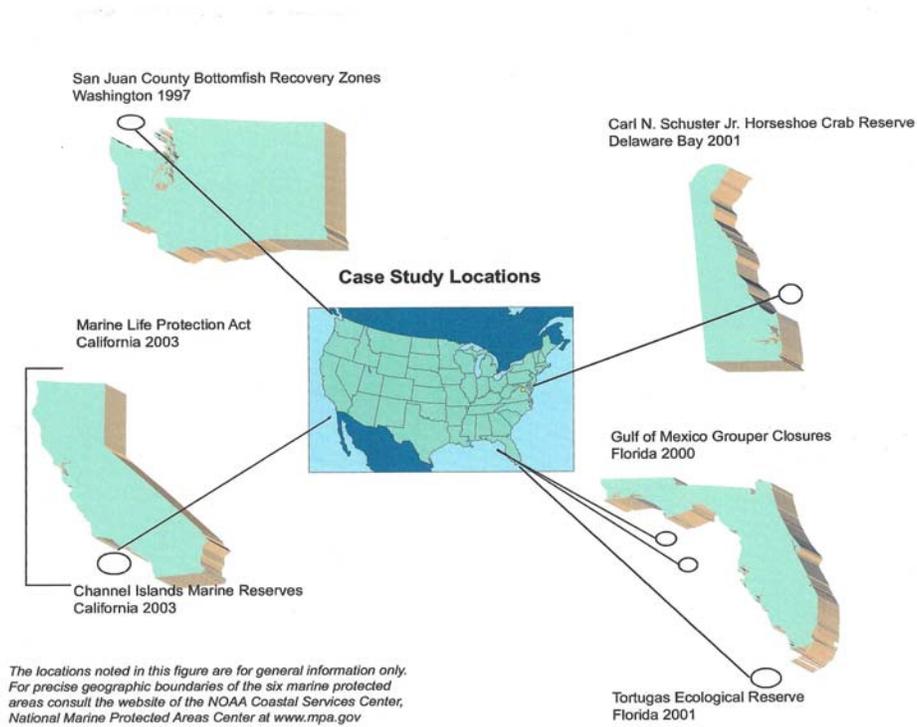
This report is a study of six separate and distinct efforts to designate MPAs in the United States. Based on the assumption that within their unique details lie lessons that can be broadly applied to other efforts, the case studies were carefully selected to represent diverse geographic areas and a spectrum of social, political, and ecological complexity. The assumption was correct. Through review of the written record and numerous interviews with those intimately involved in and affected by the six MPA designation processes, patterns emerged that formed the basis for important, broadly applicable lessons.

### ***Case Studies***

The six case studies that form the analytical basis of this report, illustrated in Figure 1, are:

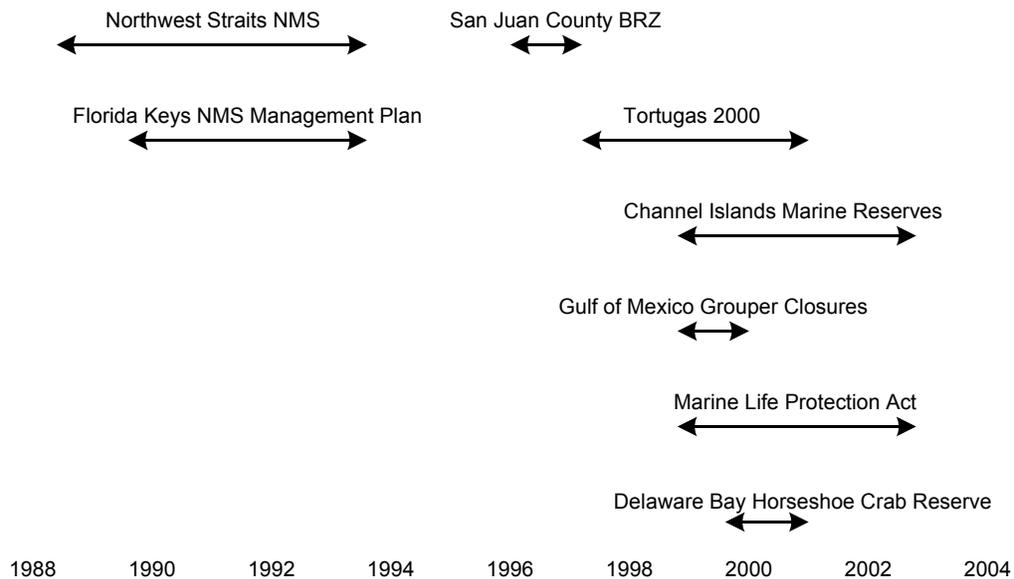
- The attempt to designate a National Marine Sanctuary in the Northwest Straits and the related establishment of Bottomfish Recovery Zones in San Juan County, Washington
- The designation of the Channel Islands Marine Reserves off the Coast of Santa Barbara, California
- Phase I of the establishment of marine reserves under California's state-wide Marine Life Protection Act:
- The creation of the Tortugas Ecological Reserve in the Florida Keys
- Grouper Closures off the coast of Florida in the Gulf of Mexico
- The establishment of the Carl N. Schuster Horseshoe Crab Reserve in Delaware Bay.

Figure 1. Locations of the six case studies that form the basis of the evaluation. Size of case studies not to scale.



The case studies cover the period from the late 1980's through 2003 and extended from one year to approximately five years in length (Figure 2).

Figure 2. Timeline for each of the case studies. NMS refers to national marine sanctuary and BRZ to bottomfish recovery zones.



While all are unique in their settings, historical backgrounds, degree of conflict, scope, and other essential characteristics, clear themes emerged from the case studies that provided the basis for explicit findings and recommendations.

### ***Findings and recommendations***

The findings and recommendations from the case studies were derived, analyzed, and then synthesized into lessons learned and, ultimately, the report's Findings and Recommendations. To ensure their relevancy and usefulness to agency managers, the lessons are organized to coincide with the typical stages of an MPA process, from inception through designation and review.

### **Setting the Stage**

Beginning with “setting the stage”, the report reveals the critical role that history, process design, goal setting, and science all play in laying the foundations for a productive effort to designate an MPA. While it may seem obvious that MPA processes do not emerge from a vacuum, several case studies revealed that avoidable challenges surfaced when process managers failed to take the time to fully understand the social, political and ecological landscape that informs a designation process. These historical factors often reveal the motivations and goals of stakeholders, and, when understood, support a more nuanced approach to avoiding or diminishing potential conflict.

Surprisingly, some process managers also overlooked (or at least undervalued) the central role that authorizing statutory or regulatory language plays in determining explicit goals and objectives. Vague or confusing expressions of goals with respect to a designation effort can lead to ambiguous and conflicting expectations about roles and outcomes, as well as other serious pitfalls. Managers should therefore clearly articulate the underlying authority driving governmental action and then build on that authority to develop, as much as possible given their sometimes fluid nature, meaningful statements of goals. This will help participants know what is at stake for them and understand precisely how stakeholder advice, decisions, or recommendations will affect authorized decision making.

### **Process Management**

Once initiated, MPA efforts turn to the “process management” phase of a designation. Process management factors include political considerations, the presence or absence of effective leadership, conflict management techniques, the role and timing of map making, and the availability of resources to fund a process. All these elements affect how efficiently and effectively a process moves through the inevitable twists and turns that occur in any designation. The case studies demonstrate that even processes that appear to be a straightforward application of scientific information to resource questions are significantly affected by their political settings and the push and pull of how user groups perceive the potential impacts of the proposed MPA(s). If not carefully managed and planned for, these allocation, socioeconomic, and political considerations can dominate a process. Effective leadership at the political, agency, stakeholder, and process levels is also a significant factor in the success or failure of a designation effort, as is the availability of skilled, interest-based conflict management tools.

Of course, intensive processes cost money, especially when facilitators, process design specialists, and sophisticated process techniques are utilized. But while stakeholder participation and process is an expensive, time-consuming, staff intensive undertaking, the case studies underscore the significant inefficiencies that occur when there is no clear staff oversight of a process, or when staff and management frequently change. In addition, staff must have the experience, stature, and core skills needed to understand and influence a processes' evolution, and to successfully flag and discuss emerging issues with program leadership.

## **Decisions and evaluation**

The final analytical phase of a designation process is the point or points at which decisions are made, and how those decisions and the outcomes they produce are evaluated. Here, the case studies demonstrate the importance of managing expectations among stakeholders by ensuring that participants understand the role they play in making decisions, and what happens to their decisions or recommendations once a participant's role in the process is concluded. Is the process collaborative, consensus building, or simply input for the agency? Precisely where does the decision-making authority lie? Participants must know the answers to these questions.

An issue related to decisions is how they are evaluated once made. A number of the case studies exhibit the problems that can occur when evaluation measures are not designed into a process. Evaluation should not only focus on the degree to which an MPA is meeting its stated goals, but also on the effectiveness of the designation process itself. Obviously the more clear the MPA's goals, the easier it is to design a monitoring system to measure those goals. Where goals are less clear, a secondary process may be required to establish interim and longer-term monitoring targets or benchmarks.

## **Recommendations**

In addition to these broader insights, the evaluation identified a number of specific recommendations.

1. Early planning efforts must include a thorough assessment of past history and its potential effects on stakeholder perceptions and the goals to which they will agree, as well as on their willingness to participate, and the groundrules they will accept.
2. Process managers must have a grasp of the underlying authority for a designation process, as well as the ability to explain it to participants.
3. Managers must have a vision of the process steps from beginning to end, not just the stakeholder participation stage.
4. Managers should design and manage MPA processes with an understanding of stakeholder motivation, an expectation that stakeholder goals will differ, and be prepared to handle disagreements and conflict.
5. Processes should incorporate appropriate flexibility and adaptability. Convenors and process managers should look at the full array of decision tools that are available and not feel locked into a complex consensus model or a rigid fishery management model.
6. Process managers need to remember that scientists are people, with motivations and biases like other stakeholders. Scientists should not work separately from other stakeholders, even on seemingly non-controversial issues. Scientists should be selected to ensure that their skills match the areas of expertise defined by the objectives of the process, and their role made clear to stakeholders.
7. Planners and managers should treat politics as the natural expression of human and interest group dynamics that reflect stakeholders' genuine interests and perceptions. They are part of the policy process and need to be recognized, accommodated and planned for. Such interest group dynamics often lead to conflict, which should be seen as a natural part of such complex processes.
8. Leadership is needed at the political level that initiates and supports the process, at the upper levels of involved agencies that ensure consistent commitment and follow through on decisions, at the process level where facilitation, negotiation, and conflict management skills are crucial, and at the interest

group level, where perceived stature, relationships with constituents, and the effective framing, control, and communication of a core message are important.

9. Value-laden conflicts can and should be addressed through the use of skilled, experienced facilitators. Where possible, third-party process managers should guide the process from the outset. If this is not possible, neutral third-party professional facilitators should at a minimum be employed to run the meetings.
10. Maps have many applications from identifying gaps to analyzing the implications of proposed boundaries. Process planners should consider three important aspects to maps – the process by which they are made, the information they contain, and how, when, and by whom they are used.
11. Upper level managers and agency decision-makers must ensure that key program staff are formally assigned to manage the process from start to finish, and that they have the experience, stature and core skills needed to understand and influence its evolution, and to successfully flag and negotiate emerging issues with the program leadership.
12. Process planners should be familiar with every stage in an MPA designation process, how long each step takes, and how much of it is set in law and regulation. They must know not only the stages of the stakeholder process and how long they will take, but be familiar with actions beyond the stakeholder process, where the stakeholder results go, what weight they carry, where results go in the next stage and how much of this is set in law and regulation. They must be able to communicate the overall picture to participants, and may need to do so more than once to be sure stakeholders do not lose sight of where their deliberations fit in the overall picture, or conceive unrealistic expectations about the outcome.

## 2.0 Introduction

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Marine protected areas (MPAs) are in use throughout the world for a variety of purposes. In the U.S., numerous agencies have established MPAs to achieve a variety of objectives. Their sizes, shapes, and purposes are as diverse as their designations. National marine sanctuaries, fishery management zones, national seashores, national parks, national monuments, critical habitats, national wildlife refuges, national estuarine research reserves, state conservation areas, state reserves, and local parks perform as sites for research and education, as biodiversity reserves, as tools to conserve historic or cultural marine resources, as designations to reduce user conflicts, and to manage natural resources.

The federal government's MPA program defines marine protected areas as "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein" (E.O. 13158, Federal Register, 2000).

Ocean resource managers at a variety of levels in the U.S. are considering MPAs to accomplish targeted objectives, including recovery of depleted fish populations. Fishery management councils are examining and debating the use of MPAs as fishery management tools. As program managers in National Marine Sanctuaries perform their periodic reviews and evaluations, no-take MPAs are being proposed as management measures in sanctuary management plans. State managers in Florida and Oregon are grappling with the effects of MPA designations on activities they manage in state waters, and in California a state law has mandated the development of a comprehensive system of MPAs throughout state waters.

Each proposed line on a chart, every suggested change or curtailment of human activity in the marine environment, engages user groups, managers, and scientists in the debate over the purpose, effectiveness, and evaluation of MPAs as a resource management tool. The process is never without controversy, highlighting the need for improved designation procedures, including more concrete criteria for MPA design and implementation.

During the past few years, federal and state agencies have undertaken public planning processes to create new MPAs or to establish fully protected marine reserves within existing MPAs. In each case, agencies sought public input on the design, location and management plan for new MPAs. Approaches used to acquire stakeholder input varied widely depending on agency-specific legal requirements, policies, timelines and other constraints. Public engagement in these very different planning processes ranged from sustained substantive involvement over several years, to more limited participation focused mainly on commenting on internally generated preliminary plans. The results of these MPA planning efforts varied as widely as their methods.

Constructive public engagement in MPA planning is vital to achieving conservation goals: both in establishing sites and in ensuring their effective long-term stewardship. Conversely, when MPA planning processes go awry, the resulting confusion and controversy can result in compromises on siting and levels of protection that do not comport with MPA objectives, and can complicate objective assessment of future unrelated MPA proposals in other settings.

To evaluate the effectiveness of stakeholder engagement in six recent federal and state MPA planning processes around the U.S., the National MPA Center initiated the MPA Lessons Learned Project to critically examine from a variety of perspectives what worked well, as well as what did not, and to make recommendations for future approaches to this fundamentally important phase of MPAs. A first phase

was publication of Marine Protected Area Process Review: Case Studies of Five MPA Establishment Processes, which can be viewed on line at [http://www.mpa.gov/information\\_tools/lessons\\_learned.html](http://www.mpa.gov/information_tools/lessons_learned.html). (NOAA 2003). The first phase was an objective documentation of five recent MPA establishment procedures, which specific process-related elements outlined for each. The present report examines the same cases from the perspective of stakeholders who participated in the planning and designation processes.

## **2.1 Report structure**

This project uses a case study approach to provide raw material and insights for an evaluation of several planning processes. Although the evaluation focuses on past experience, the report intends to be constructive and prospective, leading to improvements to stakeholder participation processes in order to create more effective MPAs.

In particular, the Lessons Learned Project evaluates the effectiveness of, and perceptions of key participants in, six planning processes to establish MPAs. The case study sites were chosen by the MPA Center for their geographic range, variation in governmental authorities involved, and different modes of stakeholder participation.

The six processes examined were:

- Northwest Straits National Marine Sanctuary / San Juan County bottomfish recovery zones (federal/state/local; Washington state)
- The Channel Islands Marine Reserve (federal/state; off Santa Barbara, California)
- California's Marine Life Protection Act: Phase I (state; throughout California state waters)
- Tortugas Ecological Reserve (federal/state; Florida Keys)
- Gulf of Mexico Grouper Closures (federal/FMC (Fishery Management Council); Florida Gulf coast)
- Carl N. Schuster Horseshoe Crab Reserve (multi-state/federal; Delaware Bay)

Each case study includes a brief description of the historic management or policy setting, examines the specific case facts in light of the project's core questions, and extracts lessons learned. A synthesis of all the lessons is pulled together in a Summary of Findings (Section 6.0), that also includes recommendations on a variety of topics related to process design, process management, decision making, and evaluation.

## **2.2 A note about terminology**

Executive Order 13158 defines marine protected area as "any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." In this report, however, each case study uses the terminology adopted by that particular process, and is not based on a consistent definition. For example, some case studies used the term "marine reserve" in reference to areas that are completely no-take, while others used the term in reference to areas that have limited take. In another example, some sites preferred to use the term "consumptive use," while others preferred the term "extractive use." Definitions of terms are incorporated in each case study as appropriate.

A list of acronyms used in the report is provided in Appendix A.

## 3.0 Core Issues

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The central goal of this effort was to assess a set of representative MPA planning processes to:

- Determine the effectiveness of stakeholder engagement
- Identify effective process planning and management elements
- Make recommendations to improve future such efforts.

The MPA Center sought information on stakeholder perspectives on a series of core issues related to these goals, including the following (drawn from the Statement of Work):

- The clarity and attainability of the conservation goals and objectives for the proposed MPA(s)
- The clarity of the policy and legal framework and the programmatic mandates within which the MPA planning processes were conducted
- The adequacy of the timeline from initial scoping to final decisions
- The adequacy of programmatic resources devoted to the planning process
- The impact, role, and adequacy of scientific information in informing decision making and resolving conflicts about site design, location and purpose(s)
- The adequacy, utility and clarity of technical information and decision support tools provided to the public
- The degree to which the perspectives of important stakeholder groups were adequately represented throughout the process
- The degree to which input from various stakeholder or user groups was weighed in making the final decisions on MPA design
- The influence of the ‘process design’ on its ultimate outcome, including the role of facilitators
- The degree to which the final MPA configuration met the stated programmatic conservation goals of the planning exercise
- Ways to improve meaningful stakeholder participation in MPA planning processes

It is clear that stakeholder perceptions alone do not provide a complete picture of the ultimate success (itself a difficult term to define) of a designation effort. Nevertheless, any participatory process that does not foster the involvement of key stakeholders is not likely to achieve its stated aims. In addition, the variety of viewpoints inherent in a broad cross section of stakeholders is a fruitful source of observations and insights for analysis and evaluation. The project’s primary focus on stakeholder perceptions should therefore be seen as a basis for analysis rather than as an explicit criterion of process adequacy or success.

In conjunction with project managers, investigators expanded the issues identified in the Statement of Work into a longer list of questions that fell into four bundles related to:

- Planning and design of stakeholder and MPA designation processes,
- How convenors, facilitators, agency managers, and others managed the process itself,
- Decision making about designation and how that action related to the stakeholder process, and
- Evaluation of the stakeholder process as well whether the MPA designation includes a means to monitor the MPA and evaluate effectiveness in meeting its objectives over time.

### **3.1 Setting the stage: Process design**

Issues related to the initial process design stages of the case studies included:

- The role of clear goals and objectives, as well as interim benchmarks or milestones
- The potential for confusion stemming from the often different sets of goals and objectives associated with enabling legislation, the individual MPA itself, and the process used to establish the MPA
- The function of any linkages established among these different sets of goals and objectives
- When in the designation process stakeholder participation was solicited
- The presence and results of actions to identify constituent groups, their perspectives, their relative influence, and their relationships to the set of goals and objectives
- The degree to which stakeholder representatives reflected their broader constituencies, including those directly affected by potential decisions
- Similarities and differences in how stakeholders viewed and understood the process
- The roles science and scientists, both natural and social, played
- The degree to which the general public was involved
- The presence and effect of any equity or environmental justice issues.

### **3.2 Working with stakeholders: Process management**

Issues involved in the stakeholder process itself included:

- The identification and/or use of best practices for critical elements of the designation process
- The presence and function of explicit groundrules
- The function of leadership of different kinds
- The use and effectiveness of decision support tools (e.g., maps, interactive GIS)
- The influence of past history on the interactions of stakeholder groups
- The nature and extent of ongoing communication between stakeholder representatives and their constituents
- Whether resources available to constituents affected the scientific advice they were able to provide
- The way science was solicited and used in the process
- Methods used to ensure all participants had a common knowledge base
- Methods for eliciting needed information from different stakeholder groups
- The influence of external advocacy campaigns.

### **3.3 Decision making: What happens after stakeholders have their say?**

Issues involved in making and implementing decisions included:

- The nature of the larger decision-making process and its relationships to local and regional processes
- Degree to which the larger decision process was understood by stakeholder groups
- The role played by comments from those outside the stakeholder process
- The influence of agency roles and relationships, as well as the larger political context, on decision making
- Methods by which agencies retain discretion on action as it proceeds through administrative steps.

### **3.4 Evaluation: Did the process accomplish its objectives?**

Issues involved in determining whether reserves are effective included:

- The role of evaluation in determining if an MPA has met its objectives
- Meaningful ways to identify lessons that link process and fundamental purpose
- How monitoring was dealt with during stakeholder discussions

- Whether gathering scientific information was an objective of the MPA
- Whether an explicit monitoring plan was included in the MPA design
- Who was given the responsibility for monitoring
- Whether monitoring is linked to an adaptive management plan.

## 4.0 Project Methods

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Investigators explored a set of issues regarding stakeholder perceptions of the respective designation processes through open-ended interviews. These were embedded in an analytic process used to assess the relative degree of success of each designation process and analyze the influence of factors that stakeholders perceived as key determinants of success or failure.

### **4.1 Methods used to gather information**

Following a discussion of the core issues, a detailed interview plan was prepared. NOAA provided an initial list of contacts and investigators expanded this with referrals from individuals on the original list and with individual contacts in a variety of organizations. The team attempted to interview the majority of direct participants in each case study, as well as knowledgeable observers who could provide an outside perspective. Investigators continued interviewing new contacts until they had thoroughly cross-checked the important elements of each case and had begun to hear the same material repeated. This required as few as a dozen contacts with the less complex cases and as many as two dozen or more with the more complicated ones.

An introductory statement about the project was used to begin each interview (See Appendix B). A few standard questions were used to establish baseline information and introduce the subject matter, but investigators did not use a questionnaire or survey instrument. Instead, open-ended interviews were used to sound out subjects on the core questions and issues. Interviews were loosely structured around core issues. Giving interviewees the opportunity to set the tone and direction of the conversation, rather than asking them to follow a highly structured survey instrument, permitted more useful information to be gathered. Once the conversation was underway, the interviewer may have branched out from the original direction of the interview to ask additional questions based on the specific issues.

Where useful, one contact was challenged with information obtained from another (anonymously), to probe their depth of understanding, their relative objectivity, or to gather data on a different perspective. Second or third interviews with some contacts helped to follow up on material from an earlier interview or to address questions raised in other interviews. To the extent possible, knowledgeable individuals, with whom we have long-standing prior relationships, were used as fact checkers and to provide greater insight into the history and underlying motivations of particular groups. All interviewees had the option of placing all or part of their interview off the record, and some availed themselves of this option.

Team members made detailed notes of all interviews, shared them among the team members and discussed interview results regularly via email and phone. These discussions aided in refining themes, narrowing hypotheses on which to base findings, and encouraged investigators to challenge each other's interpretations of the validity and significance of particular interviews. Names of interviewees and interview notes were retained by the investigators as confidential work products, and not made available to either the project managers or other information sources (per the terms of the contract with the National MPA Center).

### **4.2 Methods used to address core questions**

Because stakeholder perceptions are important but not the whole story, investigators looked beyond participants' perceptions of how events unfolded in the six case studies. Stakeholder perceptions are important, but not the whole story. To address the core questions, investigators also used the procedural documentation in the MPA Process Review (NOAA 2003), analysis of reported perceptions of participants from different interest groups and management agencies, comparisons of events and perceptions among the six cases, examination of the outcomes, investigation of the literature on process

design, insight derived from consultation within the team and with NOAA project managers. The project findings are thus more than a compendium of stakeholders' observations and judgments. They are instead the result of a synthetic and integrative analysis based on a broad range of information and experience.

#### **4.3 Methods used to validate findings and avoid bias**

Investigators used a range of techniques to help avoid bias in the data gathering and analysis and to verify conclusions and the basis of recommendations.

To ensure the representative nature of data sources, the team systematically interviewed a broad range of contacts, following suggestions for additional interview candidates, searching for other, independent, reviews of these and related planning processes, and looking for contrasting cases that challenged the plausibility of our emerging conclusions. Where issues emerged that have been treated in literature on planning, regulatory processes, stakeholder engagement or collaborative problem solving, investigators and cited used those resources.

Open-ended questions helped guard against influencing interviewees. Where interviewees' positions were known through their previous activities, investigators used this knowledge as a rough check on the internal consistency of their statements. The team employed other techniques to avoid subtle influences on our own perceptions, such as ensuring the inclusion of "dissidents" with no stake in the status quo or assigning two team members to key interviews where the contact was well known to member us. An internal skeptic's role also rotated among the team members in order to ensure that hypotheses and conclusions were adequately tested as they developed.

Investigators cross checked exceptionally passionate and eloquent interviews with more objective sources and compared verbal claims to the written record where possible. Where they found apparent distortions of the record, the team made further investigation and attempted to corroborate findings and conclusions by comparing several different sources and kinds of evidence, an approach termed "triangulation," to ensure that findings are based on several different, but mutually supportive, lines of evidence.

Information sources were weighted in terms of their relative validity and usefulness, giving more credence to those who had been directly involved in events, who had long-standing experience in the topic being discussed, whose statements could be validated through cross checks with other sources, who provided a thoughtful description and analysis of events, and who responded directly and knowledgeably to challenging questions.

## 5.0 Case Studies

### 5.1 San Juan County/Northwest Straits bottomfish recovery zones

Figure 3 shows the location and extent of the bottomfish recovery zones in the Northwest Straits portion of northwestern Washington State.

Figure 3. Location of bottomfish recovery zones in the Northwest Straits.



Source: ([www.co.san-juan.wa.us/mrc/ntz.html](http://www.co.san-juan.wa.us/mrc/ntz.html))

#### 5.1.1 Setting

The Northwest Straits is an area located in the northwestern corner of Washington State that covers approximately 1114 km<sup>2</sup> (430 mi<sup>2</sup>) and includes the San Juan Islands, an island archipelago that supports diverse and abundant natural resources. A world-class tourist destination, the area also supports several active fisheries, domestic and international shipping traffic, and vast recreational opportunities. Over one million people live in the area, which spans 7 counties – Whatcom, Skagit, Snohomish, Jefferson, Clallam, Island, and San Juan – and runs along the southwest border of British Columbia. Home to several federally recognized Indian tribes with U.S. Supreme Court affirmed hunting and fishing rights, the area’s resources are managed by an often confusing patchwork of tribal, federal, state and local government entities.

In 1983, acting through its authority under the 1972 Marine Protection, Research, and Sanctuaries Act (the act), NOAA identified a portion of the Northwest Straits as a potential national marine sanctuary (48 Fed. Reg. 35,568 1983). Six years later, Congress, led by Representative Mike Lowry (D. Wash.), doubled the sanctuary target area and elevated its status to “active candidate;” public scoping meetings were announced, and the formal vetting process was commenced (54 Fed. Reg. 41,481 October 10, 1989).

Located entirely in state waters, the sanctuary proposal almost immediately met with resistance. Although it received strong and sustained support from various NGOs (non-governmental organization) and some community members, the concept of a national sanctuary in the Northwest Straits never took hold with many local elected officials and community groups. As the process unfolded, opposition galvanized as the early to mid 1990s political culture shifted towards a local control, individual property rights perspective. To many, the sanctuary became yet another example of an “outside,” “top down” federal initiative designed to subjugate residents and their ability to decide for themselves how to manage local resources.

The sanctuary initiative floundered in the midst of increasingly strident opposition. Public meetings grew volatile and unproductive as vocal opponents frequently shouted down federal and state officials’ attempts to discuss the proposal. Without a clear understanding of the benefits a sanctuary designation would bring to the area, even supporters began to question the merits of the program and whether they were worth the concept’s divisiveness among community members. Indian tribes, with enormous interests at stake through their treaty rights to many of the area’s fisheries resources, largely sat on the sidelines because (1) they reportedly lacked sufficient resources to prioritize the sanctuary process over other critical issues facing the tribes, and (2) skepticism that the sanctuary would protect and further the tribes’ interests, coupled with a perception that it did not have the sufficient momentum to succeed.

