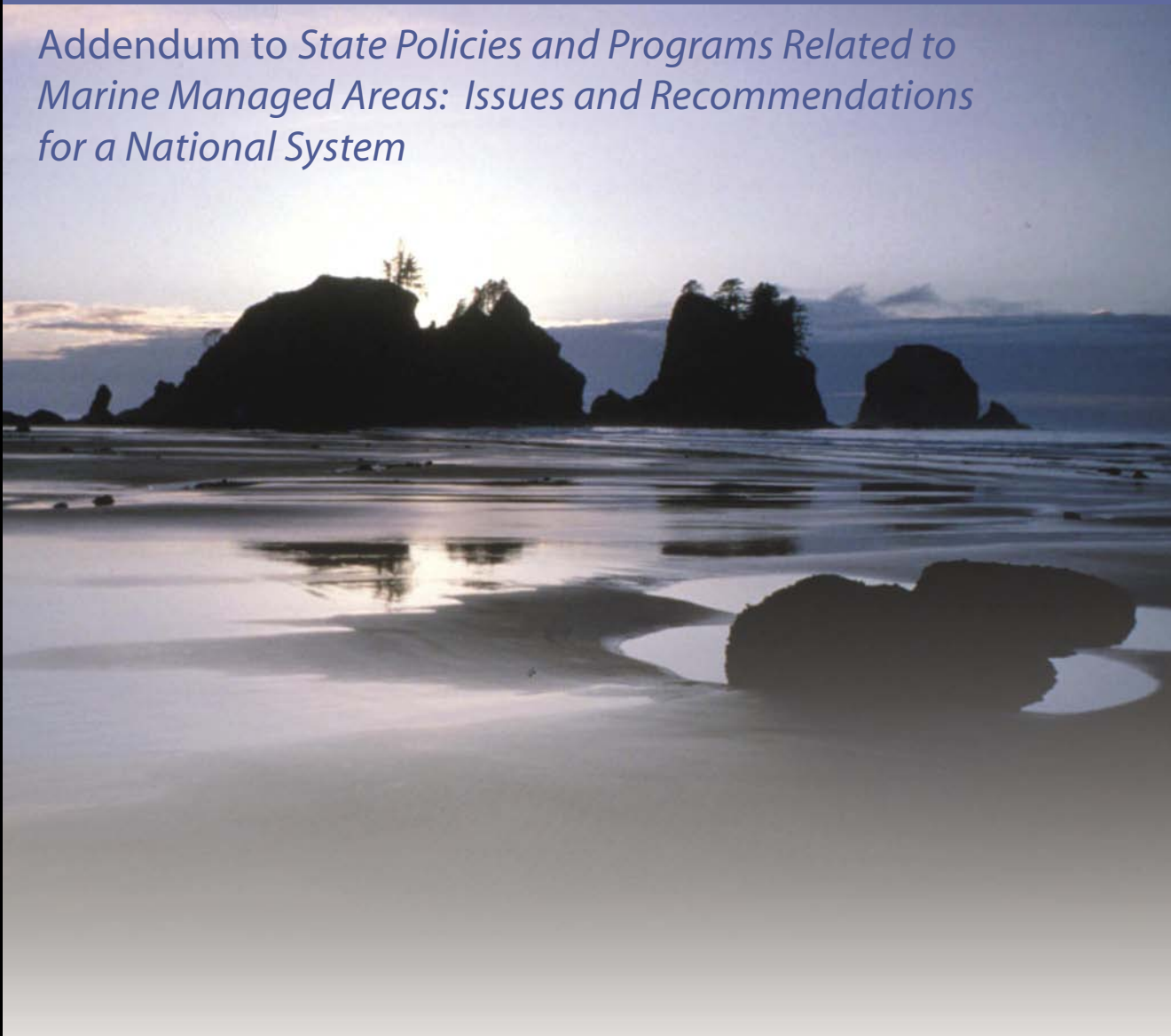


# Case Studies of State-Level Marine Managed Area Systems

*Addendum to State Policies and Programs Related to  
Marine Managed Areas: Issues and Recommendations  
for a National System*



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# Preface

This report provides an in-depth examination of six marine managed area (MMA) systems under state jurisdiction in the United States. The following state officials generously contributed their insights during telephone interviews:

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Their contributions were essential to this study, and we offer our sincere appreciation for their assistance.

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# INTRODUCTION



Executive Order 13158 on marine protected areas (MPAs) was issued on May 26, 2000 (Appendix 1). The Executive Order called for the Departments of Commerce and Interior to develop a national system of MPAs. In February of 2002, the Coastal States Organization received a contract from the National Oceanic and Atmospheric Administration's (NOAA) newly established National Marine Protected Areas Center to develop a report characterizing state-level "marine managed area (MMA)" policies and programs, and to formulate policy recommendations toward an improved, national system (see Davis et al., 2003).

One of the report's central findings was that state-level marine managed area systems exhibit a high level of complexity and diversity when compared with federal MMA policies and programs. For example, resource protections at the state level most often occur through single purpose, "marine overlay zones," rather than through comprehensive planning areas. In addition, the types of protections afforded marine resources at the state level differ significantly from those found at the federal level. States often protect nearshore marine resources by regulating coastal developments and alterations, such as dredging/filling operations, docks and marinas, and aquaculture facilities. This supplemental report was commissioned to more closely examine MMA systems under state jurisdiction, and to document the lessons learned by state managers involved with their development and implementation.

## **Study Approach**

Six marine managed area systems were selected for this analysis based on geographic representation,

uniformity among sites, availability/willingness of identified respondents, and general characteristics. It was important to examine different types of MMA systems to identify commonalities that exist regardless of the socioeconomic and ecological conditions and priorities that the MMAs are designed to address. For this reason, the selected systems ranged from sites established through local comprehensive plans in Oregon, to cultural reserves in Michigan, to nursery habitat areas in North Carolina.

An informal telephone interview (Appendix 2) was conducted with a state official identified as having had primary responsibility for, and/or first-hand knowledge and management experience with, each selected system. Other officials in their state often recommended respondents. Interviews averaged one and one-half hours in length. Following each interview, the respondents agreed to review and approve this supplemental report.

## **Layout of the Report**

An overview of each of the six selected MMA systems is presented in Section I. For each system, stakeholder involvement, goals and objectives, the roles of science, boundary issues, enforcement, education/outreach, and institutional arrangements are discussed. Section II describes commonalities between the selected systems, and summarizes management experiences and lessons learned through the development and implementation of state-level MMA systems.