The beginning of the end of the sanctuary proposal came in 1994, when all seven county commissions voted to oppose a national marine sanctuary in the Northwest Straits. Then in 1996, amidst intensive lobbying both for and against the sanctuary, Senator Patty Murray (D. Wash.) and Representative Jack Metcalf (R. Wash.) formed a bipartisan committee that developed an alternative rooted in a local, county-level approach to marine conservation. At the same time, San Juan County established bottomfish recovery zones (BRZs), voluntary measures to protect depleted bottomfish populations. Looking for guidance to San Juan County’s measures and the creation of their Marine Resources Committee – a volunteer body charged with advising the county on marine related issues – the Murray-Metcalf Commission devised a seven county, “bottoms-up,” federally-funded, voluntary program. Integrated through the coordinating leadership of the Northwest Straits Commission, and funded via a direct Congressional appropriation through the National Marine Sanctuary Program, the initiative supplanted the sanctuary concept with county-controlled, non-regulatory activities designed to “drive existing authorities to make reforms that have so far proved elusive” (Murray-Metcalf Report 1998).

The Northwest Straits Commission currently operates in its seven-county coordinating capacity and faces Congressional review and reauthorization in 2004. In April, 2004, the Northwest Straits Evaluation Panel, led by former EPA Administrator William Ruckelshaus, performed a Congressionally mandated five year review of the commission’s accomplishments. Identifying several achievements – including the mobilization of citizens, increased voluntary compliance with conservation goals, and contributions to scientific understanding of the area – the Panel unanimously recommended reauthorization of the commission for eight to ten years. The Panel also recommended a two-fold increase of federal support from roughly \$800,000 to \$1.6 million annually.

The procedural steps taken to create the bottomfish recovery zones are set out in detail in MPA Process Review (NOAA 2003).

### **5.1.2 Major themes**

Several themes emerged through discussions with dozens of individuals who participated in the Northwest Straits marine sanctuary initiative and in its metamorphosis into the establishment of BRZs and the county-led Northwest Straits Commission. Forming the basis for the lessons learned from these efforts, themes are most fully understood by first grounding them in significant factors that influenced the processes and their outcomes. These factors include the following:

- An intensely anti-federal, local control political climate
- A proposed national sanctuary located entirely in state waters
- A proposal that doubled the size of the site
- Federally recognized Indian tribal treaty rights within the area
- Unclear federal goals and several midstream leadership changes
- Local constituencies energized by a failed sanctuary effort.

Against this backdrop, and despite vastly divergent values placed on natural resources, political beliefs, and agendas with respect to the sanctuary, interviewees struck several common cords regarding why the sanctuary effort failed, and, conversely, why the BRZs are widely considered a success. These themes include (1) the importance of clear goals, (2) the appearance of a “top down” approach in a strongly independent community, (3) poor bureaucratic coordination and indecisiveness vs. quick, decisive and popular action, and (4) uncertain need for (and benefits of) a sanctuary vs. clear need for bottomfish protections. It is from these themes that the following lessons learned are derived.

### **5.1.3 Lessons learned**

#### Prepare, prepare, prepare

Several interviewees reflected a perception among participants that federal and state officials charged with responsibility over the sanctuary effort did not have a firm understanding of the affected communities or the local challenges they faced. For some, this underscored the fear that ill-informed “outsiders” were attempting to push an agenda on communities they had no connection to or stake in. Exacerbating these perceptions was the fact that little was done to integrate the process or its state or federal participants into the affected communities. Instead, officials would arrive in communities for public meetings and then immediately leave, or hold meetings in areas, such as Seattle, that sent unintended signals to rural communities that this was a concept invented by urban environmentalists who wanted to “lock up” natural resources simply for their existence value. While the sanctuary office stationed a manager and staff member in NOAA’s Seattle office, their presence did little to counter impressions in affected communities that federal officials were out of sync with local perspectives and concerns.

Perceptions that federal and state officials did not appreciate the depth of local concerns were formed early in the sanctuary process and plagued it throughout. While any proposal of this sort will generate some level of controversy among local residents, far more advance preparation could have been done to minimize the impact of this natural tension. For example, rather than going into the sanctuary process to learn more about perceived resource-related problems and how a sanctuary might address those problems, intensive research should have been done ahead of time so that problems and their potential solutions were understood as much as possible before the first public meeting was held.

Another aspect of preparation is the establishment of a presence in significant local communities. In the Northwest Straits, Friday Harbor, a town on the island of San Juan, was the source of most of the news, both myth and fact, that informed community members about the sanctuary. But rather than make efforts to connect to the community and gain trust, federal and state officials held public meetings and then left, leaving pregnant pauses in the process to be filled by people’s greatest fears. At least one interviewee suggested that opening an office in Friday Harbor would have gone a long way to building trust and inspiring more grass roots support for the initiative. Perhaps the intensity of the anti-federal sentiment would have overwhelmed any effort to establish credibility among local residents, but the lack of a local presence clearly fed the perception, among some, of a top down, “outsider” driven agenda.

The establishment of bottomfish recovery zones in San Juan County, of course, benefited greatly from the years of work that went into the failed sanctuary effort. Not only were the county commissioners who

adopted the measure intimately connected to the affected communities, they also witnessed the public's reaction to the sanctuary and understood what was politically feasible. Moreover, the sanctuary process gathered into one place considerable information about the status and location of important resources in the area, an effort which proved valuable to planning efforts that followed. While largely anecdotal, the commissioners had credible information regarding bottomfish populations and, not coincidentally, broad support for the action. San Juan County was well prepared to act swiftly to protect areas through voluntary measures.

#### Develop and communicate concrete goals

It is telling that the only interviewees who said they understood the goals of a sanctuary designation in the Northwest Straits were the state and federal officials charged with articulating them to the public. Not even enthusiastic sanctuary proponents – whose support appeared to be based on vague desires to bring more attention and potential funding to the area – were able to clearly state what a sanctuary designation would mean for the region. Indeed, the most common criticism (and the most common theory as to why a sanctuary failed to materialize) is that the process lacked a clear statement of goals. According to many, the lack of goals, the lack of a clear vision to capture imaginations and galvanize support, resulted in an “information vacuum” that was filled by those who opposed the sanctuary.

The issue of goals and objectives goes deeper than merely articulating the aspirations of a sanctuary designation process. Clear goals give shape and definition to an otherwise amorphous concept. They allow people to respond and react, to ask pointed questions and work to fashion a proposal into something that will garner support within the affected communities. In this context, several interviewees mentioned a “straw” proposal that was not offered during the sanctuary process, as a tool that could have brought much needed focus to discussions. Without something concrete, the process degenerated into parade of horrors detailing what local residents feared most from a designation: the end of commercial and recreational fishing; the closing of favorite anchorages; the federalization of a place where local communities take great pride in their self-determined lives.

The lack of clearly communicated goals also affected how federal and state officials responded to people's concerns and questions about the impacts of a sanctuary designation. According to many participants, there was little follow-up when questions were asked, especially those related to the scope or practical implications of a sanctuary. Again, without direct answers to questions regarding how a designation would affect the daily lives of individuals who live and work in the area, the sanctuary concept was effectively defined by those already predisposed to oppose it.

The BRZ effort, on the other hand, benefited from clear goals. First, San Juan County – motivated by the outside pressures of the sanctuary initiative – sought to demonstrate that it could, through locally driven efforts, act to protect bottomfish populations without federal or state “top down” involvement. The county also established a clear goal of working to ensure that whatever measures they put into place received broad support, including support from those who opposed the sanctuary. Although several interviewees expressed concern that the goal of popular support came at the expense of the most effective resource protective measures, in terms of the county's goal of politically viable, swift action that demonstrated a deep local commitment to take bold steps, the measures were clearly successful.

#### Ensure interagency coordination

Interviewees both within and outside government agencies pointed to the lack of effective coordination throughout the sanctuary effort, both among state agencies and between state and federal efforts. This lack of coordination, they felt, was a significant factor in why the process never seemed to gain steady momentum. From the outside, the lack of coordination appeared sloppy at best, and at worst reflected a perceived governmental ambivalence regarding an increasingly controversial proposal. Detecting

vulnerability, opponents reported exploiting this lack of unity while supporters of the sanctuary frequently felt out on a limb, with government officials doing little to help them counter growing opposition.

According to government interviewees, outside perceptions were not entirely off base. Federal officials reported being frustrated by mixed signals and an apparent lack of enthusiasm among some state agencies, and frequently experienced delays and lapses in communication around critical issues. For example, questions regarding the legal impact of the sanctuary being located entirely in state waters festered for months within state legal offices. Without guidance or agreed upon policies on this front, federal officials reported being hamstrung when communicating with communities about the proposal. In addition, several state agencies with significant roles in coastal resource management seemed to have diametrically opposing views on the merits of a sanctuary in state waters. This confusing situation hampered effective federal-state collaboration.

The lesson learned here is the importance of active and sustained coordination among state, federal and other agencies charged with shepherding a sanctuary proposal through its public review process. Critical issues must be defined and quickly resolved so that government officials can, as much as possible, respond to community concerns with one voice. Protocols should be in place to address inter and intragovernmental disagreements when they arise, long before they threaten to bog down a process or undermine public confidence in a government-led initiative. Federal and state officials must work in concert to develop a synchronized approach that seeks to energize local bottom-up passion and ownership over the process and its outcome.

The complexities and significance of effective coordination in multi-agency, multi-government efforts stands in stark relief to the county-led effort. Acting virtually alone, the county's establishment of BRZs was not bogged down by endless coordinating efforts with other public agencies. At the same time, however, some Indian tribal representatives maintain the county members sometimes overlook the fact that matters are not as simple as the county would like to believe. While the county's Marine Resource Committee attempts to include tribes and has a representative from one tribe with interests in the area, several other tribes, possessing treaty rights to hunt and fish that are viewed by U.S. courts as the "supreme law of the land," have for the most part elected to stay clear of the MRC for fear that their participation might result in a legal or de facto diminishment of their federal rights. The county is not a legally recognized manager of resources, many tribal and state officials point out, and as such is not an appropriate forum for management activities to occur.

The lesson here is that coordination among public entities, including Indian tribes, must be shaped with a nuanced understanding of the legal and political context within which MPA efforts are playing out. At the county level, where tribes and non-Indian local governments live in the same place but are in many ways distant neighbors, much more could be done to bridge historical gaps and distrust by searching for common ground from which to act. The tribes, through their recently adopted Tribal Policy Statement on Marine Protected Areas, Marine Reserves, Marine Sanctuaries, and Fishery Conservation Zones (June 26, 2003), have established a framework to guide effective coordination in a manner that is consistent with established law and respectful of tribal prerogatives. Working within this framework, perhaps San Juan County and tribes affected by the BRZs and other county initiatives can more effectively coordinate their efforts and work together towards achieving common resource-based goals.

#### Sustain the momentum

A number of interviewees, especially those engaged in the process from the beginning, expressed concern that the sanctuary initiative appeared to follow an on again, off again schedule. As a result, some said, momentum was frequently lost, and the concept developed a reputation for unpredictably "popping up" after sitting dormant for long periods of time. This pattern not only fed the perception that federal and state officials were not serious about a sanctuary, it also allowed opponents of the proposal to fill the

information void with their own anti-sanctuary agenda. This was especially the case when fundamental questions, such as the project's exact geographic scope or practical, day-to-day implications for local residents, went unanswered and lingered indefinitely.

The BRZ measures, by way of contract, were taken swiftly, over the course of just a few months. And where the frequently stalled sanctuary effort fed the stereotype of a lumbering federal government initiative, the county-led initiative, striking while the iron was hot from the fallout of the failing sanctuary, underscored the perception that local government can act with relative lightening speed and lean efficiency.

#### Manage disagreements

Major government actions affecting natural resources often ignite deeply held, value-laden passions that must be considered and accommodated to avoid polarization. In the Northwest Straits, the process followed a very common pattern: early reactions to a somewhat vague sanctuary proposal quickly divided stakeholders into two basic camps, those opposed and those in favor of a sanctuary designation. According to participants, however, discussions rarely went beyond this positional posturing because little effort was made to identify common ground from which to build consensus. Instead, public meetings focused on basic reviews of the sanctuary process and requests for public input, a structure that failed to inspire constructive, solution-oriented dialogue regarding the state of the area's resources. Over time, positions hardened and opportunities for such dialogue diminished, even as information was gathered to support a common understanding of challenges to resources that might be addressed by a sanctuary designation.

A more constructive approach would have been to design a process to seek a common understanding of the challenges facing the area's resources and the ways in which those challenges were not being met by existing management practices. Several interviewees expressed concern that a sanctuary seemed a "solution without a clearly defined problem," a perception that left many unable to articulate a sound reason to support the initiative.

In the subsequent BRZ effort, philosophical disagreements over the effectiveness of voluntary measures took a back seat to the desire to quickly put something into place. This, of course, is an example of how stakeholders often put differences aside when confronted with a perceived common threat (here, the threat of outside control). And as often happens, now that the threat of a sanctuary is (largely) forgotten, differences are again arising over the efficacy of voluntary vs. mandatory measures. But because trust is largely intact from years of working together, because all participants take great pride in their ability to do things themselves, and because the structure and relationships and credible information are in place, the San Juan County groups are poised to manage and even resolve these and other differences as efficiently and gracefully as possible.

#### Provide sustained leadership

Another major critique of the sanctuary vetting process was that it lacked clear, consistent, committed, and decisive leadership. While leadership comes in many shapes and sizes, in the Northwest Straits context there were two areas where leadership was absent. First, with the exception of early political leadership from Representative Lowry that jump-started the process, the process lacked high-level public leadership from state or federal elected or appointed officials. Perhaps because of the growing controversy surrounding the initiative, several interviewees suggested that the sanctuary became a political "hot potato" that high-ranking officials were reluctant to support, either politically or fiscally. But without such support the initiative floundered in the wake of active grass roots opposition.

The proposal also seemed to lack effective leadership at the process level. Here, leadership was required to manage disagreements and add a neutral third party to facilitate a consensus-based approach. Federal

and state officials attempted to play this role, but their claims of neutrality – that they were neither “for nor against” a sanctuary designation – were not trusted by most participants. And while they did their best under difficult circumstances, they were not generally trained in the art and skill of process design and facilitation of large-scale, potentially volatile public initiatives.

#### **5.1.4 Conclusion**

By all interviewees’ accounts the effort to designate the Northwest Straits a national marine sanctuary was a resounding failure. Not only did the designation fail, the process also fueled antigovernment flames and became an issue that divided communities and strained relationships. But while the effects of the effort still echo through the region, like most failures, the initiative and its fallout have inspired some success, at least from a policy and political perspective: the San Juan County BRZs and other county-led programs now in place. With the notable exception of several tribes whose federal rights make them uncomfortable with local resource management, most would say that things are better now because of increased focus brought to resource issues by sanctuary designation efforts.

Whatever the measure of success, however, much can be learned from the almost decade long attempt to establish a sanctuary in the Northwest Straits and its transformation into the Northwest Straits Commission and grassroots county initiatives. Some are obvious – determine ahead of time what problem a sanctuary is designed to address; establish clear goals and straw proposals; exercise effective leadership at the political and process levels – and some are not so obvious, such as the need to transform a distant, federal initiative into a locally-driven effort that inspires broad-based grassroots support. With these lessons in hand, perhaps future processes will achieve more effective, less divisive means of evaluating sanctuary designations.

### **5.2 California Marine Life Protection Act**

See Figure 1 for the general location of this case study. Detailed maps are not provided because the draft MPA network has removed from consideration for the moment. The draft network included a large number of proposed areas along the length of the entire California coast.

#### **5.2.1 Setting**

The current effort to develop an extensive network of MPAs in California state waters was mandated by a specific piece of legislation, Assembly Bill 993 (Shelley), also termed the Marine Life Protection Act (MLPA), introduced in February 1999 and chaptered in October 1999. The language is now included in Chapter 10.5 of the California Fish and Game Code, Sections 2850 to 2863. The bill was sponsored (and largely drafted) by the Natural Resources Defense Council, and supported strongly by conservation, diving, scientific and educational groups. The MLPA was motivated in part by two precipitating events. The first was the release of a California Sea Grant report in 1997 that critiqued the existing system of MPAs in California state waters, concluding it was haphazard and in need of reorganization. The second, which occurred at about the same time, was the shut down of all commercial and recreational fishing in southern California for all six abalone species, following the collapse of these stocks. The scientific and policy discussions surrounding this event suggested that, in addition to improved management, a backup plan, in the form of protected areas, could be useful, particularly for sedentary species like abalone.

The MLPA’s goal is to improve the array of MPAs in the state. However, wording within the act itself contributed to competing interpretations, among different stakeholder groups, about the outcome(s) the act was intended to accomplish. For example, Section 2851(h) states, “...it is necessary to modify the existing collection of MPAs to ensure that they are designed and managed according to clear, conservation-based goals and guidelines...”. Section 2853 states the need to “reexamine and redesign California’s MPA system...” and goes on to define a broad set of goals for the state (e.g., protect biodiversity, the integrity of marine ecosystem, natural heritage). While the act gives the Department of Fish and Game the authority to both implement new MPAs and remove existing ones, it does not

explicitly state that a significantly expanded, statewide network of MPAs should be established. The act also specified that a master plan team should be established to work closely with a range of stakeholder representatives to produce a draft proposal for a new MPA plan.

Following passage of the law, the California Department of Fish and Game (CDFG) empaneled a master plan team, made up of eight marine scientists from academia as well as state and federal resource agencies. The master plan team met periodically for a period of approximately 18 months to develop a draft proposal describing a network of MPAs of various types in state waters, distributed from Oregon in the north to Mexico in the south. It is important to note that, while the act states that the master plan team should work closely with stakeholder representatives, the team worked in relative isolation during the preliminary planning phase until a set of draft MPA proposals was made available on maps. The decision by the CDFG to take this approach set the stage for much of what followed.

The maps summarizing the draft proposal were met with a virtual firestorm of protest from a wide range of stakeholder groups. In a series of meetings throughout the state in late 2001, CDFG staff heard heated comments about the process used to develop the maps as well as detailed criticisms of the design of the MPA network itself. Comments on the process focused primarily on the fact that the scientists worked in virtual isolation from stakeholder groups and without their input. Criticisms of the design focused on the fact that it did not take advantage of detailed site-specific information held by stakeholders about habitat type and distribution or about patterns of recreational and commercial resource use. Even subsequent good-faith efforts to consult with stakeholders and to incorporate their perspectives into the proposed MPAs were overshadowed by the widespread concern over the apparently 'top down' agency process.

In response to these reactions from resource users, as well as to input from conservation groups involved in advocacy for MPAs, the CDFG regrouped and retracted the draft proposal. At the same time, collective action by key stakeholder groups induced the Legislature to extend the implementation timeline, giving the department additional time to develop a modified process. The department in early 2002 then constituted a set of regional stakeholder groups charged with developing MPA networks through a participatory stakeholder process. At present, this process has been suspended due to funding constraints and it is not clear whether or how the regional stakeholder groups will use the potentially useful scientific information collected and organized by the original master plan team. However, participants in the revamped process have stated that, because of the more direct stakeholder involvement, it was proceeding much more smoothly than the department's initial effort.

### **5.2.2 Major themes**

The working out of a legislation-driven MPA designation process in a complex and large-scale policy environment is a major theme of the MLPA case study. The act described desired outcomes in very general terms and was drafted with input from only a segment of potentially affected user groups. A second important theme is that the state agency with responsibility for implementing the act was operating under severe limitations, both in terms of its inherent capacity for managing a complex stakeholder process and the funds available for staffing and support. One aspect of this second theme is that a traditional fish and game agency may face institutional challenges to implementing place-based conservation as an alternative means of achieving management objectives. These two themes contributed to a third key theme, which was the way in which science input in this process engendered intense conflict rather than resolving important design issues. Finally, this case study illustrates how an agency, given time and additional resources, learned from initial difficulties and was able to develop a potentially more productive stakeholder process.

### **5.2.3 Lessons learned**

#### Excluding stakeholders creates resistance and conflict

The master plan team of marine scientists that produced the first set of draft proposals worked in isolation from stakeholders. Their task was not widely publicized and many stakeholder groups throughout the state were only vaguely aware of the master plan team's work. As a result, the publication of the initial draft proposal led to nearly universal feelings of shock and betrayal among key stakeholder groups, especially commercial fisherman. It would be hard to overstate the intensity of this response, which was magnified by the fact that resource user groups had not been consulted during the drafting of the MLPA itself. Fish and Game staff and master plan team members who attended the first set of local meetings following the release of the draft proposal describe this as the most difficult public process they had ever been involved in. While more effective communication between the department and stakeholder groups gradually resumed, all parties acknowledge that the residue of suspicion and bitterness was long lasting.

#### Excluding stakeholders leads to flawed MPA designs

Because the planning process was designed such that the master plan team of marine scientists met alone, they could not avail themselves of detailed information held by stakeholder groups. The master plan team made a good faith effort to gather and assimilate readily available information. However, in multiple meetings held between members of the master plan team and stakeholder groups after the release of the draft proposal, it became clear that the size and placement of MPAs were often based on generalizations and assumptions that were not always accurate. For example, proposed sites did not reflect finer-scale information about patterns of recreational and commercial fishing that could have helped minimize economic impacts while still meeting resource protection goals. As another example, because of the plan team's working assumption that similar habitats had similar populations of fish, proposed sites missed opportunities to maximize potential for recovery and minimize economic impacts. The discussions at these meetings made clear that, as the next point describes, scientists should not be asked to craft MPA designs in isolation from stakeholders.

#### Scientists should not be sequestered

The makeup of the master plan team and the approach it took to developing the initial draft proposal was based on CDFG managers' desire to jumpstart effective stakeholder involvement by presenting a set of maps that could serve as the focus of review, comment, and design. This situation was very different from the role scientists played in the Channel Islands process, where the science panel was tasked with developing overall guidelines that framed the design work of the stakeholder group. However, when scientists are separated from other stakeholders in a context where the product they produce will potentially have direct impacts on other stakeholders, several predictable consequences result. First, as the previous lesson describes, the product can be flawed, lessening the credibility of the process as a whole. Second, awareness that scientists are working alone and out of view can trigger a perception that this is an elitist process, amplifying stakeholders' complaint that their knowledge has been devalued, thus obstructing collaboration. Third, exclusion often leads to anger and resentment which can obscure the value that does exist in the product of the scientists' work. A process with a separate scientific planning team might have worked if the team had been charged with developing a strictly ecological preliminary design, all stakeholders had understood the planning team's role, and there had been a clearly defined process for involving stakeholders in the next steps. However, even this approach would still have failed to incorporate stakeholders' ecological knowledge (see previous lesson).

#### Maps by themselves can provoke conflict

The draft maps produced by the master plan team were released by the department of Fish and Game with little or no preparation of the audience of stakeholder groups. The process by which the maps were created was not sufficiently explained, nor was the fact that the department considered the maps as a starting point for discussion and revision. Instead, all too predictably, stakeholders reacted to the maps as something that was being done to them, as opposed to something they were being asked to participate in.

The fact that the maps clearly did not reflect stakeholders' detailed knowledge of many of the proposed MPA areas merely amplified this perception. Where maps are developed collaboratively, as occurred in the Tortugas and Channel Islands processes, they can contribute to trust building and provide an effective framework for productive negotiation. Where they are developed out of view and presented without adequate preparation, they produce the opposite.

#### Process experts should be involved in process design and implementation

The reaction of stakeholder groups made it clear to many participants that process design experts should have been consulted from the very beginning of the process. In hindsight, Department of Fish and Game staff point out that training as a biologist does not prepare someone to deal with complex and potentially contentious stakeholder processes. Thus, managers appear to have overestimated the capacity of the department to successfully design and administer the necessary planning, consultation, and negotiation activities required by the MLPA. To some extent, a tight budget for the process may have made it easier for managers to assume that department staff could handle the process of soliciting, organizing, and responding to stakeholders' comments and then incorporating these into a revised set of maps. From a strictly technical perspective, this was probably true. However, department staff now acknowledge that professional facilitators would have greatly improved the process by helping to avoid pitfalls and to more quickly reopen productive channels of communication with stakeholders. To their credit, department of Fish and Game managers recognized their lack of expertise and hired professional facilitators to run the second round of meetings with stakeholder groups. By all reports, these meetings were proceeding relatively well before they were suspended due to budget constraints.

#### Be willing to be flexible

The MLPA process is an excellent illustration of the value of flexibility. After the first round of disastrous statewide stakeholder meetings, the Department of Fish and Game pulled back and regrouped. Based on their own first-hand experience and input from key stakeholder groups (primarily conservation groups, commercial fishermen, and ports), the department pulled the original set of maps off the table, redesigned the process, and retained skilled facilitators. Department staff recognized that relationships had been damaged and worked hard to rebuild them. The importance of the department's acknowledgement of the problem should not be minimized. It can often be difficult for institutions, as well as individuals, to publicly admit to problems, recognize the need for policy changes, and then commit to a new approach. The fact that the department did so, even while receiving substantial criticism, was seen by some parties as admirable, although others saw it as a sign of weakness in the face of controversy. In any event, the department's willingness to reassess methods while still pursuing the goals of the MLPA appears to have been a productive strategy. The master plan team also made a substantial contribution to the department's ability to shift direction. Several plan team members (all of whom had volunteered their time from the beginning of the process) attended multiple meetings with stakeholder groups to solicit their input and reopen lines of communication. Without that effort at bridge building, the department's efforts alone may not have been effective. It is important to note, however, that any future role for the master plan team at this point is uncertain. There is little funding to support their continued participation and no formal commitment to use the information they developed.

#### Goals should be clearly and consistently articulated

The goals of the MLPA process were insufficiently explicit in two ways. First, the language in the legislation is somewhat ambiguous. It clearly mentions the need for reorganizing the existing set of MPAs in state waters but is much less clear about the creation of new MPAs. This provided one basis for criticism of and resistance to the process once the draft proposal was released and stakeholder groups obtained their first view of the proposed network of new MPAs. Second, the MLPA refers to both biodiversity conservation and fishery related goals, but does not explain how these are to be implemented and balanced or traded off against each other. While it is not unusual for legislation to leave such details to implementing regulations and/or policies, the Department of Fish and Game did not take control of the

message regarding the specific goals of the MLPA and the network of MPAs. As one example, after the release of the original draft maps, scientists on the master plan team explained in local meetings that the focus of the MPA network was subtidal rocky reef habitats, a focus that stakeholder groups were not widely aware of. As another example, discussion about the goals and merits of the MPA network was often dominated by advocacy groups on one side or another of the issue, while the CDFG's voice was drowned out. The department's lack of message control, combined with the incompletely specified goals, resulted in the relationship between conservation and fisheries goals becoming confused in public discussion and advocacy.

#### Acquiring site-specific information from fisherman can be challenging

While it was clear that master plan team's design efforts could have benefited significantly from detailed site-specific input from resource users, especially fishermen, obtaining such information can be difficult. Many fishermen were quite forthcoming in the various sets of meetings related to the MLPA process, and readily shared information about the specific locations of fishing areas, the distribution and behavior of fish populations, and the relationship between ocean conditions and fish distribution and abundance. However, significant numbers of fisherman are typically extremely reluctant to share such knowledge, for a number of reasons. Fishermen are deeply concerned that such information can be used against them. A frequently voiced suspicion was that information about the location of high quality fishing areas would simply be used to site MPAs that would put these areas off limits to fishing. Another concern is that, where detailed information is not widely known among fishermen, sharing such information in a public process can be a competitive disadvantage. Finally, there is a widespread perception among fishermen that their knowledge is considered, by conservation advocates, scientists, and fisheries managers, to be less valuable or trustworthy than scientists' knowledge. And, in fact, the process by which the master plan team produced the first draft proposal tended to reinforce this perception. As in all complex situations, these concerns were neither all true nor all false, but they did color many fishermen's perceptions and influence their behavior.

#### **5.2.4 Conclusion**

The stakeholder process derived from the MLPA is widely considered to have been a failure in its initial phase but to have set the stage for a potentially more successful outcome in its second phase. The primary proximate causes for the high level of conflict that marked the first phase, following the release of the draft proposal, were:

- The ambiguous nature of the proposed network's goals,
- The exclusion of stakeholders from the master plan team,
- The release of the draft proposal maps without adequate preparation, and
- The absence of trained facilitators and process experts.

These proximate causes stemmed from an underlying set of ultimate causes, primary among them:

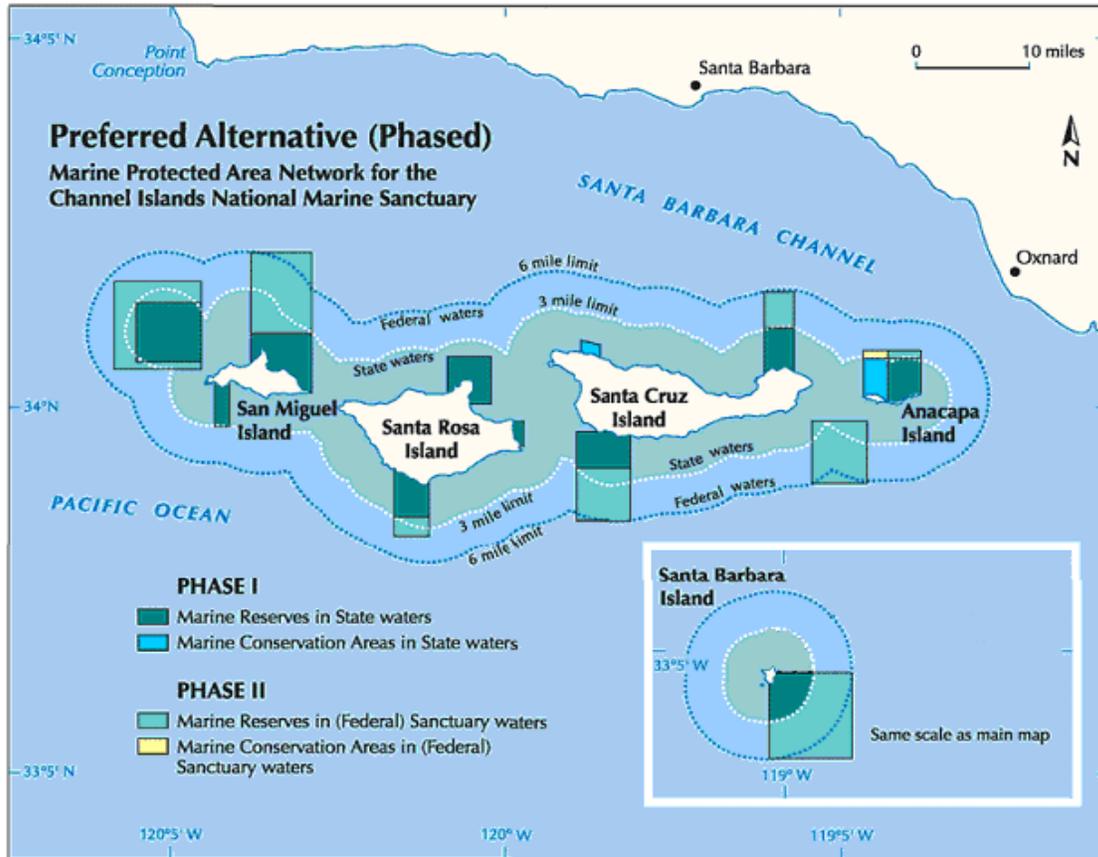
- The short timeframe imposed by the MLPA,
- The mismatch between the institutional capacity of the Department of Fish and Game and the needs of the situation,
- The larger context of adversarial relationships between fishermen and many conservation advocates, and
- Inadequate funding for the department's efforts.

While the MLPA process may yet produce its desired result, namely an integrated and well-designed network of MPAs in state waters, the path it has taken to date has been full of conflict, some of which may have been unavoidable. A key lesson to draw from this is the importance of attention to the human dynamics side of stakeholder processes.

### 5.3 Channel Islands Marine Reserves

Figure 4 shows the location and extent of the marine reserves in state waters off the coast of southern California.

Figure 4. Location of marine reserves around the Channel Islands in southern California.



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

#### 5.3 1 Setting

The Channel Islands are a chain of islands off the coast of southern California that are home to both the Channel Islands National Park and the Channel Islands National Marine Sanctuary. The islands provide extensive recreational opportunities (e.g., sportfishing, sightseeing) to a large urban population and are also fished commercially for a wide range of species. In addition, the islands are near major transit lanes for shipping in and out of the Ports of Los Angeles and Long Beach, as well as to military training and weapons testing activities at U.S. Navy facilities at Port Hueneme and Point Mugu. The marine resources of the Islands and their adjacent waters are managed by a variety of state and federal jurisdictions, many of which overlap, including the California Department of Fish and Game, the California State Lands Commission, the National Marine Sanctuary Program, the National Parks Service, the National Marine Fisheries Service, and the U.S. Coast Guard.

The effort to designate MPAs in the Channel Islands followed a complex path. It was initiated in 1998 by a group of recreational fishermen who approached the California Fish and Game Commission, concerned about potential overutilization of fish stocks around the islands. They submitted a proposal to close 20 percent of a one-mile (1.6 km) wide zone surrounding the northern Channel Islands to all fishing. After

failing to interest the commission in this initial proposal, they solicited the support of the Channel Islands Marine Resources Restoration Committee, a group of recreational fishermen and other citizens from southern California, as well as the Channel Islands National Park. When informed by the commission that a federal agency (i.e., the National Park Service) did not have jurisdiction over resource use in state waters (a judgment based on a 1978 U. S. Supreme Court decision related to the Submerged Lands Act), the Park Service then joined with the CDFG, recreational fishermen, and conservation groups to resubmit the original proposal to the Fish and Game Commission.

Finally, in late summer of 1999, the commission charged the CDFG to determine how to address the proposal for a no-take reserve. At the next commission meeting, Patty Wolf, a CDFG manager, and Ed Cassano, the Superintendent of the Channel Islands National Marine Sanctuary, proposed a structure for a multi-stakeholder public process that became the Marine Reserves Working Group (MRWG). The process included a multi-stakeholder group, the MRWG, supported by a Science Advisory Panel and a Socioeconomic Advisory Panel. The process envisioned the MRWG making a recommendation on reserves to the Sanctuary Advisory Council, which would then use this as the basis of their recommendation to the sanctuary and the CDFG. These two agencies would then make their recommendation on a preferred alternative to the Fish and Game Commission, which had the authority to make a final decision about implementation in state waters. The development of reserves in state and federal waters was split into two separate processes because of differences in jurisdiction in state and federal waters (the process for federal waters is not yet complete).

It is important to note that the Fish and Game Commission did not provide the MRWG with clear goals or objectives, but rather a very general charge to examine the proposed no-take zone. The MRWG thus spent its first several meetings determining their goals and objectives. While several objectives were agreed on, three tended to dominate subsequent discussion and negotiation about reserve design:

- Protect ecosystem biodiversity
- Maintain long-term socioeconomic viability
- Achieve sustainable fisheries.

(These are shortened versions of the objectives. For the complete statement of objectives, see MPA Process Review (NOAA 2003.))

The MRWG process took place against a backdrop of increased concerns about the status of west coast fish stocks, especially the rockfish complex, and growing interest in and advocacy for the use of no-take MPAs as conservation and fishery management tools. While it came close, the MRWG did not reach complete consensus on a reserve design. However, the alternatives the MRWG developed helped form the basis for the CDFG's and the sanctuary's recommendation to the Fish and Game Commission for a network of reserves in state waters. These were approved and implemented in 2002 and a formal planning process is currently underway to designate a complementary set of reserves in federal waters. However, the Ventura County Commercial Fishermen's Association has filed suit against the California Fish and Game Commission challenging the legitimacy of the reserves in state waters on procedural grounds related to the California Environmental Quality Act (CEQA), as well as statutory and constitutional grounds. In brief, the CEQA claim identifies several points, such as failure to adequately address mitigating negative consequences of the reserve; the statutory claim identifies procedural failures, and the constitutional claim argues that the agency does not have authority to restrict fishing in the manner it did.

The procedural steps taken to create the Channel Islands marine reserves are set out in detail in MPA Process Review (NOAA 2003).

### **5.3.2 Major themes**

The search for consensus among stakeholders in the MRWG process is a major theme of the Channel Islands case study. The attempt to reach consensus was complicated by the concentration of resource use by many user groups within a small area, as well as by the complexity of the institutional setting, which involved multiple state and federal agencies. In particular, a federal agency (the sanctuary) was acting in an advisory role to a state body (Fish and Game Commission) with ultimate decision-making authority for final approval of any proposed reserves. Secondary themes in this case included the high potential for conflict, which stemmed from the lack of “wobble room” in the relatively small area, and the way in which science advice set the boundary conditions within which the MRWG members negotiated for consensus.

### **5.3.3 Lessons learned**

#### Allocate adequate time for up-front assessment, planning, and goal setting

The original charge to the MRWG to consider the use of marine reserves was somewhat vague and did not provide explicit guidance. However, many MRWG members interpreted this wording to mean that a decision about whether or not to implement reserves had not yet been made and that it was therefore possible the MRWG could decide not to implement reserves. Over time, this goal shifted to a focus on determining where reserves should be placed and how large they should be. While there was general agreement among our sources that the basic goal had shifted, there was no such agreement about how, when, or exactly why this occurred. Some believed the science panel’s conclusion that 35 – 50% of the state waters around the Islands should be protected was instrumental, but others simply expressed puzzlement. This percentage approach was based on estimates of what percentage of fish spawning biomass should be protected to ensure sustainable yields, assuming no effective fisheries management outside reserve boundaries. This approach, and its embedded assumptions, was criticized by fisheries scientists external to the MRWG process, contributing to the skepticism among many stakeholders about the scientific recommendation. Whatever the case, several MRWG members felt the MRWG’s decision-making role had been eroded or usurped, in part because the original charge from the Fish and Game Commission and the MRWG’s own statement of goals had been so vague.

The relationships between the MRWG and its two advisory panels (socioeconomic and science) were quite different and were not clearly defined at the outset (see following). The science panel actually framed the constraints (the percentage of area to be set aside) within which the MRWG found itself operating. To some extent this may have limited the MRWG’s ability to consider incremental approaches that did not immediately meet the science panel’s criterion. The socioeconomic panel, in contrast, did not set boundary conditions but instead developed economic data on fisheries and non-consumptive uses around the Islands and helped create tools to analyze the economic impacts of alternative reserve designs. While it is often useful for the roles of the parties to a planning process to evolve naturally over time, no evidence was found that roles in the Channel Islands process were explicitly considered, evaluated, and adjusted along the way.

#### Provide for ample communication with involved scientists

While much of the discussion about stakeholder planning processes refers to the role of science, the role of scientists themselves, where they fit in the organizational structure and how they communicate with others in the planning process, is also important. The Channel Islands process, in contrast to that in the Tortugas, established a distinct science panel that met separately from the MRWG. Contacts expressed a wide variety of perceptions and opinions on the role and functionality of the science panel. These spanned the range from it was an effective, science-driven process, though it answered questions the MRWG did not ask, to it reflected the viewpoint of a few strong advocates of reserves. This range of opinions reflects, in part, the relatively limited opportunity for communication between the MRWG and the science panel. Most such communication occurred through a single contact point. There were thus very few instances in which MRWG and science panel members met jointly to clarify questions and probe the basis for and

implications of scientific advice, which, over time, contributed to concerns among some stakeholder groups about the nature of the information exchange with the MRWG.

The science panel met separately from the MRWG, by design, in order to enable the scientists to conduct vigorous and highly technical discussions without the need to slow down and explain the issues to laypersons. This benefit was counterbalanced by the perception of many outside the science panel that they were being actively excluded from these discussions.

#### Package key assumptions with science advice

Especially where the science recommendations play a dominant role and where they are developed in a process separate from the stakeholder group, the key assumptions underlying the recommendations should be made explicitly clear and shared widely. This occurred to some extent in written materials developed by the science panel. However, the limited opportunities for MRWG members to interact directly with the science panel restricted the MRWG's ability to probe these assumptions more vigorously. As a result, the science advice became, for all intents and purposes, one-dimensional, i.e., achieve the 35 – 50% set aside goal. The MRWG therefore lost opportunities to develop additional, potentially useful design scenarios. For example, the history of the process through its own minutes and the recollections of participants shows that the MRWG never explicitly examined the implications of relaxing the science panel's simplifying assumption that there was no effective fisheries management outside the proposed reserves.

#### Build experimental evaluation into MPA design

There are three distinct issues related to the evaluation of MPA designs and performance. The first is whether the design properly applies current scientific knowledge to the performance goals in order to maximize chances of success. The second is whether there is adequate monitoring of actual performance, for example, in terms of biodiversity or spawning biomass within the MPA or of fishery yield outside the boundary. The third is the extent to which the management system can adjust MPA design over time as monitoring information becomes available.

In the Channel Islands process, there was no formal examination of the science panel's recommendations during the period when the recommendations were strongly influencing the MRWG's goal setting. Neither these recommendations nor the design itself attempted to explicitly create experimental situations that would, over the course of time, allow for testing key expectations about reserve performance on both conservation and fisheries goals. The size and location of individual reserve areas were left to negotiation among MRWG members, as long as the basic scientific constraints (i.e., percentage of area, representation of habitats) were met. While this allowed for maximum flexibility in dealing with the socioeconomic impacts and other interests of the MRWG members, it also represented a lost opportunity for the reserves to act as a real-world adaptive management experiment. Statements by several MRWG members, as well as the broader literature on environmental monitoring and much of the published discussion on MPAs, emphasize the importance of truly experimental monitoring designs that incorporates key comparisons and controls. Finally, there were no specific features in the longer-term management plan that described how an adaptive management process might operate.

#### Consider outcomes other than consensus

Because of their desire to reach consensus, the MRWG members, at the outset of their work, agreed to a groundrule stating that no single member would hold veto power. Instead, a member would be obliged to suggest an alternative to a proposal he or she objected to or else resign. However, this groundrule proved difficult to consistently enforce, and the MRWG process did not achieve the desired consensus when a key stakeholder group declined to agree to the reserve design supported by the other MRWG members. While a representative of this stakeholder group maintains that there was simply not enough time to resolve their concerns about the placement of closed areas, other MRWG members perceived their

objections as gaming behavior and complained that the key groundrule was not enforced to the degree it should have been. Thus, while consensus is widely considered to be an ideal goal, MRWG members and experts in decision processes pointed out that a goal of consensus can be exceptionally difficult to achieve, can lengthen the process significantly, and opens the door to several kinds of potentially destructive gaming behavior. Thus, alternative endpoints (e.g., majority, super-majority) should be explicitly considered.

#### Clarify dual roles and avoid where possible

The convening agency should think carefully about whether it should also act as a voting stakeholder. In the Channel Islands, these sanctuary convened and staffed the process and was ultimately responsible for providing recommendations to the Fish and Game Commission. However, the sanctuary superintendent also had a voting seat on the MRWG. This led to a perceived conflict of interest, and some stakeholders drew the conclusion that the sanctuary had a particular outcome in mind from the beginning and was working to achieve that by manipulating the process. The sanctuary's dual role led to further resentment among some sectors when, subsequent to the MRWG's failure to reach consensus, the sanctuary then developed a set of recommendations and forwarded them to the Fish and Game Commission. While this was well within the scope of the original agreement between the commission and the sanctuary, the sanctuary's participation as an active member of the MRWG had created an impression among some participants that it was deferring completely to the MRWG process. Thus, when the MRWG did not reach consensus and the sanctuary reverted to its alternate role, some participants felt betrayed. One key participant suggested that the sanctuary should have more frequently reminded MRWG members that it would take on its other role if the MRWG process did not produce a consensus recommendation.

#### Build maps collaboratively

Maps can be a useful and constructive tool for exploring alternate scenarios, especially if they can be created and manipulated directly by stakeholders. The sanctuary developed a GIS mapping tool, populated with actual data on habitats, the distribution of fishing effort, and the economic value of catch in different areas around the Islands. This tool was used by different stakeholder groups to generate additional alternatives in an attempt, late in the process, to bridge gaps between different positions on the MRWG. All the participant groups agreed that this mapping tool was useful, although, in this case, participants primarily talked about the value of the maps as a negotiating tool. They were willing to actively use it for this purpose because the underlying data had been identified and developed through a transparent and collaborative process. However, while the participants agreed they learned a lot through the process of developing the data needed for the maps, only a few referred specifically to this process as having helped to improve trust among the MRWG members and their constituencies.

#### Include the fisheries management system

Whenever an ocean area is set aside from extractive uses, for whatever purpose, there are potential impacts on recreational and commercial fishing activities. This case study emphasizes the importance of integrating reserve design with the fisheries management system. The fact that the analyses underlying the reserve design did not account for existing fisheries management regulations, including other extensive closures, ended up amplifying resistance and undermining the credibility of the reserve design with fishermen, the Pacific Fisheries Management Council, and the state and federal fisheries agencies. Some science panel members explained the general exclusion of fisheries management policies from their analyses by pointing out that catch limits and closures implemented by fisheries management agencies (both state and federal) were not permanent and could be revoked at any time. In response, some MRWG members pointed out that accounting for these policies in some way could have provided the "slack" needed to develop and consider phased or adaptive reserve designs that might could have improved the chances for consensus. Especially where a key goal is to promote sustainable fisheries, it is vitally important to include fisheries management and stock assessment expertise in the relevant working groups and to ensure that fisheries management agencies, who will be responsible in whole or in part for

implementing policies regarding fishing, are fully involved and committed to the process. This was particularly true in the Channel Islands case, where the reserve designation process in state waters was to be followed closely by a parallel process in federal waters, in which NMFS and the Pacific Fishery Management Council would play a central role.

#### Implement monitoring simultaneously with the reserve

Monitoring is crucial for determining if reserves are achieving their expected outcomes and, from a technical perspective, such information is clearly needed for adapting and improving reserve designs. In addition, from the perspective of stakeholder processes, monitoring is essential for assuring stakeholders that the economic sacrifices they are willing to make are ultimately worthwhile. In the Channel Islands, the recreational and commercial fishing stakeholder groups were asked to accept significant losses of near-term income in order to implement the reserves. There was an implied compact in much of the information put forward to support implementation, i.e., that setting aside areas now would lead to “more fish in the future.” While there were several mechanisms suggested for how this might occur (e.g., larval export, spillover of adult fish), neither the functioning of these mechanisms nor the degree to which they in fact would improve stocks have been documented in the Channel Islands or fully validated in the broader scientific literature. In hindsight, some contacts in conservation organizations stated that the potential fishery benefits of the reserves were probably oversold. Thus, fishing constituencies were intent on the use of monitoring to assess reserve performance and many fishermen have expressed bitterness over the fact that an effective monitoring program was not put into place at the time the reserves were implemented. While the Channel Islands National Park has conducted a long-term monitoring program in the nearshore zone around the Islands, this has not included the fishery stocks of interest to recreational and commercial fishermen. After the reserves were established, the CDFG and the CINMS held a workshop to design a comprehensive monitoring program. Both agencies are moving toward implementing the resulting program now.

#### Consider the long term, both past and future

This case extends back at least to 1978, when a U.S. Supreme Court decision gave the state the authority, under the federal Submerged Lands Act, to manage the seabed out to three miles. This was the reason the original impetus for reserve planning originated with the California Fish and Game Commission, and why the final decision about implementing reserves in state waters was made by the commission. In addition, events have continued to move forward since the designation of reserves in state waters in 2002. For example, planning is underway to design a complementary set of marine reserves in the federal waters portion of the CINMS, there are ongoing efforts to find funding for monitoring, local fishermen have both filed suit against the Fish and Game Commission and organized collaborative and community-based data gathering and management initiatives, and new efforts have begun to better integrate reserves science and fisheries management. Thus, while the designation of reserves in state waters is a significant event, it remains a solution in flux in a dynamic scientific, social, and policy context. It is part of an ongoing process that can have unpredictable outcomes or side effects, as well as unintended consequences. It is therefore difficult to judge, within the somewhat arbitrary temporal boundaries of a given stakeholder process, the relative degree of success or failure, or even what success and failure mean and to whom.

#### **5.3.4 Conclusion**

The stakeholder process in the Channel Islands is considered both a success and a failure, depending on which stakeholder group one talks to and on what criteria are used in the evaluation. The following sets of statements summarize these divergent perceptions; while each statement reflects the “success” or “failure” point of view, no statement is either true or false in an absolute sense.

It is considered a success because it:

- Ultimately led to the implementation of a network of reserves,
- Developed new approaches for applying reserve theory to reserve design,

- Used science advice as the basis for the MRWG’s design negotiations,
- Used concrete economic data from stakeholders to estimate the economic effects of alternative reserve designs, and
- Created a mapping tool that helped stakeholders evaluate the biological and economic implications of multiple design scenarios.

It is considered a failure because it:

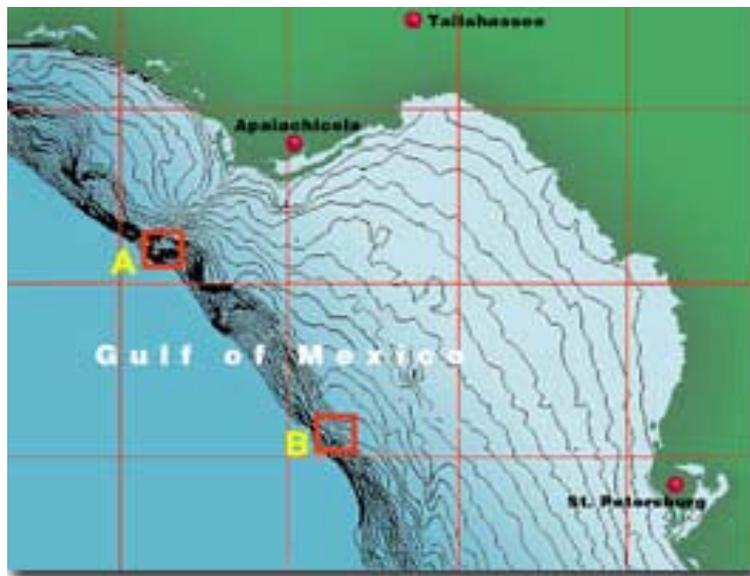
- Did not adequately consider the complex set of roles and relationships involved in the process,
- Did not reach consensus on a single design alternative,
- Changed goals without the full agreement of all stakeholders,
- Used fishery benefits arguments without fully exploring the full range of fisheries science issues,
- Was driven by science advice that was interpreted as an inflexible goal,
- Limited communication between the MRWG and the science panel, and
- Did not implement an effective monitoring program.

Thus, one important conclusion from the Channel Islands stakeholder process is that identifying consensus as the single criterion of a successful process can promote unrealistic expectations, provide an opportunity for what can be perceived as gaming behavior, and leave the process without the ability to capture the progress toward agreement that has been made.

#### **5.4 Gulf of Mexico grouper closures**

Figure 5 shows the location of the two grouper closures in the Gulf of Mexico off the coast of Florida.

Figure 5. The location of grouper closures in the Gulf of Mexico.



- A: Swanson and Madison site;**
- B: Steamboat Lumps**

Source: ([www.research.fsu.edu/researchr/2000/abstracts/images/gulf.jpg](http://www.research.fsu.edu/researchr/2000/abstracts/images/gulf.jpg))

### 5.4.1 Setting

Gag grouper are among the most economically important fish in the Gulf of Mexico, targeted by both commercial and recreational fishermen. Gag grouper live in sea grass beds as juveniles and on coral and rocky reefs as adults. Two noteworthy characteristics of gag grouper are their spawning aggregations and their change from female to male over the course of their lifetimes. Spawning aggregations occur at the same sites year after year, and can attract thousands of fish. Fishermen have long been aware of this behavior, and have often capitalized on it, catching their quota over a relatively small area. These characteristics make gag grouper particularly vulnerable to fishing, and in 1998 the National Marine Fisheries Service reported the species was approaching an overfished condition. This status triggered a requirement for action to prevent overfishing.

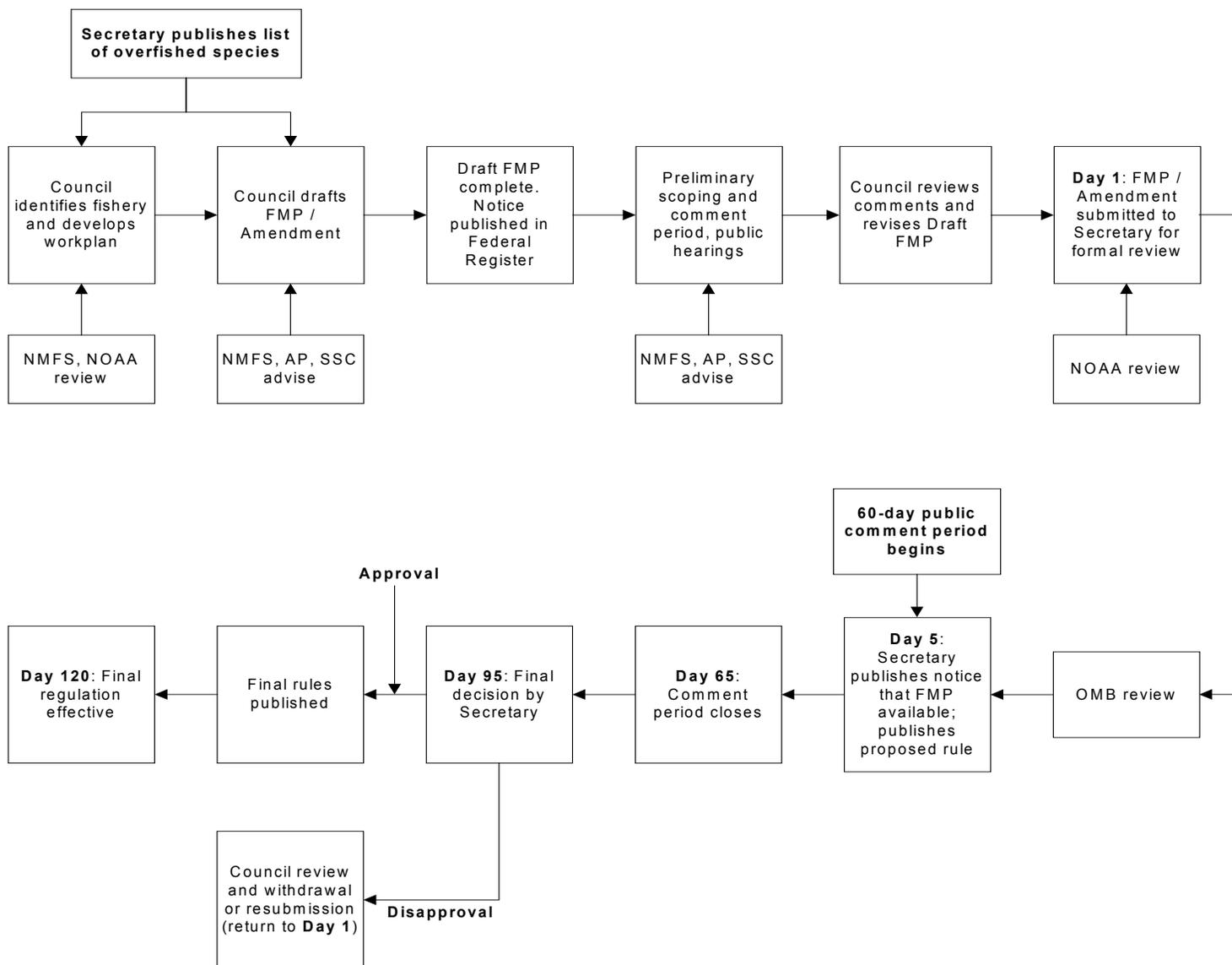
In early 1999, environmental advocates asked the Gulf of Mexico Fishery Management Council to consider protection for spawning aggregation sites, in addition to other management measures the council was considering. Advocates claimed that gag, like other groupers and snappers, came together at identified sites in the Gulf for spawning, and that these sites were targets of intense fishing pressure from both commercial and recreational sectors. The council had already begun consideration of numerous other measures in response to the status designation and an overall decline in the gag population. Proposals included changes in the total allowable catch, minimum size limits, reduction in the recreational bag limit, closures during peak spawning, and closures at aggregation sites. Proponents of closed areas argued that catching adult fish at an aggregation site before they have a chance to spawn would make it more difficult to prevent overfishing, or to rebuild an overfished stock.

Florida State University scientists had conducted long-term studies on several Gulf of Mexico species showing that extensive fishing pressure had caused changes in the ratio of male gag to female gag at aggregation sites. The council had already acted to protect mutton snapper spawning aggregations at Riley's Hump near the Dry Tortugas, and was about to launch a series of public workshops to discuss whether marine reserves would be useful as a fishery management tool in federal waters of the Gulf of Mexico.

Gag grouper are included in a fishery management plan covering all reef fish in the Gulf of Mexico. The plan was first adopted in 1984 and amended numerous times thereafter. The prescribed process for amending a federal fishery management plan is set out in regulation at 50 CFR 600, Part D, and is further explained in guidelines developed by the National Marine Fisheries Service and provided to all fishery management councils. A brief summary of the process is shown in Figure 6. In the gag grouper process in 1999 – 2000, the Gulf Council was proposing a regulatory amendment, rather than a fishery management plan amendment. Regulatory amendments are aimed at amending specific regulations rather than fishery management plans, and are allowed when addressing new information, but still consistent with the overall FMP. This is the process the Gulf Council was using to change the rules relating to gag grouper after it was designated as approaching an overfished condition. Although regulatory amendments can be completed in a shorter time than amending a fishery management plan, they still require adherence to rulemaking procedure. Comment periods are shorter, agency review periods are shorter, and in some cases, certain steps can be waived. The guidelines for the process of a regulatory amendment are set out in Appendix C.