# SECTION ONE

## Selected State MMA Systems

### *California's Channel Islands Marine Protected Areas*

case study

#### **Overview**

In 1998, a local citizens' group approached California's Fish and Game Commission (Commission) seeking to establish a system of marine protected areas around the northern Channel Islands. After more than four years of meetings, debates, and planning, twelve sites were designated. These ten "state marine reserves" and two "state marine conservation areas" cover approximately 142 square nautical miles. Under the state's new Marine Managed Areas Improvement Act (CA Fish and Game Code §1590-1591), state marine reserves are defined as essentially "no-take" areas, while state marine conservation areas may allow limited recreational and/or commercial fishing activities. On April 9, 2003, the regulations governing the Channel Islands marine protected areas (MPAs) officially took effect (Title 14 CA Code of Regs §632).

#### **Stakeholder Involvement**

Initially, the Commission deliberated the concept of MPAs for the Channel Islands, and over the course of a year discussed the issue at several of their regularly scheduled hearings. Then the Channel Islands National Marine Sanctuary (Sanctuary) offered to work with the Department of Fish and Game (Department) on a new public involvement process, based on lessons learned through the recently successful stakeholder involvement methods employed for the Florida Keys National Marine Sanctuary. In July 1999, the Sanctuary developed a "Marine Reserves Working Group" (MRWG) under its previously established Sanctuary Advisory Council (SAC). The MRWG was made up of eighteen representatives of various interest groups, including state and federal agencies, citizen groups, recreational and commercial fishers, and environmental organizations.

Because the MRWG was modeled after an advisory committee used in the Florida Keys National Marine Sanctuary, a consensus approach was

adopted rather than a voting process for recommended measures. Although consensus was achieved on a general problem statement, goals for the MPA system, and several implementation measures, the working group could not reach consensus on several other issues after 22 months of meetings (primarily the siting and aerial coverage of state marine reserves). At that point, the MRWG forwarded their recommendations to the general SAC, which recommended that the Department and Sanctuary work together to develop a preferred alternative. In July 2001 The Department and Sanctuary distributed a working draft alternative to the MRWG, SAC, and others. Based on comments the working draft was revised and a preferred alternative was forwarded to the Commission for approval. In October 2002, after more than a year of additional deliberation, the Commission adopted the preferred alternative.

During this time, the California Marine Life Protection Act (MLPA) was enacted (Chapter 10.5 California Fish and Game Code, §§ 2850-2863). This state law directed the Department to review the existing array of MPAs in California and to generate a master plan for improving the network of MPAs based on a strong scientific foundation. The Department formed a “Master Plan Team” for the MLPA made up entirely of scientists, and held ten public meetings around the state. This was later determined to be an ineffective approach, as the public responded negatively to what they sensed was a final draft plan that would include too much area under new protections. The Department changed its approach, and developed a new public input method that utilized over 60 small meetings, where one or two Department staff met with up to 20 constituents. Through these meetings, it became evident that many concerns were specific to certain coastal regions; therefore, the Department established seven regional working groups to provide ongoing input regarding state-level MPAs. Recently, this process was put on hold due to funding and staff constraints.

## Goals and Objectives

While the objectives of state marine conservation areas may vary on a site-specific basis, the general goals for MPAs in the Channel Islands were agreed upon by the MRWG, and address biodiversity, socioeconomic well-being, fisheries, natural and cultural features, and public education (California Dept. of Fish and Game, 2002). More specific, measurable objectives have not been developed, nor have indicators, benchmarks, timelines, or estimated costs been specifically related to goals or objectives. At one point in the

planning phase, fishers contended that such measures were needed in order to reevaluate the effectiveness of the new MPA system. Scientists countered that no single level of permanence could be expected at any given site, and that benchmarks would have to be site-specific due to varying ecological conditions.

## Role of Science

Science played a key role in the development of marine protected areas in the Channel Islands. First, a “Science Advisory Panel” (SAP) was established to assist the MRWG in formulating recommendations. A particularly beneficial product of the SAP was a new computer-based siting program that could model the implications of proposed boundaries on habitats, fisheries, and economic costs. Although the resulting simulations were not expected to be perfectly accurate, they were very useful in highlighting “hot spots” for reserve siting where beneficial outcomes appeared to overlap.

One of the first questions posed by the MRWG to the SAP concerned the total area needed within marine reserves to achieve their long-term goals. The scientists estimated a value of between 30 and 50%, which proved to be highly controversial. While some fishing groups responded quickly and strongly that those values were exceedingly high, some environmental groups latched on to the values as a new end-goal.

The SAP also played a key role in advancing the concept of a network of numerous, interconnected, smaller reserves as opposed to a single, large reserve. Numerous reserves can capture a greater degree of biogeographic representation, and can serve as sources and sinks for larval dispersement. However, the connectivity among reserves is difficult to demonstrate, and the concepts of “spillover” and larval transport became points of contention among some groups demanding further evidence.

Environmental data is robust in the Channel Islands, where well-funded and consistent monitoring programs have been underway for more than twenty years. Scientists involved with these programs, as well as scientists from other areas, have expressed interest in modifying their sampling designs and protocols to address the effects of the new marine reserves. The Department is seeking to coordinate these monitoring programs, and recently sponsored a workshop concerning environmental monitoring in the Channel Islands. The Department also plays an active role in data collection through the employment of



several biological field staff and through cooperative research with the Sanctuary, National Park Service, and university researchers in the Channel Islands.

The data collected through existing and modified monitoring programs will be tied to measurable marine reserve goals and objectives for the purpose of formal program evaluations. In addition, the data will be important in measuring trends in natural resources and processes. One difficulty in using monitoring data for evaluation purposes lies in the “ownership” of the data – until the research is published, the data are the intellectual property of the scientists. Because publication often occurs from three to five years after the data is collected, the Department has begun to work with scientists to obtain summary data on a more consistent basis. The Department also facilitates the work of the scientists by offering staff assistance and vessel time.

## **Boundaries**

The boundaries of each marine reserve were based on lines of latitude and longitude, and were rounded to the nearest tenth of a minute. Boundaries are not marked on the water, but attempts were made to have boundaries coincide with major points of land for reference. Public comments were extremely important in boundary delineations, since small variations in siting could have disproportionate impacts on individual stakeholders. The Department is working with several industry partners to have marine reserve boundaries incorporated into digital, nautical charts for recreational and commercial boaters.

## **Enforcement**

Enforcement is primarily undertaken by the Department. However, a memorandum of understanding is currently being developed between the Department, Sanctuary, National Park Service, and the U.S. Coast Guard to cooperate on enforcement of the marine reserve regulations. The Department is operating a new enforcement vessel, complete with night vision and radar capabilities. The National Park Service provides on-site support through its rangers stationed on each of the Channel Islands.

## **Outreach/Education**

The Sanctuary is actively involved with outreach and education programs to benefit the marine reserves. For example, the Sanctuary established an “Adopt-a-Business” program, where volunteers make sure that

informational flyers are present in marinas, tackle shops, and other marine-related businesses. The Department has also developed a website that provides detailed maps and regulations for each reserve. Outreach and education are seen as particularly important for the Channel Islands MPA network, since managers have continually faced problems with misinformation due to media inaccuracies.

## **Institutional Arrangements**

The Department is responsible for coordinating the Channel Islands MPAs, but has worked closely with the Sanctuary and the National Park Service. A Regional Working Group established under the Marine Life Protection Act, which could also provide ongoing guidance for the Channel Island MPAs is currently on hold due to funding and staff constraints. A recent marine monitoring workshop led to recommendations for public oversight of the implementation and monitoring of the marine reserves through local committees; however, these too may be limited by funding and staff constraints.

## **Summary**

Stakeholder participation is both essential and complex for the Channel Islands MPAs. The most appropriate levels of stakeholder participation may require funding and staff support that are not available, or at least not reliable, over the long-term implementation of the MPA system. In addition, consensus-reaching approaches early in the reserve process may have been more harmful than beneficial. Agreement upon a range of alternatives may have proven a better approach, where the advisory committee would have the ability to disagree and identify common ground on difficult issues.

The cooperative work between the Department, the Sanctuary, and the National Park Service has been extremely beneficial. Although unusual, states may find that they can leverage staff time and enforcement jurisdiction over state waters to gain the education/outreach and monitoring capabilities of National Marine Sanctuaries and National Parks.

# Florida's Aquatic Preserves System

## Overview

Florida's first aquatic preserve was designated in Estero Bay in 1966. In 1975, the Florida legislature passed the Aquatic Preserve Act (F.S. Chapter 258.35-258.46), which formally established a Florida Aquatic Preserves Program under the Department of Environmental Protection. The Office of Coastal and Aquatic Managed Areas (CAMA) is responsible for the living resources within the 41 preserves that currently comprise the system. The Florida Aquatic Preserves Act was instrumental in bringing existing preserves under a set of standard management criteria.

Aquatic preserves are submerged lands defined as holding "exceptional biological, aesthetic, scientific and historic value," to be maintained in their natural or existing conditions (F.S. Ch. 258.36). One or more of the following principal types characterizes each aquatic preserve: biological, aesthetic and/or scientific. Through education, resource management, scientific research, environmental monitoring, and partnerships, the management mission for the aquatic preserves system is to protect Florida's coastal resources. In general, the program restricts alterations and developments, as well as future leases or sales of submerged lands, within the aquatic preserves system, unless a proposal is deemed to be clearly in the public interest. The program also manages approximately 130,000 acres of coastal uplands within the state's three National Estuarine Research Reserves.

## Stakeholder Involvement

Stakeholder involvement is most prominent during the site designation process. Since there have been no new site additions since the 1980's, stakeholder involvement is mainly through citizen support organizations, established for individual aquatic preserves. Citizens support organizations, such as "Stewards for the Southeast Florida Aquatic Preserves, Inc.," carry out programs and activities, raise funds to support preserve initiatives, request grants and gifts, and administer expenditures for the direct or indirect benefit of individual preserves and preserve system.

In addition, the Governor and Cabinet sitting as the Board of Trustees of the Internal Improvement Trust Fund oversee management of the aquatic preserves. The Board of Trustees may establish additional areas to be included in an aquatic preserve subject to confirmation by the state legislature, and following a public hearing, may adopt a resolution to formally include areas in the aquatic preserve system. The resolution must include

a legal description of the area, the type of aquatic preserve being set aside, a general statement of what is to be preserved, and a clear statement of the management responsibilities for the area.

## Goals and Objectives

The goal of the preserve system, as stated in the associated mission statement, is to “protect Florida’s coastal resources by using the tools of environmental education, resource management, scientific research, environmental monitoring, and partnerships.” The CAMA managers consider and balance the needs of animals, plants, and humans. Objectives for managing the sites are determined on an individual preserve basis.

## Role of Science

Aquatic preserves are designated for a variety of reasons, including biological and scientific. However, most preserves were designated out of a general need and desire to preserve the locus in its natural state. Aquatic preserves are incorporated into a broad, area-based planning initiative that includes a watershed connection through land-based components. Linkages or connectivity between aquatic sites with regard to larval transport, fish migrations, were not considered.

Water quality monitoring is conducted throughout the aquatic preserve system, although not on a standardized basis. Preserve administrators are developing and implementing a mechanism that will make water quality monitoring consistent and scientifically valid throughout the aquatic preserve system. However, staff and funding constraints continue to limit these activities.

## Boundaries

Boundaries are marked on paper maps, and are available online. Individuals often become aware of aquatic preserve boundaries only when applying for a development permit. When conducting permit reviews, state officials notify property owners if a planned activity will transpire within the confines of a preserve. Aquatic preserves are bordered by land and are sometimes demarcated using depth contours.

## Enforcement

Limited dedicated enforcement exists in aquatic preserves. Local officials, such as building inspectors, provide the principle means of enforcement for construc-

tion violations. Rather than imposing penalties, permit violators are instructed to remove the illegal structure or rebuild the structure to specifications. Other enforcement responsibilities are shared by local law enforcement agencies and a few volunteer organizations. The preserves system does not employ a patrol force.

## Outreach/Education

An extensive education and outreach initiative exists throughout the aquatic preserve system. Education/outreach programs address living resources’ habitat requirements and focus on the aquatic preserves’ restoration efforts and water quality monitoring activities performed by volunteers. Human impacts to the preserves are addressed along with the importance of biological diversity through other educational programs and materials.

Additionally, CAMA has partnered with a renowned Florida nature photographer, Clyde Butcher, to create an outreach campaign (“Living Waters: Aquatic Preserves of Florida) to educate, inform, and inspire Florida’s citizens and visitors to be better stewards of aquatic preserves. The campaign includes an hour-long documentary, a book of Clyde Butcher’s aquatic preserve photographs, a traveling photographic exhibit, a music CD that weaves in the natural sounds heard in an aquatic preserve, and a 2004 Clyde Butcher Aquatic Preserves calendar.

## Institutional Arrangements

There are 35 full time state employees dedicated to the aquatic preserves program, with one to three dedicated staff members for each of the three regional preserve offices, on average. The program has 14 field offices around the state, and relies on National Estuarine Research Reserves to serve as regional coordinating centers. Several aquatic preserves staff members are assigned to NERR sites in cases of overlapping jurisdictions. The NERR/aquatic preserves relationship is still developing, but it is anticipated that NERRs will continue to play an important role in outreach activities for the aquatic preserves system.