The procedural steps taken to create the Gulf of Mexico grouper closures are set out in detail in MPA Process Review (NOAA 2003).

Figure 6. Graphical overview of the process for amending federal fishery management plans.



After the first presentation of proposed gag grouper measures in January 1999, which included possible area or seasonal closures, the council in March proposed closing one large contiguous area of 1451.5 km<sup>2</sup> (560.4 mi<sup>2</sup>) to reef fishing to protect gag grouper. The recommendation was the result of discussions in the council's science committees that focused on both fish behavior at aggregation sites and overfishing concerns. Initial discussion centered on whether experimental closed aggregation sites could protect male gag grouper. Subsequent consideration brought in concerns about the overfished condition of gag grouper, and centered on seasonal closures to reduce landings. The six contiguous rectangular blocks were cut back from eight potential reserve sites the council had considered, some covering as much as 1868 km<sup>2</sup> (721 mi<sup>2</sup>). The evolution of the closures over time and the perceptions of participants of their purpose, demonstrate the confusion that can arise when objectives are fluid. A council member directly involved in the proposal said the goal of the closures was for information-gathering purposes. A council news release claimed the proposed closures were to protect spawning aggregations. Recreational interests thought the closures were targeted only at commercial longliners. At some point in the process, each of these observations was correct.

The proposal was modified to merge the separate blocks, and at the recommendation of enforcement officers, all fishing—not just commercial longlining—was to be banned. Voting on the proposed amendment was put off from a May meeting until July. Battles on scientific and political fronts heated up over the summer as commercial and recreational fishermen joined forces to lobby against the closures and attack the scientific information on grouper aggregations. By the time the council took up the proposal in July, a council proponent of the measure was denied a second term, the council refused to consider nearly 500 letters and faxes in support of the closure<sup>1</sup>, and the only sites left on the table were two spots—Madison-Swanson and Steamboat Lumps—totaling 682 km<sup>2</sup> (263 mi<sup>2</sup>)—about half what scientists recommended was necessary to protect gag grouper, and what one council member described as “marginal” for protecting gag grouper. They also put a four-year sunset provision on the closure, and applied it to all fishing, not just bottom fishing. Recreational fishermen were angered that the closure applied to them, and eventually sued.<sup>2</sup> Conservation advocates were pleased that the council created a reserve at all, but called the closed areas too small to do any good. By the time the final rule was implemented in June of 2000, new stock assessments indicated not only gag, but also black and red grouper, were overfished and “the commercial season was under way with no protection for the fish during the time they might replenish.”

The procedural steps leading to eventual designation of the Madison-Swanson and Steamboat Lumps area closures are set out in detail in MPA Process Review (NOAA 2003).

#### **5.4.2 Major themes**

When an MPA is considered for a fishery management purpose, such as rebuilding an overfished stock or protecting a vulnerable portion of a population from overfishing, the same interest group considerations and pressures arise as would in consideration of conventional management strategies. What are the potential gear group or fishing sector conflicts? What sectors will be closed out of the fishery? Will there

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<sup>1</sup> Several conservation groups that advocated the closures requested their members to support the action with letters and faxes to the council. Rather than provide copies of all the correspondence, council staff provided members with only one copy of similar, faxed letters and a notation of the number of similar letters received. At its July 1999 meeting, the council declined to consider the submissions. Subsequently the groups requested the council to adopt a standard procedure by which it would consider faxed and emailed comments.

<sup>2</sup> The recreational interests argued that closure to fishing for highly migratory species was unfair and was not related to protection of the deepwater gag grouper. A settlement agreement between the Coastal Conservation Association and NMFS allowed anglers to troll for highly migratory species (HMS, billfish, sharks, tunas) and required NOAA Fisheries to undertake a research project to investigate the potential impacts of recreational trolling on other, deeper water species.

be a benefit in the mid to long term and has it been demonstrated to user groups to their satisfaction? In the case of the grouper closures, the major themes were ones that are familiar in fishery management decision making:

- Scientific evidence of a problem was presented, but not thoroughly accepted by Council decision makers or user groups
- Proponents of a new idea got too far out in front of conventional practice
- One or more gear groups felt they were unfairly affected by the proposal and opposed it
- When the council process was not going their way, participants stepped outside it and used political tools.

### **5.4.3 Lessons learned**

#### Consider using processes that are already part of fishery management

The regional fishery management councils use numerous mechanisms to engage stakeholders in their decision making.<sup>3</sup> First, councils are by law made up of stakeholders. In addition to voting membership on a council, stakeholders may participate in advisory panels, scientific and statistical committees, and other committees the council may convene for specific purposes. Further, the process by which councils develop and amend fishery management plans or recommend changes in the regulations that implement such plans, encourage stakeholder participation at public hearings, in notice and comment rulemaking and other participation requirements are set out in the Magnuson-Stevens Fishery Management Act (16 USC 1801, Pub. L. 94-265 Oct. 11, 1996) regulations, rules of administrative procedure, guidelines and operating procedures promulgated by the National Marine Fisheries Service and the councils themselves. All these procedures encourage and safeguard the voice of stakeholders in fishery management decisions, thus providing a ready-made framework for addressing MPA planning.

The Gulf Council had been thinking about marine reserves and their application to fishery management well before the warning about the status change in the gag grouper population. They convened a special ad hoc Marine Reserves Scientific and Statistical Committee (SSC), made up predominantly of scientists, in 1998. (See MPA Process Review (NOAA 2003) for details on the results of this committee's work.) This was in addition to the advisory panel and scientific and statistical committees on reef fish, which also had examined closed areas in relation to specific reef species under management. The ad hoc committee, although not directly involved in the gag grouper closure process, did organize a series of workshops on the use of marine reserves as a fishery management tool, and contributed to the discussion of the addition of Riley's Hump to the Tortugas reserve system (see Tortugas case study). The Council did have a history of using area closures in other management efforts, but often it was gear specific (and sometimes to avoid gear conflicts) or to protect very fragile habitat such as coral reefs. No-take marine reserves were not regularly used and had not previously been embraced by the majority of stakeholders. The process for considering marine reserves for gag and other grouper followed the normal regulatory amendment process of the Council.

Environmental group participants in the grouper closure process reported that it was somewhat of a surprise that marine reserves were considered as a management tool for gag at the time of the regulatory amendment, even though for several years there had been reports and concerns about the practice of fishing on spawning aggregations. In contrast, user group participants in the gag grouper deliberations seemed to think that there was a gradual lead-up to the notion, and by the time it was proposed by one of the advisory panel members, the idea was recognized as a viable strategy to address the decline in the stock, even if it did not garner enthusiastic support. "The closures were driven by the Stock Assessment

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<sup>3</sup> It should be noted here that "decisions" at the council are recommendations to the Secretary of Commerce (NOAA Fisheries), who is the decision maker with authority to issue regulations and approve fishery management plans or amendments thereto. The councils, although they "decide" on proposals, are by law advisory to the Secretary.

Panel recommendation. If the council did not go to a closed area, there were going to be other restrictions. It was driven by the stock assessment and the scientific and statistical committee's recommendation that there should be one."

#### Scientific uncertainty is a double-edged sword

Although the earliest formulation of the purpose of the grouper closed area was to investigate scientific questions, scientific uncertainty can also be used as a basis for fighting or delaying an MPA process. Upon closer examination, there was general agreement among scientists, managers, fishermen and advocates that fishing on spawning sites was risky, there was not a clear commitment about whether closed areas were the way to address the overfishing status of the overall gag grouper population or the decline in the proportion of males to less than 10 percent of the population. Members of the council's SSC viewed the closure proposal as a means to explore several unanswered questions. It was anticipated to be a short-term experiment, not a permanent reserve. From this perspective, closing the areas would allow the council to look at three questions:

- Do males stay on the aggregation sites year round? If so, this is a bad thing because the females leave?
- If you close the spawning sites year round, can you recover the sex ratio (*i.e.* build up the proportion of males)?
- If the proportion of males declines, does that mean that females miss spawning opportunities?

Conservation advocates, on the other hand, were convinced that studies on other species that formed spawning aggregations were sufficient evidence on which to proceed to close the grouper spawning sites. They saw the closures as a conservation measure that would protect spawning and contribute to rebuilding.

The science underlying the decision to close the gag spawning areas became a point of contention and challenges to it were used as a delaying tactic to put off the vote on the closed areas. A university scientist upon whose research the sites had been chosen was pitted against a scientist hired by fishing groups opposed to the closures. The two debated in front of an audience at a public workshop. One participant observed that "scientific disagreements occur in every field and can be productive, but allowing the comments of a single dissenting scientist to derail or delay needed management measures was not justified. The information had been published in peer reviewed journals and reviewed by the stock assessment panel."

Upon closer examination, it seems that opponents of the reserve were trying to stake out political ground through the science. Scientific disputes are commonplace in fishery management, especially when interpretation of stock assessment or abundance data means the difference between fishing or not fishing in an area. However, in contrast to cases of comparable disagreement, the council's own SSC was not used as the venue to discuss and argue about the science. They had already looked at the evidence and recommended the closure, and the council accepted and voted on their recommendation. But objections from the minority on the council generated enough momentum to persuade the council to revisit its decision. The claims of the minority had not only to do with "best available science," but with fairness and equity in distribution of socioeconomic impact of the closures. When stakes get this high, no amount of process is likely to prevent an attack on science.

#### Clearly defining objectives may be difficult if circumstances evolve

Different sets of actors in the gag grouper closures had different objectives. As policy changed based on pressure from stakeholder groups, opposition arose to new objectives (stop overfishing) where there had been none to the original proposed scientific investigation into male gag behavior.

The Council's goal—prevent overfishing on gag—was clear from the start, but the means of getting there varied among the SSC, council members, environmental advocates and user groups. Although it was not a foregone conclusion that reserves for grouper would be designated, it was clear that some type of management action was needed to prevent overfishing, particularly of gag and scamp. Once the marine reserve proposal was put forth, the questions on the table were: where, how large, how long, and closed to whom?

As in most resource management disputes, the devil is in the details. The initial proposal to close the area just to commercial bottom fishing was met with opposition unless recreational fishing was prohibited also. Recreational fishermen who were initially in support of the closures when they didn't think their troll fisheries would be affected now became opposed. Although it was not the intent of the council to close the area to surface trolling, enforcement experts made what one member described as a "compelling case" to close the area to all fishing for ease of enforcement. The recreational fishing community felt defrauded by this action and claimed the council was losing sight of the main management goal.

Further complicating the decision to close the area to all fishing was the fact that the council did not have management jurisdiction to regulate fishing for highly migratory species, one of the main activities by recreational users in the proposed areas. This legal reality gave credibility to threats of litigation by recreational interests, and contributed to the council decision to revisit its decision on the closure.

The Council initially voted for one large closure then revoked it at a subsequent meeting because one stakeholder group (commercial fishing) rallied very hard. Many participants considered this susceptibility to political pressure a large fault with the process, which in their view lacked a plan for building agreement among affected parties. The original area (double the size of the existing separate closed areas) was likely more inclusive of the better spawning sites. Now, in retrospect, some feel (including scientists) that at least one of the existing closed areas is not in the right location. As originally envisioned, the closure covered a variety of areas, including some that may now be considered 'better' for the species. A second stakeholder group (recreational fishing) resorted to a lawsuit against NOAA Fisheries because they felt the restrictions on trolling and other recreational fishing was not justified by the science nor enforcement needs. The way the Council came to its decision, at the end of a process, not early on, has further polarized this recreational fishing organization and tainted their attitude toward all marine reserves in the region (including the Tortugas Ecological Reserve.)

#### New tools may require new processes for consideration

Although fishery management processes, whether plan development or regulatory, do have public involvement aspects built in, they are not necessarily analogous to the kind of longer-term, consensus building processes used in some MPA designations. Once the process gets started, there are deadlines and timetables within which decisions must be made. Moreover, public participation (once a proposal is out of an advisory panel and into the council for decision) is in the style of providing comments at a public hearing, or submitting written comments to the council. Ultimately, the voting members—who may be representing a particular gear or interest group—make a choice, and the majority rules. This is in stark contrast to the Tortugas process, which provided a lengthy time period for affected interests to negotiate.

Participants in the gag grouper case used many critical words to describe what they did not like about the process: "haphazard," "fraudulent," "back room," "ill-behaved," "back pedaling," and "fumbling." These words came from commercial fishermen, recreational fishermen, conservation advocates, council members, and scientists. Some suggested that earlier involvement of all the affected parties, a clearer description of what was being proposed, and a mechanism for stakeholders to help develop the proposal rather than just react to it, would all have helped.

Even though all these critics had experienced wins and losses in the council allocation and TAC-setting process over the years, the action on the grouper closures seemed particularly offensive, even though it followed what was normal council procedure—with the possible exception of the vote reconsideration. Process managers may want to consider that participants are accustomed to the adversarial nature of rulemaking and accompanying debate over conventional measures such as allocation disputes. In contrast, the open-ended options for site designations and similar choices in MPA development require longer-term participation and willingness to stay with the process. As such, the positive experience of the participatory process might deserve more attention for no-take reserves than for the application of other management tools. It is also possible that because many of the participants also experienced the Tortugas 2000 process, they were making comparisons and looking for procedural steps such as facilitation, collaborative information gathering or map making, and mediation. It is noteworthy that the outcome of the Tortugas process was able to withstand a last-minute challenge by one interest group.

Instead of working with the competing interests, or using conflict resolution strategies such as mediation, negotiation or facilitation, the council sent all the stakeholders into a side room to “hash it out.” The questions posed were ‘where does it go’ and ‘what makes sense.’ No one facilitated the discussion, and participants reported angry exchanges and near walkouts, though this turmoil led to a bit of progress. This may have been an instance where facilitation or ground rules or appointment of an ad hoc committee would have contributed to a better experience for participants. More importantly, at this stage, there were affected stakeholders who were not only not “in the room,” they were not engaged in the process yet. In the end, the failure to incorporate these views led to a successful challenge, and council decisions were not just attacked, but revisited and changed.

#### Watch for opportunities for collaborative data collection

One positive outcome of the gag grouper closures was the attention to the importance of scientific monitoring. In a subsequent amendment to the Reef Fish Management Plan, not only were the closures continued but the council is conducting studies to determine if the original three scientific questions are answerable. Several research projects have been supported and are allowing scientists to address these questions. In a recent article reviewing these and other Gulf of Mexico closures, scientists writing in Fisheries Magazine note they found few MPA regulations that called for performance evaluation as a condition of implementation. They point out that monitoring is essential to assess whether management measures are effective or need to adapt to new information (Coleman et al. 2004).

More importantly, particularly from the perspective of the participants, the research efforts are encouraging fishermen to work with scientists and have generated positive interaction. From the start, interactions between scientists and fishermen were important. Scientists knew where to look for aggregations based on fishermen’s knowledge. If fishermen had not shared their knowledge, scientists would never have determined where aggregations were occurring, and what type of behavioral interactions were taking place.

Finally, establishing partnerships to collect information and monitor the condition of the MPA once designated can cement support for a site, or at a minimum defuse opposition. Successful methods for designing cooperative data collection projects between fishermen and government agencies have been reviewed by Bernstein and Iudicello (NFCC 2003) and the National Research Council (NAS 2003). Opportunities process managers can watch for include:

- Identifying partners (institutional and non-governmental) and their roles within the proposed area
- Potential for cooperative research or data collection before or after MPA designation processes
- Voluntary monitoring and data collection, or use of fishermen (or other stakeholders) in cooperative data collection projects can contribute to support of the designation as well as provide information for monitoring and evaluation.

#### **5.4.4. Conclusion**

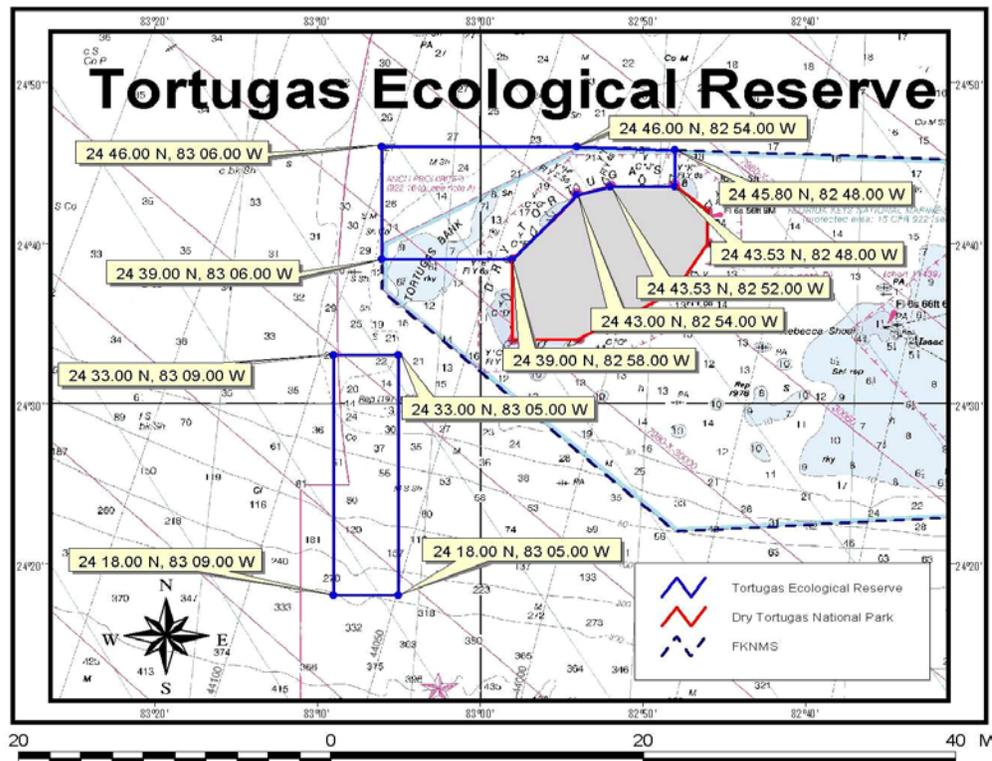
The designation and implementation of the Madison-Swanson and Steamboat Lumps marine reserves for groupers followed the normal amendment process that the Council uses. However, this process, often driven by regulatory calendars and timetables, can be unsatisfactory to many. Although it was a proactive move to consider the potential use of a marine reserves as a management tool for some groupers in response to populations approaching an overfished status, it was not necessarily deliberate or planned. There was a lack of consideration of how to deal with the potential controversy that the proposal might elicit, and not all affected interests were brought into the process at the beginning. As each successive stakeholder group became aware of the effects that modifications in the closure proposals would have on their activities, the process was jolted by a whole new set of players, objectives and tactics.

The Council process is contentious on many fishery regulatory issues, not just creation of marine protected areas. It is a process that operates on its own statutory timetables, involves a lot of “pushing and pulling,” and is politicized. Many stakeholders believe that behind-the-scenes discussions and deal making often occur and that their input is often disregarded. But while these criticisms are made of the councils in general, and arise during every reauthorization of the Magnuson-Stevens Act, there are a few approaches and tactics that could be employed to improve in MPA discussions even if the fundamental nature and structure of the council process remains the same. Clear intent that MPA consideration is on the table, specific proposals for sites or specific requests for information about sites, use of ad hoc groups in protected area discussions that bring in additional stakeholders who are not on the council, or employment of independent third-party convenors or facilitators could all foster processes that occur within the council framework. These actions would not necessarily make consideration of MPAs in the fishery context less controversial, but they could provide tools for managing the controversy and make the process less subject to challenge at the end.

## 5.5 Tortugas 2000 Ecological Reserve

Figure 7 shows the location and extent of the Tortugas Ecological Reserve in the Florida Keys.

Figure 7. Boundary of the Tortugas Ecological Reserve in the Florida Keys.



Source: ([www.fknms.nos.noaa.gov/graphics/maps/tortugas.jpg](http://www.fknms.nos.noaa.gov/graphics/maps/tortugas.jpg))

### 5.5.1 Setting

The Dry Tortugas (the Tortugas) form a cluster of remote islands located in the Gulf of Mexico approximately 113 km (70 mi) west of Key West, Florida. Due to the area's unique and biologically diverse marine habitats, including coral reefs and banks, seagrass meadows, and rookery islands, the islands have attracted visitors for many years. The Tortugas have long been frequented by the diving community and have supported diverse commercial and recreational fishing activities. In 1992, the Dry Tortugas National Park was established to protect a 259 km<sup>2</sup> (100 mi<sup>2</sup>) park of marine resources and islands, as well as preserve historic Fort Jefferson, built on the largest island. Through three tiers of regulations that apply to different areas in the region, various commercial and recreational activities are either prohibited or limited. (For more detailed information on what is and is not allowed in the Tortugas, see <http://floridakeys.noaa.gov/regs/FinalFSEIS/pdf>).

The Tortugas are also located at the western edge of the 9800 square km Florida Keys National Marine Sanctuary (FKNMS or the sanctuary), created by Congress in 1990 (Public Law 101-605). Managed under cooperative agreement between the State of Florida and NOAA, FKNMS is unique in its size and for its first use of a zoning network designed to protect diverse habitats while allowing compatible public use and activities to continue. In 1997, a management plan established and implemented five types of zones throughout the sanctuary, including 'ecological reserves,' which are protected 'no-take' zones in which extractive activities are prohibited.

During the management plan development and consideration, the Tortugas were proposed for an ecological reserve. Highly controversial, the concept was widely rejected for a number of reasons. Chief among these were the fact that significant coral resources were not included in the proposed boundaries and fears that the reserve would cause economic harm to commercial fishing interests and other stakeholder groups. This and other opposition was largely fueled by significant confusion and uncertainty regarding the scope and impact of the reserve. There was also widespread concern among reserve proponents regarding whether and to what extent the jurisdictional boundaries between the National Park Service and National Marine Sanctuary Program would arbitrarily limit the potential extent of ecologically significant areas.

The unsuccessful seven-year effort to garner support for an ecological reserve in the Tortugas was not the end of the story. Committed to some protection scheme for the Tortugas and listening intently to comments received during the vetting process, FKNMS managers worked together with the National Park Service to determine which areas of the Tortugas region would benefit from zoning protection, and what particular management strategies would work best. A FKNMS/National Park collaborative process was initiated in 1998 and became known as “Tortugas 2000.”

Building upon the frequently contentious eight-plus years of experience with FKNMS, Tortugas 2000 was launched with the establishment of a broad-based, 25 member ad hoc Working Group. Authorized by the FKNMS Sanctuary Advisory Panel (SAC), the Working Group was led by a facilitator and worked quickly. Over the course of just five meetings, the Working Group established and weighted criteria to determine the size and location of zoning areas, assessed scientific and economic information in GIS format, and came to consensus on the specific location, size and boundaries of two ecological reserves to recommend for approval by the SAC. Following the approval by the SAC, support for the reserves was also obtained from the Gulf of Mexico Fishery Management Council, Florida Fish and Wildlife Commission, State of Florida, and NOAA. The north and south Tortugas Ecological Reserve was fully implemented in July 2001 (see Process Review (NOAA 2003) for more detail).

The procedural steps taken to create the Tortugas Ecological Reserve are set out in detail in MPA Process Review (NOAA 2003).

### **5.5.2 Major themes**

Several major themes emerge from an analysis of the Tortugas 2000 process. First and foremost, the establishment of the Tortugas Ecological Reserve demonstrates the nearly universal truth that MPA processes can never be viewed separate and apart from the events leading up to them. In this sense the past is never past, it is present, as Tortugas 2000 was shaped by relationships and stakeholder perceptions grounded in earlier failed efforts to establish significant ecological reserves in the area. These already-formed relationships and frames of reference – when combined with shared mandates among various government agencies, broad stakeholder participation, and a skilled facilitator that worked with and built upon this confluence of history, relationships, and government mandates – set the stage for a relatively lightning fast series of decisions that led to a robust, widely supported outcome.

### **5.5.3 Lessons learned**

#### Don't repeat the past – learn from it

Like many similar efforts, the Tortugas 2000 process was defined by what came before: in this case, the highly contentious establishment of the adjacent FKNMS and the failed attempt to include more reserves in the area. As a result, there was time to analyze the missteps that occurred during the initial development of the marine zoning network and to reflect upon the public comments received when an ecological reserve for the Tortugas region was first proposed in 1997.

More specifically, participants reported two major factors that helped to set the stage positively for Tortugas 2000. First, organizers recognized that it was important to establish a Working Group that was as broadly representative as possible – more so than prior advisory or working groups. For example, five separate fishing interests were identified and represented (commercial, handline lobster, Cuban-American, charter, spear, and recreational), ensuring that more nuanced perspectives were fully heard and incorporated into the development of proposals. The absence of some of these groups from the initial effort to designate reserves was reported to hamper that process.

The second factor is directly related to FKNMS, for even though the lengthy effort to adopt a management plan (which required multiple federal and state approvals) did not include all the ecological reserves that were proposed, it did engage most of the affected interest groups and create a placeholder for some kind of area in the Tortugas. Significantly, the original reserves concept was completely withdrawn, providing stakeholders with a virtual blank slate from which to work. The act of “starting over” created significant good will as interest groups now felt empowered by their defeat of the initial efforts, more in control of their destiny, and more confident of their ability to create a reserve derived from stakeholder prerogatives. These carrots, when combined with the perception that the existing placeholder would resurface if the Working Group did not come up with a viable plan, was strong motivation for success.

#### Use a professional facilitator

The Tortugas 2000 process benefited greatly from the participation of a professional facilitator, although the decision to use a facilitator was made after the process had begun, not at the outset. The facilitator was viewed as a “neutral party” by all stakeholders, particularly those on the Working Group. Compared to very large metropolitan areas, the Florida Keys comprise a relatively small community where people know each other and, for better and for worse, inevitably bring those relationships into planning processes. In addition, it was only a few years before this that the same stakeholders were hashing out the details in the overall FKNMS Management Plan, and lines between competing interests were drawn in the sand. Thus it was critical that a facilitator who was not part of the existing institutional structure quickly gain trust and bring a fresh perspective and approach.

The majority of Working Group members and staff expressed support for the role of the facilitator and the structure of their meetings. Bringing to bear his expertise on the process, the facilitator was instrumental in helping participants identify core interests that underlay their stated positions. He also quickly designed and implemented an effective consensus-building process, ensuring that all members were engaged and involved and that decisions were credible and robust. Because he was clearly not identified with any agency history or position, he was able to provide the kind of neutrality (in terms of both process and outcome) that government representatives typically cannot. This combination of factors helped to ensure that the opportunity for collaboration and consensus building was fully exploited.

#### Plan ahead and organize

Ironically, a significant reason for the success of Tortugas 2000 – the use of an outside facilitator – was also a source of challenge because the facilitator was brought in relatively late in the process. The decision to use a facilitator was made after the process had begun, and he was contracted just one week before the first meeting of the Working Group. Because this was hardly enough time for a professional third party to become educated on the issues and the parties involved, he started at a disadvantage and the process lacked an initial assessment by a neutral third party or by someone with process expertise prior to initiation.

The facilitator’s late arrival also meant that he could not participate in developing a thorough process for identifying candidates for the Working Group. As a result, some stakeholders were overlooked and had to be added later in the process. According to many, it was difficult to add new members after the group had been working together and a level of trust had been built. People generally like to “stake out their own

territory” early, particularly on contentious issues, and a skilled facilitator can help avoid positional approaches that can stagnate a process if not addressed early on. Most professional facilitators will not have direct previous experience with stakeholder groups relevant to a specific process. Nevertheless, their knowledge of processes to assess stakeholder interests and ensure broad representation is fundamental to success.

#### Inclusive stakeholder process breeds success

As previously mentioned, the structure and composition of the Working Group was a significant factor in the success of the reserve initiative. The Working Group started with eight members of the SAC, and other individuals were identified to fill the remaining categories. In addition, the Working Group also included representatives from each of seven overlapping jurisdictions involved in the Tortugas, as well as scientists. Rather than organize constituents into separate individual panels or groups, as often occurs in similar processes, participants were integrated to facilitate communication and trust building between factions.

Other aspects of the process also facilitated meaningful stakeholder participation and buy in. For example, multiple representatives were identified if one member could not represent the entire “category.” This meant recognizing that commercial fisherman were not a monolithic interest, but instead had several subgroups that each required a distinct voice. As the process unfolded, several other members were added when additional gaps in representation became evident.

#### Stakeholder representatives must have authority and be accountable

To ensure reliable decisions were made, it was also important that each Working Group member had authority to actively represent his or her stakeholder group. As such, members were identified and acknowledged as leaders to those they intended to represent, and were held accountable for their commitments. Each member was asked if he or she could, in fact, speak for a constituency, and efforts were made throughout the process to ensure that members were interacting and receiving feedback from those they represented.