A number of the Aquatic preserves are also designated as Gulf Ecological Management Sites (GEMS). The GEMS program is an initiative of the U.S. Environmental Protection Agency, Gulf of Mexico Program, and five Gulf of Mexico states, providing a framework for the protection of significant Gulf habitats. In addition, most of the waters within aquatic pre-

services have been designated as “Outstanding Florida Waters” under the state’s water quality legislation to restrict discharges of pollutants.

## **Summary**

Aquatic preserves in Florida were originally established on a case-by-case basis in state statutes, and site activities were not standardized statewide. Over time, coordination has improved, and priorities are

increasingly consistent among the preserves. Links with upland conservation programs and implementation of a watershed approach have proven useful in integrating the statewide system. A statewide management approach has increased the program’s visibility and the public’s awareness of individual preserves, strengthening statewide public support for the aquatic preserves system and environmental awareness. A strong state system may also lead to better funding opportunities at the regional and federal levels.

# Michigan's Underwater Preserve's System

case study

## Overview

The Michigan Underwater Preserve System, which is administrated through the Department of Environmental Quality's Submerged Lands Program, is responsible for managing roughly 2,000 shipwrecks located on approximately 1,900 square miles of Great Lakes bottomland. The underwater preserves have been established to protect some of the region's most sensitive underwater natural and cultural resources, and provide an area-based approach to managing shipwrecks. The system's central objective is to provide enhanced management for shipwrecks by managing the tracts of submerged land where wrecks are located.

The Michigan Underwater Preserve System was established in 1980 through the Michigan Natural Resource and Environmental Protection Act (NREPA; M.C.L. 324.76101 et seq.). The legislation received strong support from stakeholder groups, arguably the strongest of which was from the recreational dive lobby. The underwater preserves are managed in conjunction with the Michigan Department of History, Arts and Libraries, Michigan Historical Center, as authorized under Section 761 (Aboriginal Records and Antiquities of NREPA). Sport divers and history enthusiasts have also ensured the integrity of the preserve system through a system of volunteer monitoring and enforcement. The eleven underwater preserves that constitute the preserve system are considered underwater museums.

## Stakeholder Involvement

Stakeholders play a key role in establishing and maintaining the underwater preserves. In fact, stakeholder groups, such as local dive clubs, are the sole proponents of site nominations for inclusion into the preserve system. Should a site be officially designated by the state legislature, volunteer stakeholders are also relied upon for site management. All site management, such as the placement of marker buoys; artifact documentation; and outreach campaigns, occurs at the local level through volunteer support.

The principle management organization for the eleven preserves is the Michigan Underwater Preserves Council, Inc. The council is a private, non-profit organization comprised of dive enthusiasts and local business leaders and officials from local chambers of commerce. The Underwater Preserves Council fosters the cooperative stewardship of the resources associated with the preserves. In addition, the council identifies, supports,

and participates in projects which benefit the preserves, such as the development and applications of new technologies to aid management and education.

The council also acts as an information clearinghouse and referral service to existing preserve committees, existing and potential preserve-related businesses, and groups interested in establishing new preserve committees. Finally, the council coordinates preserve monitoring and assessment, and develops new positions based on emerging issues. The Underwater Preserves Council communicates these positions in the form of recommendations to the state legislature, relevant agencies, and other organizations for further action.

## Goals and Objectives

The original intent of the underwater system was to preserve and protect shipwrecks through an area-based management approach. This area-based approach is intended to facilitate the management of submerged resources and to regulate the removal of historic and cultural artifacts. Although not originally intended as an objective, the preserve system also serves as a stimulus to local economies through the promotion of preserve sites as tourist attractions for the recreational diving community. No specific, measurable objectives have been developed for the preserve system.

## Role of Science

Monitoring occurs infrequently and on an informal basis. To better document the condition of newly located shipwrecks, and with the intent of establishing a more formal performance evaluation system, preserve staff have solicited the support of the Michigan State Police. A state police dive team, working in concert with volunteer divers, documents the condition of a shipwreck through the use of videotape. The result is a visual record of the shipwreck at the time of discovery. Although the visual record is primarily intended to document any artifact removal for law enforcement, state officials would like to use the documentation to develop and institute a monitoring program to assess the condition and deterioration of the shipwrecks over time. However, relying on a volunteer force to monitor the changing conditions of the each shipwreck presents obstacles to effectively implementing a scientifically valid monitoring program.

## Boundaries

All boundaries are resource-based. Boundaries of an underwater preserve are based on the presence of “abandoned property” and a site’s “historic value” as defined in the Aboriginal Records and Antiquities Act. Examples of such resources include a single or numerous submerged vessels, boats, canoes, aircraft, or associated equipment. A preserve may also be designated if a site includes features of archaeological, historical, recreational, geological, or environmental significance. Protected cultural resources may also contain artifacts from historic and prehistoric Native Americans.

Individual underwater preserve boundaries may not exceed 400 square miles in total area. A variety of factors are considered in establishing boundaries, including depth contours and longitude and latitude. Surface boundary markers are occasionally deployed. However, the deployment is dependent upon a volunteer force and as such is inconsistent from year to year. Boundaries are designated on maps and brochures, but a lack of funding has limited printings and distributions.

## Enforcement

All artifacts found within the preserve system are protected under the Michigan Aboriginal Records and Antiquities Act, as amended. The Michigan Department of Environmental Quality and the Michigan Department of History, Arts and Libraries administer the act. The law authorizes preserving abandoned property (shipwrecks, etc.) on the bottomlands of the Great Lakes, designating underwater preserves, issuing salvage permits when appropriate, and for fines and penalties for illegally removing, altering, or destroying artifacts. It is a felony to remove or disturb artifacts in the preserve system. Those caught removing portholes, anchors, chain, or other artifacts could have up to a two-year imprisonment. Fines could also be administered, along with confiscation of boats, vehicles, and equipment used to remove the artifacts.

Due to the lack of funding and limited enforcement capabilities, state officials primarily rely on volunteer surveillance. However, local marine police and state police units sporadically patrol underwater preserves. Partial funding to support these patrols comes from the federal Coastal Zone Management Act (CZMA; 16 U.S.C. §§ 1451 et seq.). Violators often challenge enforcement actions by making admiralty claims, and

center their arguments on the definition of “abandoned property” under the Michigan Aboriginal Records and Antiquities Act (MCL section 299.51), as well as the federal Abandoned Shipwreck Act (P.L. 100-298; 43 USC 2101-2106). Cases are tried in federal district court acting as an admiralty court.

### **Outreach/Education**

State officials view the Underwater Preserve System’s website as generally successful in promoting the preserve system. The website promotes the use of the preserves for recreational diving. Volunteer groups undertake additional outreach and education activities, including lectures on the system or the history of a specific shipwreck at local libraries. Currently, outreach efforts to promote or enhance the preserve system are limited by a lack of state funding.

### **Institutional Arrangements**

The state’s Submerged Lands Program staff administers the preserves system. The submerged cultural

resources are managed in conjunction with the Michigan Department of History, Arts and Libraries, and the Michigan Historical Center, as authorized in Part 761, Aboriginal Records and Antiquities, Natural Resources and Environmental Protection Act (MCL 324.16101 et seq.). As noted, state officials rely heavily on volunteer efforts for local management, monitoring and enforcement.

### **Summary**

The Michigan Underwater Preserves System has enjoyed great popularity since the program’s inception over twenty years ago. Future management initiatives include the establishment of a formal monitoring and indicator program. However, state funding continues to be a limiting factor in the program’s growth. State officials concede that if a stable and reliable funding source for the Michigan Underwater Preserve System is not found, the long-term management goals of the program are not likely to be achieved.

# North Carolina's Primary and Secondary Nursery Areas

## Overview

Since 1977, North Carolina's Marine Fisheries Commission has designated nearly 150,000 acres as estuarine "nursery areas" to protect important nearshore habitat areas from the negative effects of trawling, seining, and dredging (NC Statutes § 113-134, 113-182, 143B-289.52; Rules Title 15A Subchap. 3N). Three categories of nursery areas have been designated. Primary nursery areas (PNAs) are located primarily in the upper portions of intertidal creeks and bays, and restrict commercial fishing activities that negatively impact benthic habitat and can take large numbers of juvenile fishes. The use of trawl nets, seine nets, dredges or any other mechanical methods for taking clams or oysters is prohibited in PNAs. Trawling is prohibited in secondary nursery areas (SNAs), which are found in the lower portions of creeks and bays. Special secondary nursery areas (SSNAs), located adjacent to SNAs and open water, are closed to trawling seasonally based on the presence of juveniles of important fishery species.

## Stakeholder Involvement

Any group or individual can nominate a site for consideration as a nursery area. The designation of a nursery area, or a change in corresponding rules, triggers standard stakeholder involvement procedures for all rule changes by the Marine Fisheries Commission. Notification of the proposed rule change is widely advertised and public meetings are held.

## Goals and Objectives

The central goal of the nursery area system, as stated in the associated NC Rules, is "to establish and protect those fragile estuarine areas which support juvenile populations of economically important seafood species." More detailed objectives, indicators, benchmarks, and timelines have not been developed, nor are they anticipated. Specialized management planning for individual sites is not undertaken; rather, all sites are governed by uniform state regulations.

## Role of Science

Considerable sampling efforts are, and have been, undertaken for fish and shellfish species within designated and nondesignated nursery areas. In the early to mid -1970s, state and federal funding supported significant levels of sampling using standardized trawling techniques. The data collected, in



combination with observations of commercial fishing activities in areas with high percentages of juveniles, led to the initial call for protected nursery areas.

The sampling data have proven extremely effective in supporting area designations, even when designations were challenged in a few court cases in the 1980s. In addition, the nursery area system has benefited from strong support from all affected stakeholder groups – in large part due to the existence of comprehensive scientific data. In addition, the data have been used to develop juvenile indices for commercial fishery population models, and integrated with fisheries studies undertaken by the National Marine Fisheries Service, the Atlantic States Marine Fisheries Commission, and researchers from the academic community. The ongoing sampling of areas both within and outside of nursery areas is also used to consider sites for potential designation.

Monitoring occurs both within and outside of designated nursery areas, and is not presently designed to spatially represent the outcomes of protected area policies. Nor have measurable objectives or benchmarks been established for the program; therefore, there is little emphasis on formal program evaluations or adaptive management for nursery areas. Evaluations are not perceived as a strong need for the program, since few stakeholders argue for fishing in areas dominated by juvenile fish. However, periodic reviews of boundaries based on trends in sampling data may be warranted.

## **Boundaries**

Boundaries are available on paper charts, and are currently being digitized for integration with Geographic Information Systems. Marker signs are also placed at the downstream boundary line for all nursery areas. Boundaries are not always based on habitat conditions; often reference points, such as a point of land, are used for improved clarity. Boundaries have also been adjusted for safety reasons, since shrimpers usually work at night.

## **Enforcement**

No special enforcement arrangements exist for nursery areas. The Division of Marine Fisheries employs nearly 50 officers that enforce all fisheries rules, and a degree of self-enforcement occurs as general violations are reported via special toll-free call-in numbers.

## **Outreach/Education**

No special outreach or education projects are currently underway or planned for the nursery area system. A dedicated web page is online; however, the website could benefit from links to maps of the designated nursery areas and their corresponding regulations. The development of updated brochures and other forms of public education materials are anticipated.

## **Institutional Arrangements**

There are no dedicated staff members for the nursery areas system; rather, responsibilities lie within the local geographic offices of the NC Division of Marine Fisheries. Coordination between Marine Fisheries and other state and local programs is considered an important aspect of the program. The state Coastal Resources Commission restricts channel dredging within Primary Nursery Areas and land development adjacent to Primary Nursery Areas. The Environmental Management Commission has designated all PNAs as High Quality Waters to limit point source discharges and stormwater runoff. The South Atlantic Fishery Management Council has also adopted Primary Nursery Areas as Essential Fish Habitat. Finally, the Division of Marine Fisheries has worked with the state Wildlife Resources Commission to designate over 10,000 acres of freshwater Inland Primary Nursery Areas.

## **Summary**

The protected nursery areas program has been very successful in gaining and maintaining the support of a full range of stakeholders. This has primarily resulted from the application of strong scientific data obtained through extensive and ongoing sampling efforts. The system could be improved, however, through improved coordination with other protected area programs, such as “critical habitat areas,” in North Carolina’s state waters. This will likely be achieved through an ongoing and unique state program that is developing integrated “Coastal Habitat Protection Plans” for important marine habitat areas in state waters.