#### Build trust and sustain it by adhering to agreed upon processes and ground rules

Trust among participants is essential to any successful decision-making process, and, in the words of one participant, “takes time to build and can be lost in an instant.” In Tortugas 2000, trust was stressed as essential to success by everyone interviewed, and the perceived breach of that trust among some participants almost derailed the process.

The challenge to trust in the Tortugas process occurred after a methodical approach had been used to winnow twelve specific geographic proposals down to two, when several Working Group members met separately to attempt to work out differences and develop a new proposal. For those involved it was a positive experience, but for those not involved, the separate meeting represented a significant breach of trust. People felt left out, annoyed that a decision was reached without participation of the larger group and outside the established consensus-building process. The resulting proposal was not significantly different from another one, but because of the deviation from the established process and resulting undermining of trust, achieving consensus to include the proposal in the final deliberations was far more difficult than it would otherwise have been. Though ultimately successful, this experience underscores how critical it is to adhere to established ground rules and avoid behavior or tactics that exclude participants, no matter how innocent or noble the intent may be.

#### Clearly identify and agree on goals early

Quite different from most MPA processes, the premise of the Tortugas 2000 process was that an ecological reserve would be established somewhere within the Dry Tortugas region. The intent was to support other goals such as fisheries management, but always within the context of an “ecological

reserve.” Working Group efforts focused on size, location, and conditions of the ecological reserve, but not whether a reserve was appropriate in the first place. Thus the goal – to designate reserves in the Tortugas – was not questioned because the goal was broadly perceived as mandated by federal law, and, as a result, the process focused on the more productive question of “how” to construct a reserve rather than the often more divisive threshold question of “whether or not” such a reserve was appropriate.

The more focused ecosystem based goal was also achieved through public outreach efforts engaged in by proponents of the reserve. Beginning early with the initial designation of the sanctuary and carrying their message through development of the management plan to local, state, and federal decision makers, the public relations campaign meant that grass roots efforts in support of the broad goal of a reserve were well under way by the time Tortugas 2000 was launched.

Specific instruction was provided early in the process to build upon and refine consensus on this broad goal, and was critical to maintaining a common focus. For example, the Working Group was told to ignore jurisdictional boundaries, ignore existing authorities, and work instead on what was needed to meet established ecological and fisheries criteria. This approach resulted in buy in by all stakeholders, who looked at issues holistically, supported the concept of an ecosystem approach, and focused clearly and collaboratively on resources rather than on which participants might not support their interests.

#### Both traditional science and fishermen’s knowledge were equally important

Everyone agreed that the preparation and presentation of numerous types of technical information was integral to the Working Group’s ability to make sound recommendations. The information included oceanic, biological, socioeconomic, and fisheries information presented by scientists and stakeholders. While the majority of scientific information was provided during two special forum presentations, scientists sat next to fishermen, conservationists, and managers throughout the process. The resulting ability of scientists and stakeholders to continuously interact and provide immediate feedback on issues raised around the table helped to build the sense that scientists were there to help the process rather than merely act as another stakeholder.

The informational forums allowed community members and other stakeholders to share their knowledge and experience with the Working Group, managers, and scientists. This broad-based information exchange was extremely beneficial to the process. In essence, the value of the community input was equal to that of traditional scientists; the fact that anecdotal stakeholder knowledge was used directly and given equal weight was key to subsequent discussions and consensus building. Fishermen reported feeling more involved as compared to other processes, and that their “unscientific” but no less valuable knowledge was respected.

#### GIS is valuable, but manual map making is more appropriate in some cases

GIS was used very interactively during Working Group sessions and was uniformly praised. The ability to quickly and graphically portray new information empowered the Working Group to make decisions. An extensive database was compiled and information was quickly processed for presentation. In particular, for the first time data showed use patterns in addition to biological information. This allowed the Working Group to better identify what needed to be protected, and balance those protections with fishery uses.

When it came to recording individual preferences for potential boundaries, however, the old fashioned approach proved far better than GIS. A manual method using an acetate overlay on top of the grid cell was employed, and resulted in participants working together over paper charts, sharing stories and perspectives and, according to one observer, avoiding the negative effect GIS can have on people’s ability to have a direct sense of ownership over the map building process. Each Working Group member drew out preferred boundary configuration, and the overlays were shared with the group via overhead, or

provided to staff to use in GIS products. This more intimate, hands-on, and interactive technique for recording boundaries proved successful. In the Tortugas process, GIS was useful for sharing and displaying data, but having members draw on hard-copy maps was the best approach for exploring individuals' ideas about appropriate boundaries.

#### Public input was innovative and was solicited throughout the process

Several participants pointed to the interaction between Working Group members and other stakeholders as essential to the consensus-building process. During Working Group meetings, members were able to confer directly with members of their stakeholder group to solicit immediate input when necessary. During break out sessions, the public was invited to sit as a "second tier" around the Working Group members. Or, members could go elsewhere to caucus. Whatever the case, the opportunity for a free and rapid flow of information between members and observers allowed for a full range of perspectives to be incorporated into the discussion. Because of the broad support for this approach – as many as 50 people surrounded Working Group members during their meetings – very little additional work was required to solicit stakeholder buy-in when decisions were made.

The National Park Service had a simultaneous management planning process underway for the Tortugas National Park, that paralleled the Tortugas 2000 effort. It was important to managers that the simultaneous efforts not confuse the public, thus they were coordinated as much as possible. This included holding public hearings jointly. The format was not the traditional one, with one speaker at the podium at a time, each with only three or five minutes to state a position. After initial presentations, the room was divided by topic, and individuals could present comments in one of several ways: they could talk into a microphone, write out comments, dictate their comments to staff, or write them up on newsprint on the wall. Comments could be given anonymously, the public could ask questions, and the entire process was relatively informal and non-threatening to those unaccustomed to or uncomfortable with more structured, formal approaches.

While some fisheries representatives did not like the rather unorthodox process because they were used to speaking at a podium, the majority felt that it was more inclusive, and far less intimidating. The podium format focuses attention on those few who may be more eloquent or feel very comfortable speaking before audiences, and overshadows those less comfortable.

#### Don't start drawing lines prematurely

From the start, many of the users (particularly fishermen) wanted to know where managers thought the ecological reserve boundaries should be. They were familiar with other management processes where several options – with maps – were presented and debated, rather than created with their input. To their credit, the sanctuary managers remained silent, empowering and ultimately compelling stakeholders to do the work of determining the reserve parameters. Managers would not even offer ballpark estimates of the size or location that should be protected, nor what the regulations should contain – in public or private. This approach may not work in other cases where trust is not established and where stakeholders may not be as familiar with the geographic area or relevant resources. Here managers benefited from lessons learned from their earlier efforts, and understood that speculating on the potential boundaries would taint the process and put stakeholders on the defensive, trying to protect what they may have considered their turf or territory.

The majority of stakeholders saw the wisdom in this particular part of the process, while a handful had some misgivings, thinking it protracted the overall efforts. Whatever the perspective, participants unanimously agreed that their input had real meaning and that there was no hidden agenda or predetermined outcome on the part of the managers. Interestingly, the resulting ecological reserve was much larger than any of the managers individually anticipated.

### 5.5.4 Conclusion

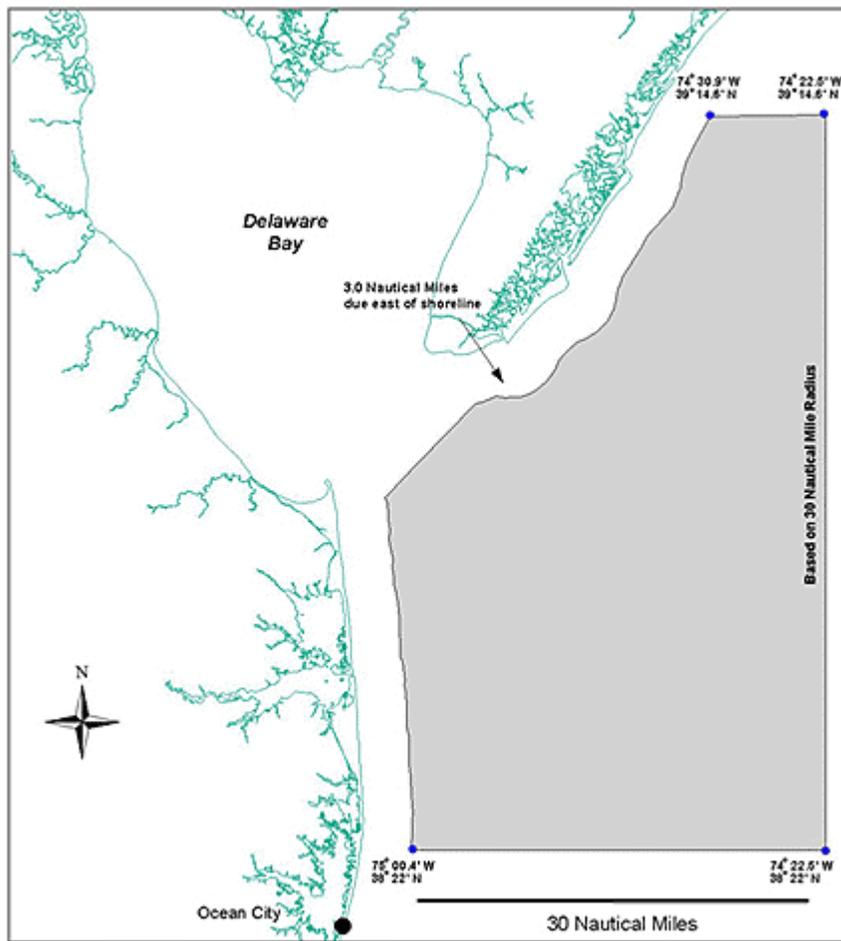
Almost everyone involved agreed that the Tortugas 2000 process represents how a successful consensus building process can work when a skilled facilitator is paired with motivated participants in an environment of trust and empowered by a clear mandate. Building upon efforts leading up to the process and the wise decision among sanctuary managers to not attempt to predetermine or shape the outcome, participants were free to be proactive and creative rather than reactive and defensive.

Success in the Tortugas may also be attributed in part to the fact that most participants had some first hand experience with no-take reserves, and thus perhaps feared the concept less than in other regions. Moreover, trust was established and more positional bargaining avoided with agreements such as the one between fishermen, who agreed not to “whack and hack” proposals, and conservationists who agreed not to “pad and add.” As a result of a successful collaborative process, the building of trust among diverse stakeholders, and demonstrably positive ecological measures, even those who initially opposed reserves are now some of their biggest supporters.

### 5.6 Horseshoe Crab Reserve

Figure 8 shows the location and extent of the Carl N. Schuster Jr. Horseshoe Crab Reserve off the mouth of Delaware Bay.

Figure 8. Location and extent of the Carl N. Schuster Jr. Horseshoe Crab Reserve.



Source: ([www.nmfs.noaa.gov/horseshoecrb\\_map.htm](http://www.nmfs.noaa.gov/horseshoecrb_map.htm))

### 5.6.1 Setting

The Delaware Bay is home to many fish, marine mammal and bird species as well as miles of popular recreation beaches. It also is on the flight path of northward migrating shorebirds, and has been heralded as the second largest stopover location in the western hemisphere. The reason the Bay is so attractive to the birds is that it is the site of one of the largest concentrations of spawning horseshoe crabs along the Atlantic coast. The birds feed on eggs turned up from buried horseshoe crab nests. Thus fueled, migrating birds such as red knots, semipalmated sandpipers, ruddy turnstones and sanderlings are able to continue their long distance flights to the arctic.

Horseshoe crabs are an ancient species, more closely related to spiders or ticks than true crabs. Their glossy brown “shells” (really a chitinous exoskeleton shed during molting) are a familiar feature of Atlantic beaches, where they have been around for 300 million years without much evolutionary change. Horseshoe crabs are found on the ocean bottom from northern Maine to the Yucatan Peninsula, but are most abundant on the Atlantic coast between New Jersey and Virginia, with the Delaware Bay at the center of distribution. In the spring, adult crabs migrate to beach areas to spawn, during high tides of the full moon. They lay their eggs in clusters on protected sandy beaches. Juveniles remain in the estuarine environment until they reach maturity at about 10 years.

A fishery in the 1800s harvested horseshoe crabs in the millions for fertilizer and livestock feed, but demand for those uses waned. By the 1960s, the annual catch was reported at only 42,000 crabs. Catches fluctuated in response to demand throughout the 1970s and 1980s, ranging from lows of 11,900 pounds to highs of 1 million pounds for use as bait for eel and whelk fisheries and for biomedical research. In recent years, these uses have been valued at more than \$50 million annually.

Horseshoe crabs, particularly females, are cut up to bait pots used to catch American eels. A boom in eel prices and the concomitant increase in fishing effort in the 1990s created a related increase in the horseshoe crab fishery along the mid-Atlantic coast. Egg-bearing females for bait were fetching 75 cents to a dollar. In addition, the biomedical industry collects horseshoe crabs for their blue, copper-based blood, which contains a clotting agent. The substance is used to support the production of Limulus Amoebocyte Lysate (LAL), which makes it possible to detect toxins caused by bacteria in human patients, drugs and intravenous devices. Medical collections on the east coast take between 200,000 and 250,000 crabs per year, bleed them, and return them to the ocean within 72 hours of capture. It is estimated that about 10 percent do not survive capture.

As a result of this increased demand, catches quadrupled between 1993 and 1996, reaching highs of 5 and 6 million pounds in 1996 and 1997. Crab landings were reported in states that previously had no horseshoe crab fishery. By 1997, concern over what appeared to be declining crab numbers and the relationship between the crab and eel fisheries led the Atlantic States Marine Fisheries Commission to begin developing management plans for both species. Some scientists reported a decline of as much as 90 percent over a decade.

At the same time, bird watchers and other environmental advocates noticed a decline in the spring shorebird population, and connected it with the horseshoe crab fisheries, which take place mostly during the crabs’ spawning season when they can be caught easily and cheaply—the same season the birds rely on crab eggs. These groups used newsletters, websites and other outlets to make claims about declines in horseshoe crabs and the detrimental effect it had on shorebirds. These groups also encouraged members to attend fishery management meetings, write to government officials, and take other actions to protect shorebird populations by calling for reductions in fishing mortality on crabs. They also collected information on crab abundance, and sponsored studies.

A plan to manage the species along the entire coast was approved by the Atlantic States Marine Fisheries Commission in 1998.<sup>4</sup> Before the interstate plan was developed, the states each managed the species in their waters. Since there was no fishery in federal waters, none of the federal fishery management councils on the east coast had adopted management measures. New Jersey, Delaware and Maryland already had taken action to reduce catches in their waters, and the Fishery Management Plan (FMP) maintained those measures and called for a cap on landings of crab for bait by 2000. While participants in the fishery management planning process were debating proposed measures to reduce catches, the state of Virginia allowed crab landings in its waters in 1999 to climb 26 times higher than the prior average. By this time landings from federal waters were increasing as well.

One of the arguments against catch reductions was the limited amount of information about the status of the stock, so the FMP called for a comprehensive monitoring program to gain better data on both catches and abundance. Despite opposition from the fishing community and arguments that there was not enough information to support cutting back landings, the ASMFC management board approved the state-by-state cap on bait landings in February 2000. They recommended a 25 percent reduction coastwide, and let Maryland, Delaware and New Jersey maintain their more stringent catch reductions. Participants observed that no one was satisfied with the plan. The mid-Atlantic states, conservation groups and bird advocates thought it didn't go far enough. The southern states were not convinced of the need for any catch reduction at all.

It was at the conclusion of this multi-year fishery management planning process, which had included fishermen, the biomedical industry, fish conservation advocates, state managers and—for the first time—bird watchers, that Carl Schuster, a retired professor and horseshoe crab researcher, stood up to remind the board that while they had protected the horseshoe crabs by reducing landings, they had not protected the “heart of the spawning population” at the center of Delaware Bay. He suggested a closed area.

Even though there had been no suggestion of a closed area throughout the multi-year process that led up to the plan amendment, Schuster's proposal during a public hearing on the final horseshoe crab plan amendment was seized by the management board as an opportunity to do more. They handed off the development of the closed area to the federal government, calling for a sanctuary in federal waters outside Delaware Bay.

What started as a straightforward fishery management process to reduce fishing mortality through reduced Total Allowable Catch and allocation took a turn toward place-based management. What started as interstate management in nearshore waters from Virginia to New Jersey took a leap outside three miles and into federal waters. When shorebird advocates began showing up at Atlantic States Marine Fishery Commission meetings they were viewed as outsiders; not really “stakeholders” in the fishery management process. However, not only did these groups continue to stay active at the commission level and develop grass roots support, they developed a campaign at the Washington, D.C. NOAA headquarters level.

The actual designation of the horseshoe crab sanctuary was accomplished through notice and comment rulemaking, an administrative process that unfolds through published notices in the Federal Register and comment periods for public reaction to the proposed action in the notice. Although notice and comment rulemaking often includes public hearings (and in this case did) it is more the playground of lawyers, lobbyists and interest groups than the rough and tumble of the state commission or federal council process. It is governed by strict rules of administrative procedure including deadlines and prohibitions on *ex parte* communication. Nevertheless, the proposal to designate the sanctuary went from the advance

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<sup>4</sup> The Atlantic States Marine Fisheries Commission, made up of the 15 Atlantic states, coordinates among the states and develops fishery management plans for species that occur in more than one state. Eighteen species-specific boards meet four or more times per year, and develop proposals for the Commission, which meets twice a year.

notice of proposed rulemaking to final rule in what could be considered record time for an action of its magnitude: 10 months from start to finish. Between the first proposed rule in May 2000 and the final rule published in February 2001, the rulemaking process carved out an exemption to allow collection of crabs in the closed area for biomedical purposes, and to allow whelk vessels to fish with pots and gillnets in the area while carrying horseshoe crabs as bait. The procedural steps that were taken leading to eventual designation of the Carl N. Shuster, Jr. Horseshoe Crab Reserve are set out in detail in MPA Process Review (NOAA 2003). The reserve, which encompasses nearly 3,900 km<sup>2</sup> (1,500 mi<sup>2</sup>) of federal waters off the mouth of the Delaware Bay, was established on March 7, 2001.

The procedural steps taken to create the Carl N. Schuster Jr. Horseshoe Crab Reserve are set out in detail in MPA Process Review (NOAA 2003).

### **5.6.2 Major themes**

The interplay between conventional fishery management approaches to protect or recover a depleted stock and the use of a closed area as a conservation tool to accomplish that purpose is a major theme of both the horseshoe crab sanctuary and the grouper closures. The horseshoe crab sanctuary process is further distinguished by its beginnings as a state fishery management issue inside coastal waters, and eventual metamorphosis into a closed area in federal waters. Federal notice and comment rulemaking is an unusual course for MPA designation and may result, despite strict procedural rules aimed at guarding the public interest, in a process that is not conducive to engaging the general public. This type of decision process is often marked by formalized exchanges of documents in response to Federal Register notices, constrained responses on the part of agency managers, and conducted by lawyers or association representatives specializing in regulatory decision making. Also noteworthy in this case is that the stakeholder participation was actually developed through the fishery management process, not the MPA designation process. However, the working relationships, knowledge base, and interest group advocacy that evolved through the development of the horseshoe crab fishery management plan and amendment carried over into the rulemaking process. Agency managers took on the role of communicating with interest and constituent groups to get feedback as the proposal took shape, even though there were only three scoping meetings, very sparsely attended, to serve as venues for stakeholder participation. The lack of scientific information on stock abundance, and on the potential for the closed area to contribute to spawning or to reduce mortality, appeared not to matter in this designation. Although the lack of data was a major point of contention in the FMP process and the decision to cut catches to reduce mortality, once the play moved into designation of a closed area, it became a non-issue because the fishery sector in Virginia most opposed to catch limitations was not at all affected by the closure.

### **5.6.3 Lessons learned**

#### Relationships in other venues carry over to MPA process

Motivation and leadership for the designation of an MPA may come from an unexpected quarter. Shorebird conservation groups were new players on the fishery management scene, drawn into the process by the connection between shorebird declines and horseshoe crab declines. They worked in the horseshoe crab management process within the ASMFC for several years. Although at the beginning they were not familiar with the fishery management system, or the way science was used to provide a basis for management actions, they stuck it out and won the respect of “old hands” during development of the amendment to the FMP. This stature won these advocates a place at the table during the subsequent federal rulemaking process. This setting was more familiar to advocacy groups, and they used campaign techniques and grassroots membership activism to muster support for the sanctuary and to push the process. The biomedical industry also was a new player, with a \$75 million product on the line. They came to the table as a highly educated and well-financed interest group. At the outset these groups were strangers to the eel, conch and horseshoe crab fishermen of New Jersey, Delaware, Maryland and Virginia. One state participant noted that the interactions were not pleasant at the outset, with groups of stakeholders having different agendas and goals. But through the open FMP process over a two-year

period, groups began to understand the different points of view and why they were held. “It led to meaningful conversation, compromise, and agreement about where they wanted to go. Stakeholders still had their opinions, but at least they were able to come to a compromise. It was worthwhile to spend the energy up front [in the horseshoe crab plan amendment process] to get to that level.”

#### Science matters, but perception may matter more

In the period between the passage of the ASMFC plan amendment reducing horseshoe crab mortality coastwide and the designation of the sanctuary, Virginia continued to balk at a reduction in its crab catch, with officials claiming there was no scientific basis for the quota. Although the horseshoe crab fishery showed classic signs of a fishery headed for trouble (declining catches in some areas, increase in landings in others, displacement of effort from closed areas to unregulated federal waters) there was no stock assessment showing an actual decline. Only one trawl survey in Delaware Bay showed some declines in catches. Nor was there much evidence of the connection between the crabs and the shorebirds. During the 1990s, data on crab abundance was collected, but “not in a statistical manner. Most of the studies were conducted by nonprofit groups with lots of energy, but not much knowledge about statistically valid design.” But even though stock assessment scientists were not willing to make a definitive call about the status and abundance of horseshoe crabs, or any relationship to the decline in shorebird populations, shorebird advocacy groups were. They published their own studies, made information available on websites, talked to newspaper reporters and circulated newsletters and action alerts. Once the story of the interwoven “crash” of horseshoe crabs and shorebirds was in the public consciousness, it was difficult to undo the perception, even after scientists who reviewed the available data found there was not enough to support any such conclusions. State managers relied on taking a precautionary approach in the face of uncertainty. NOAA’s justification for the sanctuary was based on the precautionary approach as well as the shift of landings from state to federal waters. Not knowing proved as persuasive as knowing.

#### All politics is local

As New Jersey and Delaware reduced catches in their horseshoe crab fisheries in 1997 and 1998, effort moved to Maryland and Virginia. Ports that had never recorded any landings were showing substantial horseshoe crab catches. Maryland reduced its fishery, cutting catches by 72 percent. Despite requests by shorebird advocates to the ASMFC to step in and impose some coastwide discipline on the horseshoe crab fisheries, the commission opted to set a reference period for landings and call for monitoring of catches. In 1999 Virginia catches climbed to 26 times higher than previous averages, eliciting strong criticism from conservation advocates. By the end of 1999, ASMFC put a fishery management proposal on the table, calling for a coastwide quota with state-by-state caps. Virginia opposed catch reduction and the state quota, and even though the commission passed it in 2000, Virginia set its own state quota at more than double what was called for in the plan.

It was against this backdrop that managers in Virginia were able to support the idea of the sanctuary. One participant observes that they seized on the idea because it would not affect their fishery and they could repair relations with the environmental groups that criticized the state so harshly for its refusal to reduce crab catches. “Maryland, Delaware and New Jersey were wondering what happened? They had a cap *and* a reserve, while the other states had neither.”

Meanwhile in Delaware, the governor was pushing hard for the sanctuary. A participant pointed out it was a good issue for the governor’s campaign for the U.S. Senate, both environmentally and economically, since Delaware’s beach-related tourism (including bird watching) is a significant part of the state’s economy. One of the participants in the rulemaking observed that the candidate was the same party as the federal administration at the time, making the Department of Commerce receptive to the proposal. High-level promises and media announcements put the pressure on to get the sanctuary designated.

The governor won his senate race, but the federal administration changed, bringing with it new policies and a moratorium on all pending regulations—especially environmental ones. But the combination of positive public support from the scoping and public comment periods, the exemptions that accommodated economic interests, and the public relations benefit of taking a pro-environmental action all paved the way to allowing the rule creating the sanctuary to be published as final.

#### Follow the rules

Participants in the federal notice and comment rule-making process had different ideas at the outset. Environmental advocates, including Delaware’s governor, wanted the sanctuary created through an emergency action, shortening the timelines for notice, assessment, scoping and comment. But NOAA stuck with the rules of procedure and went through a full rulemaking. Even though they did not prepare a complete environmental impact statement, they prepared a careful and thorough environmental assessment (EA). In the absence of much data from the fishery, the EA incorporated a broad literature review and a socioeconomic study that had recently been done by the U.S. Fish and Wildlife Service, as well as survey data to back up the Delaware Bay information. The agency addressed all the comments received during scoping. They responded to all comments from the comment period. “We resisted doing the rule on an emergency basis and it paid off in the end.” The new administration seized upon the sanctuary as a pro-environmental action, completed with good public process, with little impact on economic interests. It sailed through to much fanfare and positive press.

#### Moving between management regimes requires careful interagency negotiation

The Carl Schuster Horseshoe Crab Reserve was not designated through a fishery management process, though it was clearly for a fishery management purpose—reducing horseshoe crab mortality—and arose in that context at the conclusion of a fishery management plan amendment process. What worked for state managers and federal officials conducting the rulemaking process that created the sanctuary was tight focus, close communication, and careful negotiation. All state fishery managers sit on the ASMFC, as do representatives from the National Marine Fisheries Service and the U.S. Fish and Wildlife Service. Therefore all the key players were participants in the interstate process that led to the horseshoe crab plan amendment and thus had a venue for negotiation. When the commission made its recommendation to the Department of Commerce requesting the closed area in federal waters, the action was handed off, but the players overlapped. In the course of developing the proposed rule, federal agency officials stayed in close contact with state managers, met with state agencies, the Coast Guard and the Fish and Wildlife Service. The size, configuration and location of the reserve were negotiated carefully among all these agencies because those parameters were directly linked to its enforceability and the user groups who would be affected. In addition, the staff developing the rule briefed officials at NMFS, NOAA and even the Secretary of Commerce. There were no surprises as the rule made its way through the process, despite intense advocacy by interest groups. All these actions took advantage of established relationships, recognized and capitalized on overlapping authority and jurisdiction, and cleared the way for approval by the ultimate agency decision maker.

#### Venerable leaders can make a difference

A respected scientist as “leader” can provide a focal point. Dr. Carl Schuster, a retired professor and horseshoe crab biologist was so highly regarded by all parties that no one questioned his proposal for a sanctuary at what would have been, from anyone else, “too late in the process.” Although in this case such leadership came from a scientist, figures from other sectors could provide the “respected elder” role as well.

#### Fair treatment of economic interests can quell opposition

Working with stakeholders to draw boundaries and craft exceptions contributed to acceptance. The crab sanctuary includes exemptions for two affected user groups, but not all. The economic impact on a small group of Maryland watermen who trawled for flounder in the area, and kept horseshoe crabs taken as

bycatch, was seen as too small to justify an exemption. Whelk fishermen who use crab for bait are allowed into the area, as is the fishery for biomedical purposes. The latter activity involves capturing the crabs, bleeding them, and returning them to the water. These exemptions were created in the course of the rulemaking process, through responses to the first proposal and revisions to the final rule.

Though the balance between fairly drawn, rational exceptions and changing an MPA proposal in response to every special interest is a precarious one, process managers ignore economic interests at their peril. In this case, the procedural safeguards of federal rulemaking assured that the quite narrow exemptions were developed with equity and due process.

#### Keep the boundary lines simple and enforceable.

Because the request from the ASMFC to NOAA called for an area “in a 30-mile [48 km] radius” of the mouth of Delaware Bay, originally the agency proposed an arc, using the radius from the center of the mouth of Delaware Bay. But after consultation with the U.S. Coast Guard, they squared up the corners to make the area easier to enforce.

#### Base boundary lines on data

The proposed rule provided three options: one with a 15-mile (24 km) radius, the preferred alternative at 30 miles (48 km), and one at 60 miles (96 km). The agency was able to show with data that most of the crabs were caught along the shelf, and that a 30-mile (48 km) radius would protect them.