# Oregon's Estuary Management Plans/ Natural and Conservation Management Units

## Overview

In Oregon, the state's Land Conservation and Development Commission (LCDC) has adopted 19 statewide planning goals that establish procedures and standards for the development of comprehensive plans by local governments (ORS Chapter 197). Once approved by the LCDC, these comprehensive plans replace the statewide goals in guiding most land and water use decisions. Goals 16 through 19 provide the foundation for the state's coastal management program. Goals 16 through 18 require local comprehensive plans to address estuarine resources, coastal shorelands, and beaches and dunes, respectively. Goal 19 addresses state and federal actions that affect ocean resources (LCDC, 2000).

In accordance with Statewide Planning Goal 16, counties and municipalities must include "estuary management plans" as components of their comprehensive plans. Goal 16 sets broad standards for the preparation of these plans and for the review of proposals for developments and alterations. In addition, the Goal prompts local governments to guide development toward more acceptable areas while avoiding areas with important natural and cultural estuarine resources. According to the general classification of each estuary, the estuary management plans must designate specific geographic management units and corresponding policies regarding permissible uses and review standards. "Natural" management units include major tracts of salt marsh, tide flats, and seagrass meadows, and are the most restrictive of alterations and developments such as piers, boat ramps, aquaculture facilities, and dredge/fill operations. "Conservation" management units include habitat areas that are smaller or have less biological importance than those included in natural management units. These are usually areas that are partially altered and adjacent to existing development of moderate intensity, and allow for more intensive uses while conserving natural and cultural resources. Finally, "development" management units are designated to provide for navigation and public, commercial, and industrial water-dependent uses consistent with the level of alteration allowed by the overall estuary classification (LCDC, 2000). These estuarine management units are based on statewide, standardized policies, and therefore represent a "system" of state-level marine managed areas.

## Stakeholder Involvement

A full range of stakeholders were involved in local estuary management planning. Public hearings, work sessions, and working groups were held with the involvement of local, state, and federal agencies and nongovern-

mental organizations. Stakeholders were involved in estuary management planning primarily during in the early 1980s, as the estuary management components of local comprehensive plans were being developed. This built upon a substantial degree of stakeholder involvement in the development of Oregon's coastal program in the late 1970s. Although comprehensive plans have undergone formal updates and revisions over the past fifteen to twenty years to incorporate revisions to Goals 16 and 17, there have been no amendments to the estuary management components, nor have additional management units been designated.

### **Goals and Objectives**

The management objectives for each type of management unit are stated in broad terms under Goal 16. For example, the objectives for Natural Management Units are "to assure the protection of significant fish and wildlife habitats, continued biological productivity in the estuary, and scientific research and educational needs," and "to preserve the natural resources in recognition of dynamic natural, geological and evolutionary processes." More detailed objectives may be found within each local comprehensive plan's estuary management plan, and the emphases may vary between localities so long as the state standards are met. The broad objectives of Goal 16 may be more appropriately referred to as goals, since they represent a long-term, general intent. These goals are not specifically or hierarchically linked with management processes, cost estimates, benchmarks, or performance indicators.

Approximately two years ago, the LCDC was tasked with developing performance measures for all of its programs, and for each of the statewide planning goals, in order to reflect results in future budget requests. The development of quantitative outcome measures for the coast-oriented statewide goals has been hampered, however, by several factors. First, there is insufficient data for all of the managed estuarine resources. Next, benchmarks proved nearly impossible to establish for each resource, given the amount of funding and staff time needed for data collection. Initially, over 100 potential benchmarks were identified, and it was later determined that any smaller sets of benchmarks would not accurately reflect general achievements. Last, changes in resource conditions are difficult to attribute directly to any one program or policy due to numerous external influences that will likely obscure future evaluations.

### **Role of Science**

Science, however, played a crucial role in the development of estuary management units in Oregon. Statewide, comprehensive resource inventories were undertaken by the state's fish and wildlife agency for all of Oregon's estuaries in the 1970's, using the standard resource classification system developed by the U.S. Fish and Wildlife Service. These inventories were used to create estuarine baseline maps that local governments could use to formulate the specific policies required under Statewide Planning Goal 16. The data collected during these inventories were considered very effective in reducing local disputes over boundaries and rationales for site designations. And because consistent data collection techniques and classifications were used statewide, the relative importance of any one management unit can be better estimated on an estuary-wide or statewide scale.

Monitoring of water quality and benthic habitats exists independently of the estuary management units. There is no formal attempt to link this monitoring data to formal evaluations or to estuary management plan updates. In fact, there is only a tangential link between local comprehensive plans and estuarine monitoring data, in that comprehensive plan updates are required to "consider new data."

### **Boundaries**

Boundaries are identified on paper maps that are held in local planning departments. Some have been digitized and incorporated into Geographic Information Systems (GIS). The boundaries are not marked on the water; rather, they come to light when an intertidal or subtidal development or alteration is formally proposed.

### **Enforcement**

There are no special enforcement procedures for the estuary management units. Local governments are primarily responsible for the enforcement of comprehensive plan policies. Citizens, state agencies, and nongovernmental organizations play an important role in reporting violations and countering proposals. In fact, these locally established management units rely more heavily on third-party interventions than state sites, both due to the program's structure and local funding constraints.

## **Institutional Arrangements**

Each coastal county has at least one dedicated staff member to oversee implementation of the statewide coastal goals (16-19), including estuary management planning. However, the establishment of natural, conservation, and development management units has relied heavily on coordination between the local governments, state agencies, and ports with jurisdiction over each estuary. This coordination was facilitated by the concurrent development of estuary management plans by local governments in the early 1980s.

## **Summary**

Estuary management plans have enjoyed strong support from a variety of stakeholder groups, including commercial fishers and environmental NGOs. This has resulted from early, extensive, and inclusive stakeholder involvement. Equally important, the coastal program has enjoyed a strong political constituency. Increasing attention to resource inventories and monitoring, outreach and education efforts, and involvement of the academic community, as well as continuing partnerships with the South Slough National Estuarine Research Reserve, will be important in maintaining long-term support for this MMA system.

# Washington's Aquatic Reserves

case study

## Overview

Washington's Department of Natural Resources (DNR) manages approximately 2.4 million acres of state aquatic lands, which include about 230,000 acres of tidelands, 6,700 acres of harbor areas, and all submerged lands, including 2.2 million acres of marine bedlands (below extreme low tide), 120,000 acres of freshwater bedlands, and 30,000 acres of freshwater shorelands. These mostly-submerged lands are protected for aquatic habitat, navigation, leases to ports for commerce, and public use and access. In 2002, the WDNR established an aquatic reserves program for state-owned aquatic lands having unique or high-quality ecological features and habitats (WAC 332-30-151). The program provides for the designation of three types of aquatic reserves: Educational, Scientific, and Environmental.