#### **5.6.4 Conclusion**

Designation of a protected area for horseshoe crabs in Delaware Bay took a route different than the other cases in this review. Federal notice and comment rulemaking is a tightly constrained process that is not comparable to the more complex and multi-issue negotiations and consensus building that took place, for example, in Tortugas 2000 or the Channel Islands Marine Reserve Working Group. However, it worked in this instance because agency staff who managed the rulemaking process took advantage of several years of stakeholder participation that preceded their action, kept stringently to procedural rules including regulatory and economic review and environmental assessment, took advantage of relationships with other federal agencies and state resource managers, and kept not only stakeholders but decision makers in the loop through the entire process.

## 6.0 Summary of Findings

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The overall goal of this evaluation is to identify best practices that can assist agency managers and planners in improving stakeholder processes used to design and implement MPAs. The case studies clearly provide a wealth of specific lessons that form the basis for broadly applicable generalizations and recommendations. However, the case studies just as clearly show that one uniform or consistent set of approaches will not fit all situations. Thus, while the evaluation's basic intent is to move from the specific to the ideal (i.e., here is what actually happened and here are some ways it might have been made more effective), there is an equal emphasis on identifying the contexts that suggest when one approach would be preferred over another. In addition, the case studies demonstrate that the effectiveness of individual design elements or tactics is strongly dependent on the choice and application of other design elements. The findings and recommendations below therefore depend heavily on cross comparisons of lessons from multiple case studies and are often framed in "if – then" terms (as in, "if" this set of circumstances exists, "then" proceed this way and not that way).

The findings below are organized in terms of the four main process themes used to structure the core evaluation questions:

- Setting the stage
- Working with stakeholders
- Decision making
- Evaluation.

Each theme includes broadly applicable lessons, differences and similarities in lessons learned across multiple case studies, and context-based recommendations for future efforts.

### **6.1 *Setting the stage***

Initial process design is, or should be, dominated by the legal mandate and policy direction, local marine management and conservation history, goal setting, the selection of stakeholder participants, and the establishment of the structure of stakeholder groups and the rules governing their interactions. The case studies vary widely in terms of these features, as summarized in Table 1. It is important to note that these features are not all controllable to the extent process planners might desire.

Table 1. Factors involved in setting the stage for the processes in each of the case studies.

Case	History	Goals	Participants	Group structure	Rules
San Juan County/Northwest Straits bottomfish recovery zones	Earlier failed federal effort Local resentment against ambitious efforts motivated by external forces	Original federal effort not specific Focused tightly on groundfish in subsequent local effort	Local governments, agencies, residents	Federal/State led public meetings to vet sanctuary led to county-formed Marine Resources Committees and umbrella NW Straits Commission	None formalized
Marine Life Protection Act	Report criticizing the existing MPA system in state Advocacy promoting MPAs Concern re stock declines	Established in law but specific outcomes ambiguous	State agency staff Scientists Ad hoc stakeholder groups, then regional planning teams	Science team working in isolation with inadequate resources Stakeholder feedback in us vs. them setting, then regionally independent multistakeholder teams	None formalized
Channel Islands	1970s Supreme Court case re state jurisdiction Proposal from sport fishers Assertion of state authority by F&G Commission Agreement between state and federal agencies Advocacy re MPAs Concern re stock declines	Initially vague, then focused on achieving specific percentage set-aside	All major stakeholders	Stakeholder group advised by separate science and socioeconomic panels meeting in parallel	Formal and explicit groundrules
Gulf Grouper	Emerging concerns re changes in population abundance and structure	Catch reduction measures PLUS focus on protecting spawning aggregations	Customary Council participants	Customary Council bodies	Customary Council process
Tortugas	Earlier sanctuary designation Earlier reserve designation effort unsuccessful	Initially vague, then focused on protecting specific habitats	All major stakeholders	Single multistakeholder group	Formal and explicit groundrules
Horseshoe Crab	Emerging concerns re decline in crab stocks and effects on shorebirds	Reducing stock decline by reducing catches and allocating reductions equitably, then protect specific, known crab spawning habitat	State and federal managers, biomedical industry, shorebird advocates and fishermen	Customary ASMFC bodies	Formal and explicit groundrules re: <ul style="list-style-type: none"> <li>• ASMFC process</li> <li>• Federal rule making process</li> </ul> Informal negotiations among stakeholders

### **6.1.1 History**

The history of events leading up to the designation effort in each case study varied widely and, in some instances, exerted a dominant influence on the process as well as on the eventual outcome. For example, the successful implementation of voluntary groundfish closures in the San Juan County case was preceded by – and, by many accounts, would not have happened without – a lengthy and ultimately unsuccessful effort to designate a national marine sanctuary in the area. The fact that the sanctuary process was initiated and promoted from outside the region, combined with its poorly articulated goals and inconsistent federal and state leadership, led to a deep-seated local suspicion of any MPA effort not locally originated and led. Past history also affected stakeholders' attitudes toward MPAs in the Tortugas case, where the often-contentious establishment of the Florida Keys National Marine Sanctuary and management plan helped to clarify issues, highlight pitfalls to avoid, and identify local leaders capable of managing a designation process.

The MLPA case provides an example of how a designation effort can itself create history that strongly influences stakeholder attitudes and subsequent changes to the overall process design. Resentment at the initial phase of this process (in which a planning team of scientists developed an initial set of maps in isolation) was so extreme that the lead agency halted the effort and then restarted it with a new process design.

History can thus be critically important and the nature of its influence will differ from process to process. Early planning efforts must therefore include a thorough assessment of past history and its potential effects on stakeholder perceptions and the goals they will agree to, as well as on their willingness to participate in any planning process, and the sorts of process structures and groundrules they will accept. This assessment should include an evaluation of the sorts of leverage, both positive and negative, that history can provide. For example, in the San Juan County case, strong resistance to any outside, federally led effort meant that stakeholders were more receptive to a local, grassroots process. As another example, in the Gulf Grouper case, the Council's experience with negotiating fishery management provisions provided a ready model, though not necessarily an elegant one, for crafting an agreement on a closure to protect grouper spawning aggregations. As a rule of thumb, past history will always provide insight into the current situation, as well as guidance on achieving leverage (either from going with or against the grain of past events). The key is knowing how to interpret that history to achieve one's ends.

### **6.1.2 Motivations, goals, and overlapping jurisdictions**

It is a truism that collaborative stakeholder processes depend on clear and broadly accepted goals and objectives for their success. However, the case studies demonstrate that, for a variety of reasons, achieving such clarity and acceptance is often considerably harder than it seems. Further, goals that seem explicit in the abstract can turn out to be vague, ambiguous, or mutable in practice. The articulation and ongoing management of goals and objectives was one of the most challenging elements in several of the case studies examined.

One potential source of confusion about goals and objectives is the fact that, depending on the impetus for a particular MPA designation effort, there may be quite different goals associated with the enabling legislation, with the individual MPA itself, and with the process used to establish the MPA. The linkage between fundamental enabling legislation and the goals of a specific MPA is often not explicitly considered, with the result that the process design does not target primary goals and objectives. This failure can be even more problematic where the enabling legislation is vague, such as in the MLPA, where stakeholders' interpretations of the act's intent were at odds and the Department of Fish and Game failed to establish control of the message. This difficulty can be compounded by the interplay of local, state, regional, and federal authorities.

The Channel Islands case study provides a useful illustration of these issues, including the impact of overlapping state and federal authorities, which stemmed from the presence of both a national park and a national marine sanctuary around the Islands, as well as a U.S. Supreme Court decision in 1978 that affirmed California's authority to manage submerged lands under the Submerged Lands Act. Thus, while the Channel Islands National Marine Sanctuary had a fundamental interest in marine resources within the sanctuary boundary, it did not have sole authority to manage activities in the marine environment in state waters. These overlapping authorities were resolved in the Channel Islands case by identifying the national marine sanctuary as the lead agency for developing a recommended MPA design in state waters, which would then, in cooperation with the state Department of Fish and Game, be submitted to the California Fish and Game Commission for final approval.

The broad (and somewhat vague) set of goals defined by the Channel Islands Marine Reserves Working Group (MRWG) thus did not fit comfortably within the responsibilities of any single agency, a situation complicated by the fact that working relationships among the three federal agencies (National Marine Sanctuary Program, National Park Service, National Marine Fisheries Service) with responsibilities relevant to the MRWG process were not always smooth. Thus, for example, the MRWG's goal of enhancing sustainable fisheries was not a goal of the Sanctuaries Act, though it was a major goal of the Fish and Game Commission. In addition, some stakeholders commented that the fundamental tension between sustainable use and complete protection in various agency perspectives was never resolved. Key participants in the MRWG process said that, in hindsight, more attention should have been paid to identifying and resolving this network of overlapping responsibilities and establishing more explicit processes for communication, especially between the state and federal agencies involved.

A similar situation occurred in the federal sanctuary designation effort in the Northwest Straits, where uncertain and potentially conflicting goals between various federal and state agencies confused stakeholders and undermined their confidence in government's ability to successfully lead the effort. Indeed, the inability of government agencies to agree on what the goals of the sanctuary effort should be, or even whether a sanctuary was necessary or appropriate, was cited as a major factor in its demise. "A strong federal-state partnership never materialized," one participant lamented, and agencies charged with vetting the process were left "largely on their own" in the face of increasing public hostility.

In the Tortugas, the other case study with a web of interacting agency responsibilities, a long history of ongoing processes to consider and develop marine zoning plans and protected areas had resulted in a more coordinated set of interagency working relationships. This, in turn, helped the working group develop a more coherent set of goals founded explicitly on the guiding and broadly accepted notion that ecological reserves would be established in the region. Here, too, the process was made complex by a combination of state and federal waters, national park, and required approvals by the fishery management council, governor and cabinet. These relationships were tested during the designation of the Florida Keys National Marine Sanctuary and development of the management plan, so participants had more experience with each other and each others' institutional requirements.

In contrast, lines of authority were simpler in other case studies. For example, the San Juan County bottomfish recovery zones (BRZ) were developed and implemented entirely by county commissioners working in collaboration with grassroots participants energized by the deep desire to demonstrate that a federal sanctuary was not necessary to achieve resource protection. United by a common goal to avoid federal or state regulation, the BRZ process focused tightly on goals important to local participants and the unwavering commitment to succeed. This was in stark contrast to the earlier federal effort to designate a sanctuary in the region, whose goals were so vague that even proponents could not articulate what a sanctuary would mean for the region.

In a manner analogous to the local San Juan County process, the grouper closures in the Gulf of Mexico were considered and resolved within the context of the existing fishery management council decision process. In the Horseshoe Crab case, authority was passed in sequence from the states to an interstate body to federal managers. There, too, they were resolved within an existing fishery management process. While this process is not necessarily suitable for broader ecosystem management concerns, in cases such as these, where the concern is single species management, the existing fisheries management system can be a useful vehicle.

Despite its importance, the relative complexity of a designation process's management structure is not the only determinant of whether clear and explicit goals and objectives can readily be developed. Two other factors play a key role. The first is the nature of the immediate motivation or impetus for the effort. The second is the design of and the preparation for the planning process itself. As discussed below and in Section 6.1.3, these two factors interact strongly.

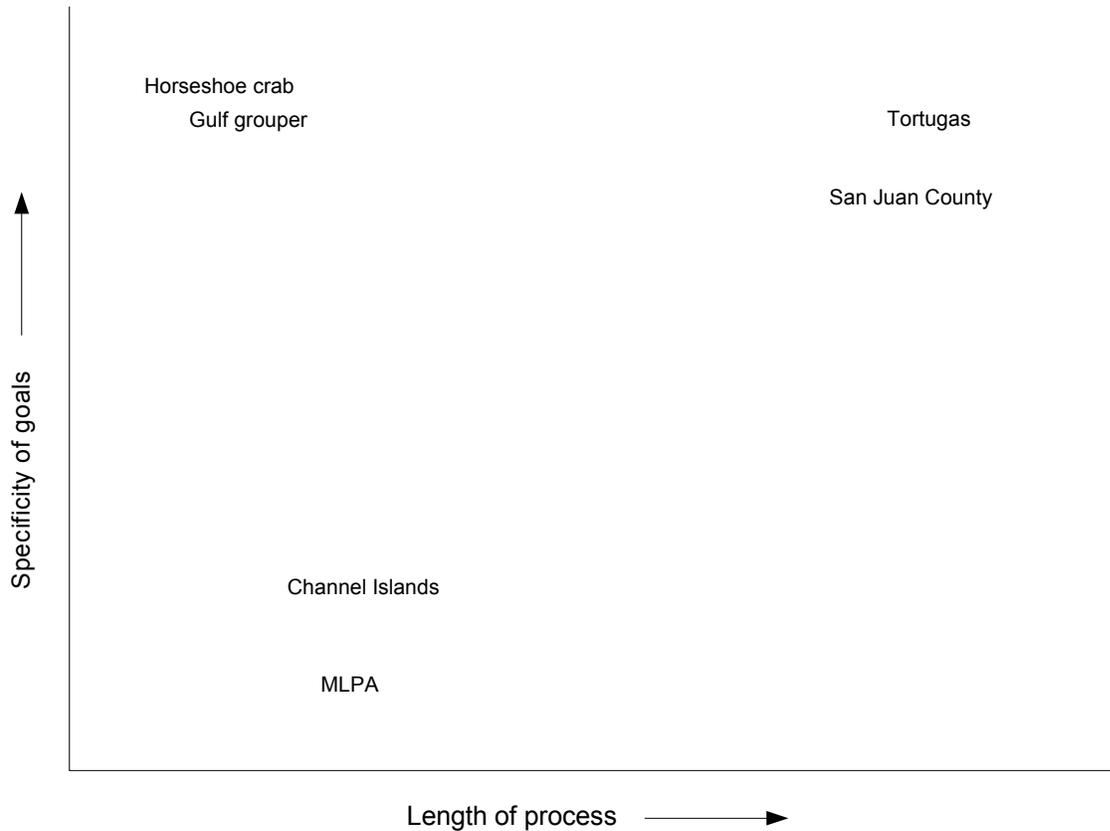
The original impetus for the designation efforts considered differed widely. In two cases, grouper and horseshoe crab, the impetus was a change in resource status that triggered a statutory requirement for action to reduce fishing mortality. Even though resource protection was also a motivation in the San Juan County case, more compelling was the desire to do something specifically local, and this was reflected in the goal to protect a specific resource of local importance. Not insignificantly, both San Juan County and Tortugas 2000 were also motivated by the real or perceived notion that, in the words of one participant that reflect the sentiment of many, "if we didn't do it the feds would do it to us." In contrast, the Channel Islands effort was initiated by a request from sportfishing interests to set aside 20 percent of the area around the Islands. This request was made in a policy environment characterized by active advocacy efforts in California to use reserves to compensate for perceived failures of the conventional fishery management system, efforts that also gave rise to the MLPA. The goals in both the Channel Islands and MLPA cases were thus broad and somewhat vague (e.g., in the Channel Islands to achieve "sustainable fisheries by integrating marine reserves into fisheries management" and in the MLPA to improve the management of California's MPA system).

Defining precise goals will not always be possible, however, nor will such a narrow focus be suitable in all circumstances. A comparison among the San Juan County, Channel Islands, MLPA, and Tortugas cases provides useful rules of thumb for situations that involve broader and less well defined motivations and/or goals. In all four cases, the designation effort stemmed from desires to protect broad aspects of habitat and fisheries, as opposed, for example, to a perceived need to safeguard a specific spawning area. While the Tortugas and San Juan County working groups achieved consensus on a system of closures, the Channel Islands and MLPA processes did not, and left residues of conflict and mistrust that are still being worked out, particularly for the Channel Islands case, in a variety of legal and management arenas.

The histories of both the San Juan County and Tortugas designation efforts show, however, that their ultimate success was preceded by failures analogous in many ways to those of the other two cases. A primary difference, apparent in hindsight (Figure 9), is that the San Juan County and Tortugas efforts had the time (although for somewhat different reasons) to move from earlier efforts characterized by diffuse goals and lack of agreement to more specific and tangible goals that formed the basis for an effective consensus. As one key result, participants in both processes were motivated to support the reserve design because they perceived clear potential benefits to their specific interests. In contrast, participants in the Channel Islands and MLPA processes were presented only with more global benefits that they were skeptical of and/or had difficulty translating into personal terms. Consequently, many resources users were motivated largely by fears of economic loss and focused their efforts on spreading the expected economic pain as equitably as possible. In such situations, it is not uncommon to hear participants comment that "reserves are a solution in search of a problem." Future designation efforts motivated by less specific, or more general, goals should therefore either state explicit goals and benefits as a starting

point or, if this is not possible, allow the necessary time and process for these to mature to a stage that supports design efforts based on more concrete goals that embody and reflect participants' specific interests.

Figure 9. Qualitative representation of the relationship between the specificity of a designation effort's goals and the length of time involved in the process.



Even if it possible to distinguish and plan for use of an MPA as tool (means) versus MPA as goal (end), convenors and process managers should look at the full array of decision tools that are available and not feel locked into a complex consensus (Tortugas/Channel Islands) model or a rigid fishery management model. It may be possible to use some aspects of the more complex collaborative processes within the constraints of fishery management. For example, fishery management council structure allows for the creation of ad hoc committees, task forces, or workshops that fall outside the rigid timing that constrains plan amendment or regulatory change. If facilitation or other tools from collaborative process would be useful in this context, the planner can make such choices. By the same token, application of deadlines from aspects of agency decision or rulemaking (NEPA timelines, or other procedural frameworks) could assist the planner in constraining what might otherwise be an open-ended process without any predictable deadline. The interplay of process complexity and time is shown in Figure 9. The lesson of the diverse case studies is that each instance has attributes that require the planner to make distinctions and design the process to the circumstances. One process will not fit all situations.

### 6.1.3 Planning, structure, and participation

The effect of history on a particular MPA designation process, as well as issues related to motivation and goals, are typically dealt with in an initial planning effort that details the structure and groundrules of the planning process, as well as the participants to be involved. There is an extensive literature on planning

for collaborative processes in a wide range of resource management, land use, and regulatory contexts, all of which are relevant in some way to MPA designation processes. Rather than attempting to summarize and/or repeat it here, this section focuses instead on lessons to be learned from the specific circumstances of each case study.

The case studies differed widely in terms both of the amount and kind of up-front assessment and process design employed and the structures of the processes used in the planning efforts themselves. None of the six case studies conducted what could be considered a best-practices assessment and design effort, conducted by practitioners with specific expertise in process design. Instead, the stakeholder processes were typically designed by agency staff, with a greater or lesser degree of input from professional facilitators. For example, staff of the California Department of Fish and Game developed the MLPA process and stated in hindsight that they would have benefited greatly from expert process design input. Similarly, the Channel Islands MRWG effort was designed primarily by sanctuary staff, with little if any input from the professional facilitators hired to run the process. And the effort to designate a sanctuary in the Northwest Straits was run entirely by state and federal employees with no formal training in process design. In contrast, in the Tortugas 2000 process, even though the professional facilitator was brought in after the meetings had begun, his expertise contributed substantially to the creation of a process that moved forward to a conclusion most of the participants agreed was fair and successful

Table 2 presents a brief summary of key issues that should be assessed in planning an MPA designation stakeholder process. In Table 2:

- **Motivations** refers to the incentives that influence behavior,
- **History** refers to past events that have shaped the situation, including the roles, relationships, and perceptions of stakeholders,
- **Leadership** refers to leadership both within stakeholder groups, of the process as a whole, and at different levels within involved agencies,
- **Goals** refers to the specific goals of the process and how they are communicated
- **Structure** refers to the process design, including number and kinds of stakeholder and advisory groups,
- **Science** refers to the nature of available scientific information and to the role of science and scientists, and
- **Timeframe** includes schedule, deadlines, pacing

Table 2. Key issues to be assessed in planning for an MPA designation stakeholder process.

	<b>Stakeholders</b>	<b>Structure</b>	<b>Science</b>	<b>Timeframe</b>
Motivations	Perspectives, motivations, goals	How the structure is influenced or affects by different motivations	Whether new information leads scientists to make recommendation	How emerging or new perspectives can change timeframe
Relationships	Relationships among stakeholders	How the structure recognizes and capitalizes on relationships (opinion leaders, constituents) and between process manager and stakeholder	How science is used in the process How scientists relate to other each other and to other stakeholders	When in the process new information or research results become available
History	Who has been involved Past history of interaction	How well the structure leverages history of past events, interactions	Experience of participants with science in past decisions	How schedule and pacing take account of history
Knowledge	Relative distribution of different kinds of knowledge among stakeholders	How well the structure incorporates tools to teach/learn	Degree of knowledge about systems and processes directly related to problem/goals	Potential for new knowledge to be created within set timeframe
Skill	Relative distribution of process, content, organizational, campaign skills among stakeholders	How skill sets of process managers match up to requirements of the structure	Whether science skills match requirements of goals	Whether timeframe accommodates lack of skill or time for getting up to speed, for both managers and other stakeholders
Leadership	Leadership characteristics and potential within stakeholder groups Whether stakeholder representatives represent the entire sector or a subset	How authority is defined and distributed How structure is affected by leaders' influence How structure affects existing leadership	Senior or venerable scientists or other authorities as leaders	When in the process is leadership most critical? From what sectors?
Goals	Whether goals reflect stakeholder concerns Whether goals identify tangible benefits to stakeholders Whether stakeholders are involved in developing goals Whether stakeholders know source of goals they did not develop	Whether the structure is appropriate to the goals How the structure influences or is influenced by mandated goals	Whether goals reflect current science How goals depend on science to be measured or achieved Whether science is being used to develop and address goals or counter opposition	Whether schedule allows for needed evolution of goals

Partly as the result of the lack of input from process design specialists, some of the case studies encountered difficulties that stemmed directly from the process structure and/or groundrules. For example, the sanctuary designation effort that preceded the more local San Juan County process was characterized, in addition to extremely vague goals, by an inconsistent level of involvement by NOAA staff, poor follow through, erratic and confusing communication with stakeholders, and a poorly defined process. It therefore appeared to local stakeholders to be a fitful effort, managed from a distance by staff without a solid commitment to the process. As another example, the MLPA managers designed a process (Table 1) that involved an independent and isolated science team with the responsibility of developing the first draft of a proposed statewide network of MPAs. Because of its relatively small size and isolation, the science team had inadequate information about the distribution of habitats, resources, and fishing effort. Thus, the initial proposals produced by the science team, far from being received as a starting point for productive discussion, provoked fierce criticism and opposition from stakeholders who felt excluded and who could point to significant gaps and errors in the maps.

The Channel Islands MRWG process also included a separate science panel, structured to provide science advice to the stakeholder group that was meeting in parallel. This structure avoided the problems encountered by the MLPA process because it left the responsibility of map making to the stakeholder panel and had the two groups meeting in parallel. However, the Channel Islands structure engendered other problems. While one of the explicit goals of the MRWG was “to achieve sustainable fisheries by integrating marine reserves into fisheries management,” the science panel included no scientists with expertise in stock assessment and other conventional fisheries management tools. In developing their recommendations, the science panel thus made the key simplifying assumption that there was no effective fisheries management in the area of interest, that is, as one panel member expressed it later, that “there was scorched earth outside the reserve.” The absence of scientists with direct fisheries management expertise thus hindered the panel from developing more realistic assumptions, with the result that the science panel’s recommendations were viewed with skepticism by many commercial and recreational fishermen, stock assessment scientists, and fisheries managers.

In addition, communication between the Channel Islands stakeholder panel (the MRWG) and the science panel flowed primarily through a single point of contact, who was widely perceived to be a strong advocate for the establishment of marine reserves. This separation between the two groups resulted in several MRWG members feeling that the science panel was not responsive to their concerns and, as one key MRWG member remarked, “The science panel kept answering questions we hadn’t asked.” While this sentiment was certainly not universally shared, the fact that much of the key scientific discussion occurred out of sight of MRWG members created a situation in which the most important scientific recommendation (i.e., to set aside a specific percentage of area) became a black box.

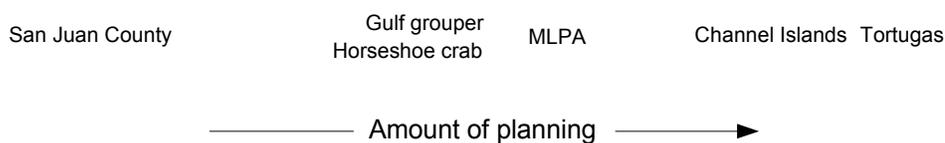
In contrast to the MLPA and Channel Islands cases, the multidisciplinary nature of the working group process in the Tortugas case, in which all stakeholders’ knowledge was integrated and shared openly, worked to create a common body of knowledge and a collective starting point for discussion. This structure also served to build trust and understanding among participants who might have otherwise perceived their interests to be at odds. Because natural scientists and socioeconomic scientists worked as an integral part of the working group, stakeholders were able to more readily integrate their knowledge with formal scientific concepts and data. (The role of science and scientists is further addressed in the next section.)

In addition to demonstrating the need for careful up-front planning, the case studies also illustrate the importance of flexibility in adapting to unexpected events and opportunities. Thus, while the

MLPA case exemplifies the dangers of poor planning, it also illustrates how the Department of Fish and Game’s willingness to reconfigure the entire MPA design process enabled it to potentially recover from its initial problems. In a different way, the horseshoe crab and Tortugas cases show how including new categories of stakeholder can expand the knowledge base, the range of options, and the support for reserve design. The addition of seabird advocates and the biomedical industry in the horseshoe crab case and Cuban American fishing interests in the latter, broadened the interest and audience for the process. The horseshoe crab case also illustrates how stakeholders took advantage of an unplanned suggestion for a spawning area reserve, moved the reserve designation from a state-level to a federal rule making context, and used an informal negotiation process to resolve the final design details. In this instance, adaptive process design worked largely because of the broad agreement that a problem existed, a narrow focus on a specific, scientifically supportable goal, and stakeholders’ experience with and skill at ad hoc negotiation.

The case studies make clear that one process design will not fit all situations.. The amount of planning and structural process complexity varied widely across cases (Figure 10) and apparently had little direct relationship to overall success. Rather, a key correlate of success appears to be the extent to which the structure matched the fundamental purpose of the effort. For example, broad goals such as those articulated by the Channel Islands MRWG are extremely difficult to meet in a short period of time. Similarly, goals that depend heavily on science are difficult to meet in a structure that divides scientists from other stakeholders. As another example, it is possible to achieve tightly focused goals that are supported by a clear consensus about a problem or the strong desire to act (e.g., Gulf grouper and San Juan County), even when the process is as cumbersome as that in the regional fishery management councils. And finally, it can be useful to move the process from one venue to another, as occurred in the horseshoe crab case, as the nature of the problem shifts or evolves.

Figure 10. Qualitative depiction of the amount of planning and structural process complexity involved in each case study.



#### 6.1.4 The role of science (and scientists)

The role of science is a recurring theme in all the case studies and deserves particular attention. It is important to consider not only the role of science (as abstract knowledge) but also that of scientists themselves. Not only are there often competing interpretations of available scientific evidence, but even widely accepted abstract knowledge is communicated, synthesized, and used by scientists. Their relationships (both structural and informal) to other stakeholders thus have a large influence on events. Because scientists are people, too, their role must be considered as carefully as that of other stakeholders and the process must be structured so that scientists play a constructive role.

The cases illustrate different approaches to building science and scientists into an MPA designation process (Table 3) and provide the basis for developing useful rules of thumb for process managers.

Table 3. Summary of the roles played by science and scientists in each case study.

Case	Structure	Science role	Scientists / stakeholder relationship	Maps
San Juan County (post sanctuary effort)	Scientists integrated into advisory group	Provide evidence in support; research inside zones	Worked collaboratively	Produced by stakeholders
Channel Islands	Separate science panel	Provide overall design target and boundary conditions	Worked separately but with some communication	Produced by stakeholders
MLPA	Separate plan team	Provide starting point for planning	Worked in isolation	First maps made by scientists
Gulf Grouper	Scientific and Statistical Committee initiated proposal	Provide justification in form of data; boundary information Described research to be done	Worked collaboratively with pro-reserve advocates	Produced by managers, stakeholders and scientists
Tortugas	Scientists integrated into stakeholder group	Provide design information	Worked collaboratively	Produced by stakeholders and scientists
Horseshoe Crab	Scientist initiated MPA proposal	Provide justification for MPA	Worked collaboratively	Produced by managers, stakeholders, and scientists

The previous section summarized some significant structural differences among the MLPA, Channel Islands, and Tortugas case studies in terms of the roles played by science and scientists. In addition, other features of the cases are worth noting.