A Final Environmental Impact Statement for Aquatic Reserves Program Guidance was adopted in late 2002. Implementation guidance of the aquatic reserves program is in the late stages of development. The implementation guidance describes a two-year cycle that includes a proposal process, site designation criteria, site evaluation and site designation processes (WDNR, 2002).

The WDNR is presently evaluating six sites for consideration as reserves. A Technical Advisory Committee (TAC) was established and evaluated the six sites in August 2003. Management plans will eventually be developed for each individual reserve that is established. The development of the management plan involves an extensive public process. In addition, as the management plan is developed, interested stakeholders have additional opportunities to provide input through the Washington State Environmental Policy Act (SEPS) review process. The WDNR is proposing to establish a site manager for one or multiple aquatic reserves.

## Stakeholder Involvement

Stakeholders have a number of opportunities to be involved in the development and implementation of aquatic reserves. Any individual or group may nominate sites for designation as a reserve by submitting a proposal to the WADNR. An ad hoc Technical Advisory Committee reviews new proposals. Site proposals are then made available for review through an "open house" public meeting. The public meeting provides proponents an opportunity to exchange information with the public and gain additional information about the proposed site.

## Goals and Objectives

The goal of the aquatic reserves program is to ensure environmental conservation and enhancement of state-owned aquatic lands that will provide direct and indirect benefits to aquatic resources in the state of Washington. Objectives of the program promote enhancement of aquatic biodiversity throughout the state, setting aside areas for educational and research opportunities, and foster effective and equitable stakeholder representation and participation. The WDNR intends to develop more specific, measurable objectives as the aquatic reserve program matures.

## Role of Science

Science plays a key role in the site designation criteria established for the aquatic reserves program. For a site to be included in the Reserves system, a proposal must include scientific data related to site condition, biogeographic representation, habitat representation, biodiversity, connectivity, species of concern, ecosystem processes, and cultural resources, among other factors. These criteria were peer reviewed by a team of scientists with expertise in aquatic lands conservation and experience in establishing aquatic reserves. In addition, the use of all available scientific literature and existing and ongoing research is the bases for evaluating a site's relevancy as a reserve, site boundary options, and management plan.

Monitoring plans may be developed as supplements to each Reserve's management plan. It is anticipated that monitoring activities will be linked back to measurable goals and objectives of the program for periodic program evaluations. As yet, no formal plan renewal processes, evaluation schedules, etc. have been developed. Inherent in the designation of scientific reserves will be the collection of long-term ecological data and long-term research. Data collected for initial site evaluations will also serve as baseline data for future evaluations.

## Boundaries

Reserve boundaries are limited to state ownership. Boundaries are generally resource-based, but are also based on depth contours and fixed distances from the mean high water line. Boundaries are designated on paper maps and have been incorporated into Geographic Information Systems. No boundary markers have been placed on-site.

## Enforcement

The Department of Natural Resources intends to coordinate with other state, tribal and local agencies to develop management policies for each individual reserve. However, the basis for conservation of aquatic resources at each site will be for WDNR to ensure that permitted uses do not create additional impacts to the habitat and species features of the site. Any additional management would be coordinated through cooperation with local Shoreline Master Programs and comprehensive land use plans with management authority and fishing rights, or with state agencies having jurisdiction over fisheries, water quality, energy facility siting, etc. Enforcement of any special regulatory provisions would be the responsibility of the agency having jurisdiction, and there is no plan to establish special enforcement measures.

## Outreach/Education

The Department's Aquatic Reserves website is perceived to have been successful in educating stakeholders about the system and providing information regarding public hearings. A special e-mail address was created to answer questions regarding the Reserves. Additional outreach and education efforts will be site-specific, but may include volunteer monitoring or restoration programs, brochures, and/or special events.

## Institutional Arrangements

The WDNR dedicated two full-time staff members for the aquatic reserves program. These staff members work closely with the Technical Advisory Committee, and will work with local citizens, jurisdictions and Tribes, or possible advisory committees, for each individual reserve. The staff will also seek to coordinate relevant programs, agencies, and stakeholders at the local, state, regional, and federal levels to develop and implement policies and procedures for each site. Some of this could be accomplished through memoranda of understanding and/or coordinated permit reviews and involvement in the revision of local Shoreline Master Programs and comprehensive land use plans.

## Summary

The aquatic reserves program has enjoyed strong support from stakeholder groups. Future management planning will improve coordination among the various agencies with jurisdiction over these sites. The site evaluation criteria developed by the WDNR are

proving to be extremely beneficial in producing high quality designation proposals that are backed up by strong scientific data.

Site “connectivity” is recognized as an important criterion for the development of an ecological network of aquatic reserves and will become a larger factor as the program develops and more reserves are established. One priority of the program is to develop criteria to assess connectivity to clarify regional ecological processes that support larval dispersal, spawning, rearing and migration. This information will help the DNR establish cyclical priorities for proposing sites as aquatic reserves.





# SECTION TWO

## Commonalities/Shared Management Experiences



### Overview

The six state-level MMA systems selected for this case study analysis reflect the diversity of area-based management approaches found at the state and local levels nationwide. Three of the systems were developed to restrict harmful coastal developments and alterations, one to protect cultural resources, and two to manage fisheries. These goals are reflected in the managing agencies, which included Oregon's Land Conservation and Development Commission, Washington's Department of Natural Resources, North Carolina's Marine Fisheries Commission, California's Department of Fish and Game, Michigan's Department of Environmental Quality, and Florida's Department of Environmental Protection. Four of the systems were developed during the period between 1975 and 1982; California's Channel Islands MPAs and Washington's aquatic reserves were developed during the five years preceding this report.

### Stakeholder Participation

Stakeholder involvement was generally concentrated around the development stages of each state MMA system. In two cases, special public planning processes were developed specifically for the proposed system (California's "Marine Reserves Working Group; Washington's Aquatic Reserves). While public nominations of new sites are provided for in the enabling legislation of each system, only half of the systems developed specific, unique procedures for public site nominations. In the remaining cases, new sites are treated as rule changes and therefore trigger standard public notices, comment periods, and hearings. Permanent stakeholder advisory groups or committees were not established for five of the six systems. In California, a standing, regional working group with stakeholder representation, and a plan to establish a local oversight committee for the Channel Islands MPAs, are currently on hold due to funding and staff constraints. In Michigan and Florida, non-profit citizen support organizations provide a foundation for ongoing stakeholder involvement.