In the Channel Islands case, the science panel was chaired by a political scientist, who was appointed chair by default because of his position on the sanctuary’s Advisory Committee (SAC). While some science panel and MRWG members felt this enabled him to remain focused on more important and higher-level issues, others felt strongly that his lack of natural science knowledge enabled some stronger-willed members of the science panel to become de facto chairs and direct the panel’s deliberations. Whatever the truth of the situation, it seems clear that process managers should have the ability to choose appropriate chairs or leaders of key advisory and stakeholder groups.

In many instances, “science” is understood to mean the “hard” biological and physical sciences, with the result that socioeconomic or cultural science are given less attention and resources. Thus, for example, the MLPA process made no provision for socioeconomic studies to assess the impacts of alternative reserve network designs, an omission that angered stakeholders and made it extremely difficult to assess the relative equity of competing proposals. And the lack of broad tribal scientific or cultural input into the San Juan County BRZ measures remains a major source of contention. Similarly, it was lack of consideration of socioeconomic impacts that contributed to the vulnerability of the grouper closure to legal challenge. In contrast, the Channel Islands process included a separate socioeconomic panel that conducted detailed data gathering and

analysis of alternative reserve designs. Because it worked closely with stakeholders, the socioeconomic panel generated none of the misgivings that some stakeholders held regarding the science panel's work. In the Horseshoe Crab process, the strength of a socioeconomic study and the inclusion of high economic profile interest groups helped get a new regulation past a federal administration with a declared antagonism to new environmental rules.

Decisions about how to use science and scientists must be carefully considered. It is essential to avoid stopping with superficial descriptions such as "science-driven process" but instead to push for explicit decisions about the role science and scientists will play. There is no right answer, although there are some rules of thumb that jump out from the case studies, including:

- Remember that scientists are people, with motivations and biases like other stakeholders
- Do not assume that all scientists have equivalent expertise or similar views on key issues related to MPA design and management
- Do not separate scientists from other stakeholders
- If there must be a distinct science advisory group, then ensure stakeholders are evenly represented and provide for broad channels of communication to other stakeholder groups
- Do not have scientists alone make maps, even of seemingly noncontroversial features such as topography, oceanography, and habitat types
- Ensure that scientists are selected to match the overall goals (e.g., if rebuilding stocks is a major goal, then include stock assessment scientists)
- Be explicit about the role science will play in the process.

## **6.2 Process management**

To the degree that planners can incorporate or anticipate most or many of the above considerations in the way they plan a stakeholder process, they can ease the job of process management. Process management is dominated by political and policy considerations, leadership issues, conflict management, and reserve design (i.e., map making) (Table 4). It can be helped or constrained by availability of resources, including the capacity of the staff managing the process, and the timing and pace of the process. If these considerations are not integrated during the work of setting the stage, they can become obstacles later. Similarly, if the role of science has been clearly delineated in the planning stage, dealings with science and scientists may not rise to a level that must to be "managed," but simply guided in accordance with the plan.

Table 4. Variation across the case studies in the major features of process management.

Case	Political considerations	Leadership	Conflict management	Map making
San Juan County	Sanctuary legislated by Congress and affected by lack of political leadership County activities motivated by desire to show grass roots success for Congressional delegation	Sanctuary suffered from lack of leadership to support process Effective leadership in opposition	No formal or effective conflict management in sanctuary process	Sanctuary maps were proposed but ineffective County maps made by stakeholders, who identified BRZs
MLPA	Goals and timeline set by law Context of active reserve advocacy	State agency with limited resources and capacity Fragmented leadership statewide in some stakeholder groups	Initial conflict a surprise, no provision for conflict management	Initially conducted by science team in isolation
Channel Islands	Context of active reserve advocacy Shared decision making between state and federal agencies	No single strong leader among stakeholders Science panel affected process through their strong design recommendation	Groundrules for consensus that were not consistently enforced	Conducted by stakeholder group within % of area constraints established by science panel
Gulf Grouper	Context of active reserve advocacy Existing fishery management framework available History of allocation conflict	Fishery management council and well organized interest groups	Council votes on majority rule, no provision for conflict management	Conducted in public council process (in committees)
Tortugas	Reserves as unfinished business of sanctuary effort History of interstate allocation conflict	Strong and charismatic leadership, skilled facilitator	Groundrules for consensus consistently enforced	Stakeholders produced while working together around table
Horseshoe Crab	Growing concerns over the population and its links to shorebirds Context of environmental protection in political campaign	Scientists, state and federal managers, interest groups	Informal but within rules of administrative procedure and federal rulemaking	Conducted by federal agency staff in consultation with state resource managers and enforcement staff

### **6.2.1 Political ecology considerations**

There are important economic, cultural, and institutional elements that influence how MPAs can be structured, how they will function, and, ultimately how successful they will be in achieving their objectives. Many of these human elements were to a large degree absent from the planning of the MPAs in the case studies, or became a consideration only after MPA boundaries, drawn by scientists and managers, gave rise to objections about their economic effects. The reported ecological and economic benefits of MPAs notwithstanding, the planning, design and designation of areas restricting some or all prior human uses becomes a progressively more political and economic activity (rather than a strictly scientific one) as planning proceeds, and as such requires an understanding of human behavior and institutions. “Political ecology” refers to institutional settings, such as other ongoing resource decision processes, as well as community or stakeholder group decision processes. An MPA process layered over the existing resource management and/or socioeconomic context without any particular accommodation to it is likely to create new costs and conflicts and to be vulnerable to human behavioral dynamics that can distort a design process and divert it from its stated objectives (Hanna 2003).

For example, the initial federal effort in the Northwest Straits failed to understand the political dynamic motivating much of the local resistance to the sanctuary designation effort. It thus missed an opportunity to build bridges to local constituencies by opening satellite offices in key strategic locations. At another level, an undercurrent of political tension between federal agencies participating on the Channel Islands MRWG hampered its ability to achieve its goal of integrating the reserve with existing fisheries management policies. Political considerations can also play an important role within interest groups, either enhancing or diminishing their relative power and/or effectiveness. Thus, sportfishing groups in California and Florida were united in their opposition to important aspects of the proposed closures around the Channel Islands and off the Florida coast, a reflection of their existing organization and leadership. Political considerations at the state and federal level can also affect an MPA planning process, as may have occurred in the horseshoe crab case where the Delaware governor’s U.S. Senate campaign was perceived to have benefited from his strong support for the reserve.

The specifics of the political considerations in any one instance can be as varied as the participants involved and are almost guaranteed to vary markedly from process to process. This makes it difficult to develop simple process design guidance that fits all situations. However, an important design principle to remember is that politics exists and it matters greatly. MPA proponents and process managers ignore at their peril the human and institutional context within which MPAs will be designed and implemented. There is no such thing as a strictly “science-driven” process. Any process whose managers believe it is driven only by science run a large risk of being blindsided by the inevitable human and institutional reactions to perceived patterns of costs and benefits, on a variety of levels. However, given the sometimes dominant importance of political considerations, this should not be interpreted as recommending a duplicitous or manipulative process design and management approach. Rather, planners and managers should treat political ecology as the natural expression of inevitable human and interest group dynamics that reflect stakeholders’ genuine interests and perceptions.

### **6.2.2 Constructive partnerships**

One way to try to anticipate and perhaps even avoid having interest groups use stakeholder process for political ends is the formation of constructive partnerships with affected parties. For example, establishing partnerships to collect information and monitor the condition of the MPA once designated can contribute to buy-in. In the cases of the gag grouper closures, the Tortugas, and the San Juan County BRZs, the knowledge of fishermen was used to develop site proposals at the outset. After the designation of the gag closure areas, the challenge from commercial

fishermen was turned into a cooperative data collection effort to look at the effect of pelagic trolling in the closed area. The work of a university scientist with eel and whelk fishermen on the Atlantic coast led to successful development of bait bags that eased the loss of the reserve area for horseshoe crab catches. Successful methods for designing cooperative data collection projects between fishermen and government agencies have been reviewed by Bernstein and Iudicello (NFCC 2003) and the National Research Council (NAS 2003).

Constructive partnerships can provide opportunities for interagency communication and work as well. This not only can avoid the stakeholder conflicts inherent in closing areas of the ocean to prior uses, it could avoid additional conflicts that arise when other managers—in fisheries, coastal development, community planning, transportation—begin to work on their respective pieces of the puzzle. Goals developed by cooperating partners could provide a framework for planning at many levels as well as opportunities for coordinating inter/intra-agency information and research. For example, NMFS was able to use a socioeconomic study conducted for the U.S. Fish and Wildlife Service in making its argument to close the horseshoe crab area in Delaware Bay.

### **6.2.3 Leadership**

Effective leadership of MPA stakeholder processes is widely recognized to be critically important and its essential elements difficult to define. Nevertheless, participants in the case studies were clear in their judgments about when effective leadership had (or had not) been exercised.

In the early federal effort to establish a sanctuary in the Northwest Straits, U.S. Representative Lowry provided the initial high-level political leadership that helped to jump-start the process. However, after that, there was an apparent absence of consistent leadership and commitment from both state and federal elected and/or appointed officials. This was paralleled by an equally debilitating perception of a lack of consistent leadership at the process level, related to facilitation and conflict management of a large-scale and potentially volatile initiative. In contrast, the later county-led effort to establish bottomfish recovery zones was led collectively but effectively by county commissioners, building on a broad base of popular antipathy for any process led from outside the region.

In the MLPA case, the state agency's lack of institutional capacity ("we're biologists, not facilitators") hamstrung agency managers' ability to provide effective leadership for the process of designing a statewide network of MPAs. In this case, managers' efforts to provide leadership were counterproductive until they had accumulated enough practical experience to begin making more informed decisions about the process design. They were provided the breathing space to do so by the collaborative action of several stakeholder groups that persuaded the California Legislature to extend the deadline for establishing the MPA network. However, at a more fundamental level, the initial decision to place (or leave) biologists without process design knowledge in charge of MLPA implementation indicated that at the policy-making levels of the agency there was insufficient understanding of the potential for conflict and controversy in this process.

Somewhat different leadership issues arose in the Channel Islands case. The sanctuary convened the MPA process but also had a voting seat on the stakeholder group (MRWG), a potential conflict of interest that engendered an undercurrent of suspicion among some participants about the sanctuary's motives. In the Tortugas, in contrast, a charismatic and popular leader helped inspire collaboration while a strong and skilled facilitator shaped and implemented an effective process.

De facto leadership can also come from unexpected quarters, as the role of scientists in two case studies illustrates. In the horseshoe crab case, Dr. Carl Schuster, a widely respected scientist, pointed out that the “heart of the spawning population” at the center of Delaware Bay had not been protected and suggested a closed area. His stature and credibility were such that this suggestion was sufficient to initiate the successful effort to designate the reserve, even though the idea of a closed area had not entered any of the previous years’ discussions about reducing fishing mortality. In the Channel Islands case, the science panel’s recommendation that a minimum area be set aside in the reserve framed the MRWG’s map making and negotiations throughout the remainder of the process.

In addition to leadership at the larger political and process management levels, leadership at the interest group level also played an important role in several cases. Unless stakeholder representatives can speak for their constituents, and communicate to them what is occurring in the process, they will be ineffective. While representatives’ ability to usefully communicate with their constituents can be constrained by resources (e.g., time and money for outreach), their perceived stature in their community is typically even more important. In the early stages of the effort to designate a sanctuary in the Northwest Straits, leadership from national environmental groups was not well received in the region. Although these groups did much of the communication and advocacy at the sanctuary program level, they were not seen as “speaking for” local residents who would be affected by a designation, largely regardless of their view of the proposal.

Two other factors were apparent from the case studies. First, the scope of action of stakeholder representatives is limited by their constituencies’ willingness to modify their own positions. For example, one group of commercial fishermen in the Channel Islands process disavowed their representative when he moved too far out in front of them. Similarly, commercial fishing representatives on the Gulf council who initially went along with the notion of closures for gag grouper were overtaken by grassroots efforts by their constituents who were opposed to the notion. Second, the most visible person, such as a stakeholder representative, may not be the actual leader. Other people who work more in the background may exert more influence. It is an essential part of the political scoping process to identify these leaders.

The case studies make clear that there is no one locus of leadership sufficient for complex MPA designation processes. Rather, leadership is needed at the following levels, at a minimum:

- The political level that initiates the process, ensures that adequate resources and institutional support are available, and, if appropriate, uses the bully pulpit to inspire public support
- The upper levels of involved agencies that ensure a practical approach to planning and a consistent commitment and follow through on decisions
- The process level where facilitation, negotiation, and conflict management skills are crucial, and their consistent management essential
- The interest group level, where perceived stature, relationships with constituents, and communication skills are important.

In addition to a multilayered model of leadership, some of the cases showed that the locus of leadership can shift as the process evolves through different phases. Thus, the characteristics needed for the start-up and organizational phase are different from those needed for the negotiation and closure phase. For example, while Dr. Carl Schuster provided needed leadership to initiate planning for the horseshoe crab reserve, it was the Department of Commerce that managed the mechanics of the federal rule making process that implemented the reserve.

The management literature is replete with treatises on leadership in a wide variety of management contexts, many of them directly relevant to the process of MPA design, which is typically characterized by uncertainty, shifting circumstances, and stakeholders with their own power base. A set of leadership traits considered valuable in such situations includes:

- Intelligent and highly skilled leaders with a penchant for boldness and initiative
- A tolerance for errors as an essential part of a leader's learning process
- An ability to generate trust through confidence building and familiarity
- Relationship building based on honesty and frankness
- The primacy of the human element (as opposed to technology or rigid procedures) in decision making and leadership
- An understanding that effective communication is based on mutual understanding, built through shared experience
- A willingness to foster communication through long-term working relationships and direct, face-to-face contact
- An ability and willingness to demonstrate personal leadership through physical presence and involvement
- An understanding that MPA decision-making environments are typically chaotic, uncertain, and changing
- An ability to demonstrate flexibility, adaptability, and opportunism in taking advantage of changing situations.

Effective leadership is essential not only for initiating MPA design processes but for managing the conflict that inevitably arises.

#### **6.2.4 Managing conflict**

Conflict is unavoidable in any process that involves investigating and selecting new ways to manage and use natural resources. By their very nature these processes threaten the status quo, the practices, ways of life, and belief systems that have, sometimes for generations, defined and shaped individuals and communities. Whether one is a commercial fisherman, a Native American with treaty rights, a federal resource manager, or an environmental activist, the stakes involved are inextricably connected to deeply held values. And whether conscious or not, these values frequently inspire more reactive, positional bargaining, and seemingly intractable conflict.

While conflict may be unavoidable and even welcomed – a pearl is created by grains of sand rubbing against each other, the old adage goes – it does not have to dominate a process or necessarily cause it to degenerate into a series of counterproductive, polarizing, and divisive encounters. If managed carefully and strategically, conflict can be transformed into an opportunity to explore new ways of bringing people and communities together for common purposes (See e.g., Wondolleck and Yaffee 2000). Each circumstance is different, but, generally speaking, there are three levels at which value-laden conflicts can be addressed (Susskind and Field 1996).

First, skilled facilitation can assist stakeholders to discover and agree on shared principles and values. In the MPA context, these will typically focus on the desired status of resources. This may be as simple as agreeing that fish stocks are not as robust as they once were, or agreement that participants want to ensure their grandchildren enjoy the same opportunities they have had. Or perhaps the shared value is autonomy – the desire to create bottoms up, grassroots solutions to commonly understood problems. However, shared principles alone will not avoid conflict if the

available implementation alternatives result in fundamentally different costs and benefits for various stakeholder groups.

The second level involves reaching agreement on processes for relating to each other, making decisions, gathering and releasing information, and managing disagreements. The experience of developing these processes can build relationships and trust, often transforming the way participants view each other, their values, and their positions. Without agreement on how participants will behave, the process manager faces the risk of end runs, release of information prior to agreement by parties seeking competitive advantage, or repudiation of the ultimate outcome.

The third level entails ongoing and fundamental shifts in participants' view of themselves and their values as specific decisions are framed and negotiated. This can occur over time as individuals work closely with their opponents, identifying and solving problems based on shared principles, breaking down stereotypes and discarding false constructs. In practice, this is a very difficult step to accomplish because it involves an altered sense of the way people view themselves in relation to an issue or problem. Because of this difficulty, there are often limits on the degree to which participants' core views will shift throughout a process. However, the environment for making such shifts can be improved by carefully selecting peripheral issues to focus on early in the process where values overlap.

The San Juan County case study illustrates a process that became mired in value-based conflict over the designation of a national marine sanctuary in the region. With one camp adamantly opposed to the federalization of resource management and the other skeptical of local communities' ability and willingness to adequately protect resources, the process degenerated into reactive, positional standoffs. Despite its failure, however, the sanctuary process planted important seeds of future success. Motivated by the possibility of outside control of local resources, communities organized around the shared principle of autonomy and began to discover that they in fact had more in common than they thought. The groundfish resource was in trouble, they agreed, and they began working to identify problems and devise solutions.

Similarly, earlier efforts that fell short in the Florida Keys National Marine Sanctuary designation process laid the groundwork for the eventual success of the Tortugas reserve. These helped to clarify objectives, build relationships among key stakeholders, develop local leadership, and resolve sources of resistance. An analogous situation may be evolving in the MLPA process, in which agency managers and stakeholders learned from the initial failure and revised the planning process around a set of multidisciplinary regional stakeholder groups. The common, and important, theme in these three cases is that "the story is never over." Because MPAs are place-based, the resource issues and the community of stakeholders remain in place, with some necessity for interaction, even after a particular effort fails. This provides ongoing opportunities for learning from mistakes and for making multiple approaches to the problem of MPA designation.

The Tortugas and Channel Islands cases provide another informative insight into conflict management, and the way in which the structure of the process can foster self management of potentially disruptive conflicts. The planning process in both cases strove for consensus and both faced last-minute resistance from sportfishing stakeholders. In the Channel Islands case, this prevented consensus in the MRWG, with the result that the sanctuary manager developed recommendations based on the MRWG's work and forwarded them to the state Fish and Game Commission for approval. In contrast, other stakeholders in the Tortugas effort were reported to have quashed the last-minute resistance in that instance to arrive at a consensus. While the exact

reasons for group behavior in complex situations are often impossible to determine, it may be that:

- The Tortugas process, which included all stakeholders (including scientists) in one workgroup, bonded the stakeholder group more tightly and developed a confidence that stemmed from having worked through the science first hand. In contrast, the Channel Islands MRWG did not have as much first-hand experience with the science because the science panel was a separate entity,
- The number of affected parties in the Tortugas process was smaller and more localized than in the Channel Islands, or
- There may have been social mechanisms available to the Tortugas participants (perhaps because of the small size and physical insularity of the Keys) that were not available to stakeholders in the Channel Islands. Thus, given that the sportfishing resistance in the Tortugas process apparently originated with organizations headquartered outside the Keys, there may have been more of a natural us vs. them reaction to outsiders that wasn't as strong in the Channel Islands.

A useful lesson from this comparison is that the opportunities and tools for managing conflict in a particular situation depend in part on the intersection between the design of the process itself and the local sociology of the stakeholder communities.

#### **6.2.5 The role of maps and map making**

There are three important aspects to maps – the process by which they are made, the information they contain, and how, when, and by whom they are used, which can include the following:

- Organizing available information and identifying data gaps
- Starting discussion
- Defining proposals and alternatives
- Negotiating
- Framing “what-if” scenarios
- Analyzing logistical implications for implementation.

The three aspects of map making are not completely independent. For example, maps made without input from all stakeholders (as in the MLPA case) will contain only limited information. Maps made without input from enforcement agencies can end up being changed so substantially for enforcement purposes that they undo carefully negotiated boundaries. Conversely, if maps are intended to contain as much useful information as possible, then only a collaborative process will create the trust necessary for participants to open up their databanks (as in the Tortugas case). Similarly, maps intended to be used as conversation starters should be produced with a different process than maps intended as negotiating tools. For the former, sufficient preparation is required so the maps are not misinterpreted when they are produced (as occurred in the MLPA case). It can also be more productive to have stakeholders build such initial maps themselves. For maps intended as negotiating tools, participants must have been involved enough in the map production to trust the information they contain.

When in the overall process maps are produced and/or revealed depends on the three aspects listed above. There is no one correct time to produce maps. In the Tortugas process, maps were used early and successfully as conversation starters and to elicit information from resource users. Maps intended as a serious negotiating tool might be produced later in the process, after stakeholders have explored their values, desired outcomes, and motivations, and after the

negotiating process has been decided on. On the other hand, maps intended to help in eliciting data can be developed early in the process.

The map-making and manipulation technology available also influences the way maps are produced and used. The GIS system available in the Channel Islands facilitated the use of maps as a negotiating tool. Similarly, GIS was used to provide several alternative choices for the Gulf Fishery Management Council in its selection of the size and location of closed areas to protect gag grouper. In contrast, the static nature of the maps produced in the MLPA process contributed to the perception that these were a done deal, despite the agency's statements to the contrary. Stakeholders had the experience of seeing fixed lines on maps and this dominated their perception, especially given the fact that the maps were produced in relative isolation by the science planning team.

The Tortugas process included a relatively structured procedure to organize the development of boundary alternatives. This involved splitting stakeholders into smaller groups, each containing a variety of stakeholders. Each group was then asked to develop alternative proposals and ranking criteria in accordance with that group's consensus of priorities. The process was used over and over until just two proposals were generated, and resulted in consensus among diverse stakeholders. A similarly structured process was used in the Channel Islands case, where the GIS system was used to estimate the economic impact on each user group of a large number of alternative reserve boundaries. These methods contrasted sharply with that used in the Gulf grouper case, where maps resulted from a comparatively unstructured negotiation process.

The cases do not suggest one particular approach to map making that fits all situations. Rather, they emphasize the importance of recognizing the variety of purposes maps may serve, making clear and widely communicated decisions about the purpose(s) maps are meant to accomplish in any particular instance, and ensuring that the process structure supports that purpose.

### **6.2.6 Planning resources**

Stakeholder processes can absorb as many resources as agencies make available. Although all the money in the budget won't necessarily guarantee a perfect process, a total absence of fiscal support and the technical and administrative resources it buys is a guarantee of dissatisfaction. Without going into extensive detail on all aspects of the resources needed to support a stakeholder process (agency staffing, participant travel and per diem, communication, facilities, technical support, information management and so forth), it is useful to highlight a few resource issues that relate specifically to the capacity and skill sets of process managers.

Taking a stakeholder process from initial MPA proposal through discussion, conflict management, conclusion, recommendation, and follow up is not a set of tasks to be tossed lightly into the "other duties as assigned" category. Managing a stakeholder process is time consuming and requires intensive, hands-on work that will be difficult to wedge into the normal tasks of managing a sanctuary or a fishery. More importantly, the set of skills required to plan and conduct meetings, help participants build trust, move a group toward consensus or away from conflict are not necessarily within the experience of ecologists, stock assessment scientists, ship captains, regulatory specialists, or similar resource management backgrounds.

Criticisms that arise when resource agencies try to manage stakeholder processes internally include:

- Insufficient front-end planning

- Dual roles of agency staff as convenors/facilitators, process participants, and ultimate decision makers
- Mistrust that agency staff will be able to set aside policy preferences or points of view and be neutral listeners
- Inadequate use of external resources including sources of funds, facilitation expertise, communications skills
- Conflicting pressures on staffers to protect resources and satisfy user groups
- Susceptibility to influence of campaigns by external groups.

The cases suggest a need for sufficient resources to engage an outside, professional facilitator, as well as agency commitment to permit involved staff the time needed to give full attention to process management. Resource management agencies typically have within their staffs more than just science skill sets. Constituent relations, education, policy, training, and technical assistance skills are often to be found among the agency's own personnel or within sister agencies. Even if these staff members are not directly conducting processes, they can provide a pool of expertise and advice for resource managers coming from a more traditional science background. In addition, many management agencies have access to technical assistance from the MPA Center's Training and Technical Assistance Institute or the U.S. Institute for Environmental Conflict Resolution.

### **6.3 Decision making**

Virtually all MPAs in the United States stem from a statutory authority and sit within an overarching agency structure. More often than not, the end of a stakeholder process—even one resulting in a “decision”—is not where the decision to designate an MPA occurs. Just as important as being clear at the outset about goals and procedures is the need to be clear with stakeholders about downstream decision making. First, what kinds of decisions are they making, how they will make them, and are they decisions or recommendations? Second, if the latter, where do stakeholder decisions go and how they are treated? The answers to these two questions are important not only because they should shape the structure of the process and the kinds of skills needed to manage it, but also because there is nothing that destroys buy-in more than taking a group of stakeholders through a complex process and then having the ultimate decision appear to ignore what they produce or recommend by opting for a different solution. For example, one knowledgeable member of the Channel Islands MRWG commented, “There was some confusion about how much authority the MRWG actually had. It was advisory to an advisory group [the Sanctuary Advisory Committee] that was going to advise the sanctuary manager who was going to advise the Fish and Game Commission. People got really exercised about the MRWG and tended to think there was a lot more power and authority there than there actually was.” That is not to say there may not be MPA designations where the process takes a less inclusive form, such as notice and comment rulemaking. However, if that is the procedural requirement, then stakeholders must be clearly informed. Table 5 illustrates degrees of control in the resource management agency or with stakeholders, and how the six cases fall along the spectrum.

Table 5. Types of decision-making processes possible in MPA designation efforts. Of the six case studies examined, the Gulf grouper and horseshoe crab cases fall into Category 2, the Channel Islands and Tortugas cases fall into Category 3, the San Juan County case falls into Category 4, and the MLPA case began in Category 1 and then moved to Category 2.

<b>Type of decision process</b>	<b>Communication style</b>	<b>Management style</b>	<b>Accountability</b>	<b>Authority</b>	<b>Stakeholder role</b>
1. Management agency has authority, makes the decision, then informs stakeholders	Telling	Directing	Agency accountable and responsible	Management agency in control	Stakeholders are told about, but not involved in, decision making
2. Management agency gathers input from stakeholders before deciding	Selling	Coaching	Stakeholder input gathered as part of process	Management agency in control	Stakeholders are consulted and may have input into decision
3. Stakeholders decide and recommend actions for the agency to implement	Participating	Facilitating	Accountability is shared	Stakeholders set direction and agency takes action	Stakeholders provide decision to agency, which then implements
4. Stakeholders decide and act to implement	Delegating	Liaisoning	Stakeholders accountable and responsible	Stakeholders set direction and take action	Stakeholders decide and implement decision

Decision making occurs at numerous stages during MPA consideration, from initiation of a proposal to final designation and management. In the cases at hand, stakeholder groups were the source of proposals to create MPAs in San Juan County and the Florida Keys; scientists were the source of the closed area proposals in Delaware Bay and the Gulf of Mexico, recreational fishermen prompted consideration of MPAs in the Channel Islands, and conservation groups and resource management programs initiated the MLPA process on the California coast. In each of these cases, the proposal to consider an MPA was taken forward by decision makers (program managers) in the respective agencies.

In the Gulf grouper and horseshoe crab cases, the requirement for public participation and the nature of that process are laid out in fishery management statutes, regulations, and operating procedures of the councils and commissions. But even given the long history these bodies have, participants are not always clear on decision rules and process. During the debate over the gag grouper closures, for example, jurisdictional questions arose about highly migratory species and it was made clear the council did not have authority to manage them by closing an area. In addition, a controversy arose over the receipt and inclusion of public comments from outside the region, comments by email, or comments generated by activist campaigns. In the horseshoe crab process, new participants didn't understand the succession of steps, the way science was incorporated, or the risks of skipping procedural requirements in their preference for emergency action over rulemaking. While the gag grouper process was criticized by many for not being better organized, not having any mechanism to reach consensus, and not having a separate stakeholder process, it nevertheless used existing decision-making structures to achieve its goals. Thus, planners should not always assume, as the default option, that an MPA designation effort must necessarily have its own separate design process.

In contrast to the Gulf grouper and horseshoe crab cases, processes for the Channel Islands and Tortugas were created solely for the purpose of considering MPAs. The programmatic authority for sanctuary management in the Channel Islands allowed managers latitude in how they would approach revisions to the management plan. Similarly, the Tortugas 2000 group provides a textbook example of structured decision-making process. This, too was enabled by the authority in the sanctuary program, the statute creating the Florida Keys National Marine Sanctuary, and the sanctuary management plan.

Section 6.1, on stage-setting, emphasized the importance of clear goals. Goals may originate with either stakeholders or the agency, and may also stem from the legal authority for MPA designation or resource management. It is important that process managers make clear at the outset if the MPA designation relates to some statutory purpose, and to what degree that legal authority will guide (or constrain) decisions stakeholders want to make. For example, if the legal basis for a closed area is fishery management under the Magnuson-Stevens Fisheries Conservation and Management Act, stakeholders should recognize they are considering an MPA as a means to a fishery management end rather than a broad biodiversity protection goal, which would not be supported by the underlying authority. Conversely, programs that are authorized primarily to conserve ecosystem integrity and biodiversity, such as the National Marine Sanctuaries, are not intended nor necessarily equipped to devise and successfully pursue an MPA planning process focused on fisheries objectives.

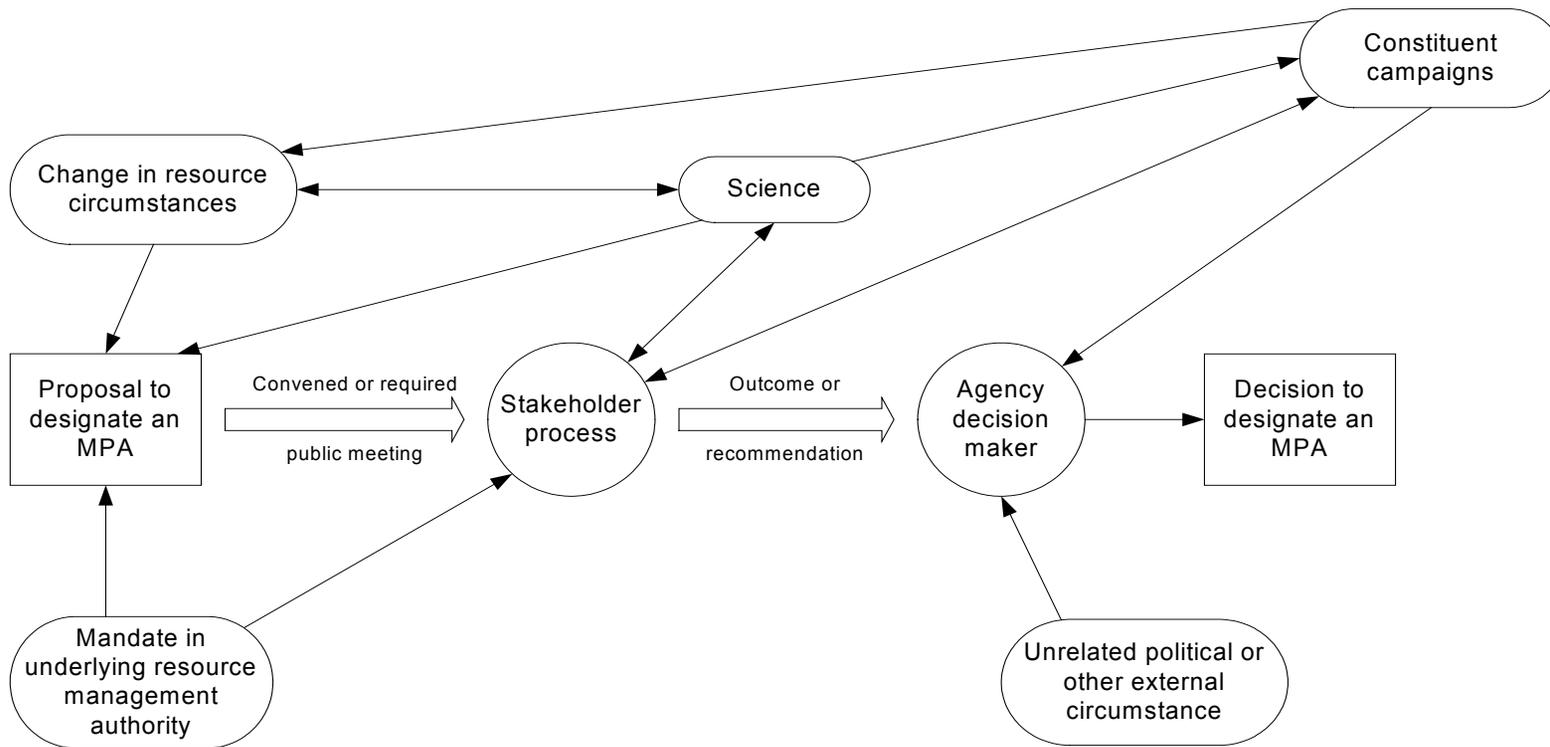
Finally, it is crucial that stakeholders understand not only what decisions they may make, but also what happens after they make them. While it may not be necessary to educate stakeholders in all the arcane details of federal administrative procedure, it is useful to process managers and the participants in their stakeholder groups to have a grasp of "the black box" so they know what to

expect, know when and how to communicate to the next stage in the decision process, and do not have unreasonable or inaccurate expectations of decision outcomes.

For example, in the first attempt to create reserves within the Florida Keys National Marine Sanctuary, advocates had support from federal program managers, national interest groups and parts of Florida's congressional delegation. They pressed forward understanding the need for state approval, but without a complete grasp of the potential for local resistance. The campaign to set aside ecological reserves became wrapped up in state and local elections and the key decision makers turned out to be the governor and the state cabinet. In the second attempt, the Tortugas 2000 process carefully pulled all agency decision makers into the discussion at the beginning, not the end. In the Channel Islands process, even though sanctuary staff informed the MRWG participants that the sanctuary manager was required to make a recommendation to the Fish and Game Commission, even in the absence of a MRWG consensus, many participants were still outraged when that occurred. It is crucial to keep reminding participants what the decision process and timeline is, especially when a portion of it includes a consensus-based effort.

The authority for decision making about MPA designation may be dictated by national policy or set out in statute or other underlying legal framework. Requirements and procedures for stakeholder process may also stem from specific statutes, in addition to overarching procedural requirements on federal action such as those found in the Administrative Procedure Act, National Environmental Policy Act, executive orders, and other guidance. Decisions about designations are influenced by everything from presidential politics, to Congressional priorities, to local recreation preferences. The take-home message for process managers is not to try to control all these aspects, but to be aware of them and to shape and inform stakeholder processes to meet underlying structure and evolving circumstances. Figure 11 illustrates the susceptibility of decision making at every stage to both internal constraints and external influences.

Figure 11. Influences on Decision Making. A proposal to designate an MPA can originate with a change in resource status; arise through the underlying resource management authority, such as a mandated review process; be initiated by a constituent group or new scientific information. Stakeholder processes may be required public involvement steps in resource management statutes or administrative procedures, or could be convened by interested constituents, resource managers or third parties. Depending on their context, stakeholder processes may have mandates and constraints based in statute or regulation, and are subject to both internal (goals and motivations) and external influences. What is critical for design planners and managers to recognize and communicate to participants in such processes is that decision making authority to designate an MPA may lie elsewhere than the stakeholder process, and that once the outcome or recommendation of that process is passed on, there are mandates, constraints and influences on the final decision, just as there were in the stakeholder process.



## **6.4 Evaluation**

Some sort of evaluation and/or monitoring process is widely accepted as an essential part of virtually all management efforts, in both the business and resource management arenas. Without objective feedback, it is impossible to determine whether goals have been or are being met or whether the management process itself is efficient and effective. These two aspects of performance evaluation are somewhat different, and will be treated separately in the following subsections. Because none of the case studies has yet had the opportunity to demonstrate a functional monitoring and evaluation system, the following discussion summarizes fundamental principles essential to the design of such systems.

### **6.4.1 Evaluating process efficiency and effectiveness**

An equivalently wide array of qualitative evaluation methods is available for determining the effectiveness of MPA design processes. However, these will be more difficult to apply than the quantitative monitoring methods just discussed. This is because it is extremely difficult to develop widely accepted criteria for process success, as the case studies amply illustrate. For example, the earlier federal effort to establish a sanctuary in the Northwest Straits was widely accounted a failure. Yet, without this prior failure, it is just as widely accepted that the subsequent locally-managed effort to designate bottomfish recovery zones would not have been successful. Similar patterns of relationship between later success and earlier failure can be found in the MLPA and Tortugas cases. The Gulf grouper case is seen by some participants and observers as a messy, conflict-ridden process that violated many best practices of collaborative management and problem solving. Yet, this is also an excellent example of the successful implementation of an MPA through the conventional fishery management process and, as such, is counted as an important success by other observers with a somewhat different perspective.

Despite these complications, there are some criteria that can help to assess whether an MPA designation process was effective, including:

- Did the process include an initial best-practices assessment by a neutral third party to identify relevant issues?
- Were the results of an initial assessment actually used in developing a process design?
- Did the process designate an MPA?
- Does the MPA adhere to the goals established by the designation process?
- Does the MPA design take account of the best available ecological, fisheries, and socioeconomic knowledge?
- What was the degree of support for the designation among stakeholders?
- Were relationships among stakeholders damaged to such an extent by the process that it undermined the possibility of future collaborative efforts to manage the MPA?
- Is there an evaluation strategy that will operate into the future?

An important lesson from the case studies is that evaluation should not be seen as a one-time effort. The case studies show that starting and ending dates for designation efforts are largely arbitrary. These efforts sit in a larger context defined by the ongoing relationships among stakeholders and the system(s) operating to manage resources. In this sense, these stories are never over.

### **6.4.2 Monitoring progress toward goals**

The more clearly MPA goals are stated, the more straightforward it will be to measure progress toward them. For example, it will be conceptually simple to measure progress toward one of the primary goals of the Gulf grouper closure, i.e., restoration of normal sex ratios in the population.

On the other hand, progress toward the “sustainable fisheries” goal in the Channel Islands case will be difficult to measure because sustainable fisheries can be defined in so many different, and equally legitimate, ways.

A monitoring or evaluation system cannot create quantitative measures of progress where goals are vague, general, or open to widely differing interpretations. This is why best practices in monitoring program design (e.g., NRC 1990) emphasize the central importance of concrete objectives and testable questions and/or measurable targets. Where concrete objectives result from the MPA designation process, the methods described in NRC (1990) provide a useful guide to monitoring design. However, it is often the case that even concrete MPA goals may require long periods to achieve. In such cases, monitoring with an extremely long time horizon may not provide useful feedback in a reasonable length of time. If an MPA is not functioning as expected, then the sooner this information becomes available, the sooner productive adjustments to the MPA design can be made.

Where time horizons are long, monitoring can and should focus on interim benchmarks of progress that reflect an underlying mechanistic understanding about how the MPA is expected to produce its desired effect(s). For example, imagine an MPA that is intended to produce enhanced spillover of larvae to surrounding populations because of the presence of greater numbers of larger females. In this instance, managers should press for explicit predictions about both the timeframe and the magnitude of the following key benchmarks:

- Increased numbers of females in the MPA
- Increased size of females in the MPA
- Increased reproductive output of females in the MPA.

Even granted that exact predictions are not possible, expected ranges should be used as the basis for the statistical design of a monitoring program to determine whether these changes are occurring. If these interim changes do not occur, then there would be no chance that the MPA would operate as expected. MPAs designed to achieve concrete goals will (or should) always be based on some set of assumptions about the processes that will lead to these changes. Once these assumptions are made explicit, they can form the basis for establishing benchmarks that can be monitored for (see the discussion on conceptual models in Chapter 4 of NRC (1990)).

Where concrete goals cannot be established because of the nature of the MPA, then a secondary process may be required to develop criteria for a monitoring program. This is because an efficient monitoring program must focus on specific indicators and must be designed to detect some amount of change at some place and time. For example, the legislation (MLPA) mandating the statewide network of marine reserves in California merely called for improving the management of MPAs to achieve broadly stated resource conservation and protection goals. The science plan team that produced the initial design proposal, as well as the regional workgroups that extended the science team’s efforts, have not gone beyond relatively simple statements about protecting specific habitat areas or avoiding excessive economic impact. Such goals are useful for MPA design but inadequate as the basis for monitoring. As another example, the Channel Islands National Park has conducted a long-term ecosystem monitoring program in many of the areas recently set aside in reserves in state waters. While suitable for tracking success in some respects, this program is not suitable for assessing progress toward the sustainable fisheries goal because it has not monitored commercially caught species.

### **6.4.3 A conceptual model for designing evaluation systems**

Despite the complexity of ecological and institutional systems, a simple conceptual model can help determine if a monitoring/evaluation system is adequately designed. This model has three levels of design and three levels of measurement and is based on the core assumption that any evaluation must be based on an understanding of the system being measured. This understanding can range from completely qualitative to specifically quantitative (see discussion of conceptual models in Chapter 4 of NRC (1990)).

The three levels of design are:

- The ultimate intention or goal (e.g., Success is ....)
- The system we interact with
  - o The whole and its parts
  - o How things work
  - o Processes and feedbacks
- The mechanisms used to effect change
  - o Tracking milestones
  - o Measuring results of actions.

In other words, an MPA design, and the evaluation system used to assess its performance, should clearly define the goals, describe how the system (ecological or institutional) is thought to work, and define the mechanisms or actions that will be taken to achieve the goals.

Three levels of measurement correspond to each of these design levels:

- Measures of ultimate success (e.g., whether grouper sex ratios have returned to normal)
- Periodic assessments, as new knowledge is gained, of the adequacy of the underlying conceptual model(s)
- Monitoring of interim milestones or benchmarks to determine whether the system is moving as expected in response to the MPA.

This evaluation model, though simple in structure, will fit virtually all situations.

## 7.0 Findings and Recommendations

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A case study analysis inevitably leads one to conclude that site-specific circumstances are different and that “all politics is local.” But while process managers should remember that there is not one size or shape or type of stakeholder process that fits all MPA discussions, there are also some universal lessons that can be drawn from the events that took place in the six designations examined.

### 7.1 Setting the stage

#### 7.1.1 History

##### Finding

Process planners ignore context and history at their peril. History is critically important and the nature of its influence will differ from instance to instance. As a rule of thumb, past history (e.g., with management agencies, other stakeholder groups) will always provide insight into the current situation, as well as guidance on achieving leverage (either from going with or against the grain of past events).

##### Recommendation

Early planning efforts must include a thorough assessment of past history and its potential effects on stakeholder perceptions and the goals they will agree to, as well as on their willingness to participate in any planning process, and the sorts of process structures and groundrules they will accept.

#### 7.1.2 Motivation and goals

##### Finding

The immediate motivation or impetus for an MPA designation effort plays a key role in determining explicit goals and objectives.

##### Recommendation

Process managers must have a grasp of the underlying authority for a designation process, as well as the ability to articulate this authority and use it to frame the process as needed. More importantly, they must seek to ascertain what actions and interests are using authority. In other words, who or what is the driver? Change in resource status? Change in agency policy? Interest group campaign? Statutory deadline? In addition, they must have a vision of the process steps from beginning to end, not just the stakeholder participation stage.

##### Finding

Different stakeholder groups and individuals will may have divergent and sometimes mutually exclusive goals or desired outcomes for the process, and may have different motivations for participating.

##### Recommendation

Design and manage MPA processes with the expectation that stakeholder motivation and goals will differ, creating the potential for disagreement and/or conflict.

#### 7.1.3 Process design

##### Finding

The lesson of the diverse case studies is that each instance has attributes that require the planner to make distinctions and design the process to the circumstances. One process design will not fit

all situations, i.e., one size does not fit all. The amount of planning and structural process complexity varied widely across cases and apparently had little direct relationship to overall success. Rather, a key correlate of success appears to be the extent to which the structure matched the fundamental purpose of the effort.

#### Recommendation

Processes should incorporate appropriate flexibility and adaptability. Convenors and process managers should look at the full array of decision tools that are available and not feel locked into a complex consensus model or a rigid fishery management model. It may be possible to use some aspects of the more complex collaborative processes within the constraints of fishery management, or to use the faster pace and deadlines of fishery management in a situation with broader goals. It can even be useful to consider moving the process from one venue to another as the nature of the problem shifts or evolves, which could involve adjusting the number and kinds of participants and/or meetings.

### **7.1.4 Science role**

#### Finding

Any manager who believes a process is driven only by science runs a large risk of being blindsided by the inherent uncertainties and disputes within the science community and by the inevitable human and institutional reactions to perceived patterns of costs and benefits, on a variety of levels. Decisions about how to use science and scientists must be carefully considered. It is essential to avoid stopping with superficial descriptions such as “science-driven process” but instead to push for explicit decisions about the role science and scientists will play.

#### Recommendation

- Remember that scientists are people, with motivations and biases like other stakeholders
- Do not separate scientists from other stakeholders; if there must be a distinct science advisory group, then provide for broad channels of communication to other stakeholder groups
- Do not have scientists alone make maps, even of seemingly non-controversial features such as topography, oceanography, and habitat types
- Ensure that scientists are selected to match the overall goals (e.g., if rebuilding stocks is a major goal, then include stock assessment scientists)
- Be explicit about the role science will play in the process.

### **7.2 Process management**

#### **7.2.1 Political ecology considerations**

#### Finding

Even processes that have much to do with application of scientific information to resource questions are significantly affected by their political settings and the push and pull of how user groups perceive the potential impacts of the proposed MPA(s). Allocation, socioeconomic concerns and political considerations may take on a dominant importance.

#### Recommendation

Planners and managers should treat politics as the natural expression of inevitable human and interest group dynamics that reflect stakeholders’ genuine interests and perceptions. They are part of the policy process and need to be recognized, accommodated and planned for. Such interest group dynamics often lead to conflict, which (see below) should be seen as a natural part of such complex processes.

## **7.2.2 Leadership**

### Finding

Effective leadership of MPA stakeholder processes is critically important, but its essential elements are hard to define. Participants are clear about when effective leadership has (or has not) been exercised. Further, there is no one locus of leadership sufficient for complex MPA designation processes.

### Recommendation

Leadership is needed at the following levels, at a minimum:

- The political level that initiates the process and ensures that adequate resources and institutional support are available,
- The upper levels of involved agencies that ensure consistent commitment and follow through on decisions,
- The process level where facilitation, negotiation, and conflict management skills are crucial, and
- The interest group level, where perceived stature, relationships with constituents, and the effective framing, control, and communication of a core message are important.

## **7.2.3 Conflict management**

### Finding

Conflict in resource management decisions is unavoidable, but it does not have to dominate a process or cause it to degenerate into a series of counterproductive, polarizing, and divisive encounters. If managed carefully and strategically, conflict can be transformed into an opportunity to explore new ways of bringing people and communities together for common purposes. Opportunities and tools for managing conflict in a particular situation depend in part on the intersection between the design of the process itself and the local sociology of the stakeholder communities.

### Recommendation

Each circumstance is different, but, generally speaking, there are three levels at which value-laden conflicts can be addressed, and this should be done through the use of skilled, experienced facilitators. They can:

- Assist stakeholders to discover and agree on shared principles and interests,
- Help participants reach agreement on processes for relating to each other, making decisions, gathering and releasing information, and managing disagreements, and
- Guide ongoing and fundamental shifts in participants' view of themselves and their values as specific decisions are framed and negotiated.

## **7.2.4 The role of maps and map making**

### Finding

It is important to recognize the variety of purposes maps may serve and to make clear and widely communicating decisions about which of these purpose(s) maps are meant to accomplish in any particular instance. The process structure should then be adapted to support that purpose.

### Recommendation

Process planners should consider three important aspects to maps – the process by which they are made, the information they contain, and how, when, and by whom they are used. Possible applications include:

- Organizing available information and identifying data gaps
- Stimulating discussion
- Defining proposals and alternatives
- Supporting negotiation processes
- Framing “what-if” scenarios
- Analyzing logistical implications for implementation.

### **7.2.5 Resources**

#### Finding

Stakeholder participation and process is an expensive, time-consuming, staff intensive undertaking. Attempting to conduct stakeholder processes in conjunction with ongoing programmatic or resource management responsibilities carries significant risk. Further, agency staff may have neither the capacity nor skill sets to conduct complex consensus or conflict resolution processes.

#### Recommendation

Always ensure that key program staff are formally assigned to manage the process from start to finish, and that they have the experience, stature and core skills needed to understand and influence its evolution, and to successfully flag and negotiate emerging issues with the program leadership. Where possible, use third-party process managers from the outset. If this is not possible with given resources, at a minimum use neutral third-party professional facilitators.

### **7.3 Decision making**

#### **7.3.1 Finding**

Decision making occurs at numerous points in the MPA deliberation process, and it is critical that stakeholder participants understand the decision role they play, and what happens to their decisions or recommendations once their process is concluded.

#### **7.3.2 Recommendation**

Process planners should know the answers to the following questions, and be able to communicate them as needed to participants. This may need to be done at several points in the process to be sure stakeholders do not lose sight of where they fit in the overall resource management picture, or conceive unrealistic expectations about the outcome of their deliberations.

- If enabling legislation does not spell this out, is the process collaborative, consensus building, or just input for the agency?
- Where does the decision-making authority lie?
- How does the agency decision-making process work if there is already a local process underway?
- What are the timeframes for decision making?
- Is there a clear set of rules and process descriptions?
- Are there ‘triggers’ or milestones set up front?
- How do different groups see the components of the process?
- Where do decisions go, after constituents have been involved?
- How do agencies retain discretion on action if the process does not produce a usable outcome?

## **7.4 Evaluation**

### **7.4.1 Finding**

Despite its importance, MPA designation processes are inconsistent in the extent to which they develop and implement evaluation systems.

### **7.4.2 Recommendation**

Evaluation should focus on both the degree to which an MPA is meeting its stated goals and on the effectiveness of the designation process itself. The clearer the MPA's goals are, the easier it will be to design an adequate monitoring system. Where goals are less clear, a secondary process may be required to establish interim and longer-term monitoring targets or benchmarks. A relatively simple model can be used to structure evaluation systems for both ecological and institutional evaluations.

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## 9.0 Appendices

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### 9.1 Appendix A: List of acronyms

ASMFC	Atlantic States Marine Fisheries Commission
BRZ	Bottomfish recovery zone
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
EA	Environmental Assessment
EO	Executive Order
FKNMS	Florida Keys National Marine Sanctuary
FMP	Fishery Management Plan
FR	Federal Register
GIS	Geographic Information System
MLPA	Marine Life Protection Act
MPA	Marine Protected Area
MRWGMarine	Reserve Working Group
NAS	National Academy of Sciences
NEPA	National Environmental Policy Act
NFCC	National Fisheries Conservation Center
NGO	Non-governmental organization
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRC	National Research Council
SAC	Sanctuary Advisory Council
SSC	Scientific and Statistical Committee
TAC	Total Allowable Catch

### 9.2 Appendix B: Introductory statement about the project

The National Marine Protected Areas Center (NMPAC) has initiated a project to evaluate six recent marine protected area (MPA) planning processes. The goal of this project is to identify “lessons learned” that can improve future and ongoing planning processes. This memo is to let you know that a contractor will be calling you to request a phone interview to discuss one or more of the six processes being evaluated. You have been selected as an interview candidate because of your unique experience with and perspective on one or more MPA planning process. We believe strongly in the value of learning from past MPA planning experiences, and hope you will participate in the project. We believe you can provide important insights that will help to improve future processes.

#### Project overview

The following six MPA designation processes were selected to represent a range of governmental levels and geographic regions:

- Carl N. Schuster Horseshoe Crab Reserve (Delaware Bay)
- Channel Islands Marine Reserves (California)
- Gulf of Mexico Grouper Closures (Gulf of Mexico)
- San Juan County Bottomfish Recovery Zones (Washington)
- Tortugas Ecological Reserve (Florida)

- Marine Life Protection Act (MLPA): Phase I (California).

The first phase of the Lessons Learned project, recently completed, objectively documented the establishment processes. (You may have been contacted sometime in the past year by Brie Kessler, who did this work.) This first phase included producing a timeline of events and identifying the various entities involved in each process. A report containing detailed case studies for five of the processes, as well as a shorter document providing summaries of all six processes, is available online at <http://www.csc.noaa.gov/mpa/process.html>. (A complete case study was not produced for the MLPA since this process is ongoing.)

The second phase of the project, now underway, involves interviewing participants to get individuals' subjective perception of what worked and what did not for each process. In addition to resource managers from involved agencies, a wide range of stakeholder groups, including commercial and recreational interests, environmental groups, and scientists will be interviewed. A final report will summarize strengths and weaknesses, and provide recommendations for future and ongoing MPA planning efforts. Primary audiences for this report are the National MPA Center and federal, state, local, and tribal resource agencies involved in MPA planning.

### **Project team**

The National MPA Center is a partnership between the National Oceanic & Atmospheric Administration (NOAA) and the Department of the Interior (DOI). Since both of these agencies were involved in the processes being studied, the MPA Center has hired the National Fisheries Conservation Center (NFCC) and the Marine Resources Assessment Group (MRAG) Americas, Inc. to bring impartiality to the interview phase. These contractors have extensive experience in marine resource management topics, but were not directly involved in the processes under review. The following individuals (in alphabetical order) make up the joint NFCC/MRAG Americas team:

- Brock Bernstein ([brockbernstein@sbcglobal.net](mailto:brockbernstein@sbcglobal.net))
- Heidi Lovett ([heidi.lovett@mragamericas.com](mailto:heidi.lovett@mragamericas.com))
- Suzanne Martley ([suzanneiudicello@rushmore.com](mailto:suzanneiudicello@rushmore.com))
- Graeme Parkes ([graeme.parkes@mragamericas.com](mailto:graeme.parkes@mragamericas.com))
- Charlie Stringer ([cmstringer@sbcglobal.net](mailto:cmstringer@sbcglobal.net))

One of these individuals will be contacting you to request an interview. It is anticipated that interviews will take between a half hour and an hour. Interviews will take place over the course of the summer, and a final report is scheduled to be submitted by the end of September.

If you have any questions about the Lessons Learned project, please do not hesitate to contact us. We can be reached at the following numbers and e-mail addresses:

Heidi Recksiek, Training & Technical Assistance Coordinator, National MPA Center (843)740-1194; [Heidi.Recksiek@noaa.gov](mailto:Heidi.Recksiek@noaa.gov)

Dr. Charlie Wahle, Director, MPA Science Institute, National MPA Center (831)242-2052; [Charles.Wahle@noaa.gov](mailto:Charles.Wahle@noaa.gov)

Thank you in advance for time you devote to an interview, and we look forward to sharing the lessons learned. The findings of this project will inform future planning activities, and your input is a critical component of an effective assessment.

### **9.3 Appendix C: Guidelines for regulatory amendment**

From: Operational Guidelines, Fishery Management Plan Process, National Marine Fisheries Service, May 1, 1997. Pages F4-F5.

#### Phase V: Continuing and contingency fishery management, 1. Continuing Fishery Management; Regulatory Amendments

Regulatory amendments amend regulations, not an FMP. Section 303(c)(2) of the Magnuson-Stevens Act provides that a Council shall submit proposed regulations the Council deems necessary or appropriate to modify regulations implementing an FMP/amendment at any time after the FMP/amendment is approved. A regulatory amendment is used to clarify Council intent or to interpret broad terms contained in approved FMPs; it may be used to implement a portion of an approved FMP/amendment that was reserved and the Council now desires NMFS to implement.

Regulatory amendments can be used when a Council believes a specific problem may occur in the fishery that would require addition to or amendment of the original regulations, but the exact nature of the event or the remedial action cannot be foreseen at the time the FMP is being prepared. An example is the concern that, with the growth of a fishery, a gear conflict might arise that could lead to serious disruption. In such cases, a Council may not be able to predict the nature, location, or magnitude of the event with sufficient certainty to describe the measures needed to address the problem, the effects of the regulatory change, or the criteria to be used with sufficient precision to use abbreviated rulemaking procedure. Nevertheless, there may be a need to act more rapidly than is possible through the FMP amendment process. The mechanism to use under these circumstances is a regulatory amendment, if the authority is provided for in the FMP.

Regulatory amendments must go through the normal rulemaking procedure, including determination of significance under E.O. 12866; time saved is derived from the fact that the change was anticipated within the scope of the FMP/amendment (thus obviating the necessity for the full FMP amendment process), and the comment period is normally 15 to 30 days, instead of the 60-day period set forth by the Magnuson-Stevens Act for FMP/amendments. However, a regulatory amendment submitted by a Council under section 303(c)(2) of the Magnuson-Stevens Act must be reviewed by NMFS according to statutory deadlines: 5 days to initiate evaluation of the proposed rule, 15 days for F to make a consistency determination and clear the proposed rule, a standard 30-day public comment period, and publication of the final rule within 30 days after the close of the comment period on the proposed rule. An interim final rule may be used when a measure must be made effective immediately and, when justified, the advance period of public notice and comment and APA delayed effectiveness can be waived; however, public comment is requested upon publication of the interim final rule. A final rule, which responds to public comments, implements the final rule on a permanent basis, if still found necessary and appropriate.

The FMP and associated documents should define and analyze as completely as possible the problems foreseen; the kinds of actions that may be taken to overcome them; any criteria for action that may be foreseen; the economic, social, and environmental effects that may occur as a result; and the procedures that are to be used for taking the action. The implementing procedures should compensate for the fact that appropriate analysis and opportunity for public comment on the action may have been limited in the original FMP.