A consistent "lesson learned" during the development of state MMA systems was the importance of involving stakeholders early on in the process. In particular, significant efforts were recently made in California to involve stakeholders during the planning phase of the Channel Islands marine protected areas, and a number of additional lessons were learned. First, a consensus approach may not always be the best approach for controversial MMA systems. Consensus was not achieved by the stakeholder advisory committee ("Marine Reserves Working Group"). It may have been preferable to discern and document stakeholder disagreements, and have the group develop a range of alternatives for consideration by the state. Another lesson learned during this process was that numerous small meetings, where one or two state representatives work with fifteen to twenty stakeholders, can be far more effective than large, more anonymous public meetings when planning new MMA systems.

### Goals and Objectives

The general goals of each MMA system generally focus on the conservation of natural and cultural resources, including benthic habitats, biodiversity, and fisheries. More specific, intermediate objectives were not developed for any of the MMA systems; however, varying objectives may be developed within site-specific management plans for Oregon's estuarine management units and Washington's Aquatic Reserves. Measurable objectives, with specified benchmarks and indicators, had only been considered for the MMA systems in Oregon and California. In Oregon, this was in response to a statewide mandate for the development of performance measures for all programs and each of the statewide planning goals. Measurable objectives and performance measures were to be hierarchically linked with future budget requests. In California, fishers contended that measurable objectives and benchmarks were needed in order to reevaluate the success of the new MPA system, but some scientists disagreed. Significant constraints were confronted in both cases, includ-

ing: 1) limited data availability; 2) the complexity of benchmarks that would need to be set for a range of resources; 3) the variability of local environmental conditions; 4) inadequate funding and staff support; 5) unpredictable fluctuations in resource conditions; and 6) difficulties in demonstrating linkages between MPA-related management activities and changes in resource conditions. In several of the other case studies, respondents indicated that measurable objectives and benchmarks were not needed because the general intent of the MMA system was self-evident, and stakeholder support had been more than adequate without quantitative proof of program success.

## Role of Science

Science played a key role in the development phases of four of the MMA systems. In these cases, comprehensive data were collected to support site designations and boundary decisions. These data proved extremely beneficial in reducing conflicts between stakeholders and disputes over the scientific merit of the projects, and led to stronger stakeholder support. However, in Florida, science was not the only rationale for site designations – some areas with high development potential were included in the system solely for the preservation of the natural environment and aesthetics.

Formal environmental monitoring programs exist for five of the six systems studied (volunteer monitoring of shipwrecks occurs in Michigan's Underwater Preserves); however, there have been no attempts to use this monitoring data for program evaluations, plan updates, or regulatory amendments. To do so would require changes in current monitoring practices, since these programs were in place prior to the establishment of the MMA systems and are not presently designed to provide evidence of the spatio-temporal outcomes of protected area policies. In Washington, it is anticipated that future monitoring plans will be developed to complement site-specific management plans, and that the monitoring data will eventually be linked to measurable objectives for periodic program evaluations and plan updates.

In California, several scientists have expressed interest in modifying their sampling designs to address the effects of the new MPA system. The California Department of Fish and Game is attempting to develop unique cooperative research arrangements with these scientists. For example, the department can offer staff and vessel support to scientists in exchange for con-

sistent, summary data products that can be useful in evaluating ecological trends.

Also unique to the California MPA system was the establishment of a "Science Advisory Panel" (SAP) for the stakeholder-based "Marine Reserves Working Group." The SAP proved to be highly beneficial in answering scientific questions that arose during the working group's discussions, especially with respect to siting issues. However, the process generated controversy when the SAP was asked to generate a "percent-coverage" value for an effective MPA network. The Channel Islands MPAs are intended to provide an ecological network through larval transport and habitat representation, and this became a point of contention because potential "spillover" effects and larval transport mechanisms are presently difficult to demonstrate scientifically. Site "connectivity" is also a high priority for Washington's aquatic reserves program, and will be factored into reviews of future site proposals.

## Boundaries

In all cases boundaries are marked on paper maps that are available to the public. However, the boundaries generally do not follow suggested "best management practices" for marine boundaries (Stein, 2003). For example, half of the MMA systems use depth contours for boundaries, which are difficult to map, can fluctuate with shifting sediments, and are not as legally defensible. However, boundaries have been digitized in four of the six cases for incorporation into geographic information systems and made available online. In addition, managers in California are working with industry partners to have marine reserve boundaries integrated with digital, nautical charts and Global Positioning System (GPS) units.

## Enforcement

In Oregon, Washington, and Florida, the state MMA systems are designed primarily to restrict undesirable developments and alterations. These developments and alterations require local and state permits, and therefore illegal activities are treated in the same manner as other permit violations. Citizens, state and local agencies, and nongovernmental organizations play a critical role in reporting violations and countering proposals. In some cases, no penalties for violations are specified by the legislature; rather, the managing agency can force a violator to cease and desist and/or remove a non-permitted development.

The MMA systems studied in California and North Carolina are both aimed at fisheries management, but differ significantly in their enforcement programs. In North Carolina, the Primary and Secondary Nursery Areas are treated as any other fishery rule, and therefore the existing enforcement staff conducts patrols and issues citations. In California, an enforcement partnership is being developed between the state Department of Fish and Game and three federal agencies. In addition, the DFG uses a technologically advanced enforcement vessel and air surveillance for enforcement of the Channel Islands marine reserves. Enforcement is a key concern for this MPA system, where an individual's compliance may rely heavily on the perception that sufficient enforcement exists to limit poaching by others [for a more detailed examination of MPA enforcement issues in the Channel Islands and nationwide, see Davis and Moretti (in prep.)].

### **Education/Outreach**

All six MMA systems utilize the Internet to convey information to the public, and most respondents indicated that their websites appeared to be of significant value in educating stakeholders. The sites were considered most effective when digital maps of the site boundaries link directly to corresponding regulations. In addition, brochures and other printed materials were commonly distributed, but in some cases reprints and distribution were limited by a lack of funding. Volunteer restoration, monitoring, and/or educational programs were also developed in four of the six systems to increase public awareness and support. The "Living Waters – the Aquatic Preserves of Florida" educational campaign was probably the most inventive and far-reaching of the education/outreach activities, and involved a public television documentary, calendar, and music CD based on a partnership with a nationally-known artist.

### **Institutional Arrangements**

Coordination between local, state, and federal agencies is a critical aspect of the MMA systems studied for this report. Most of the programs have insufficient staff, funding, and jurisdiction over activities and/or resources to address all of the threats to designated sites. In some cases, coordination has been gained through the cross-designation of sites between environmental programs. For example, a number of aquatic preserves in Florida are cross-designated as Outstanding Resource Waters and Gulf Ecological Management Sites (GEMS); Primary Nursery Areas

in North Carolina are cross-designated as "High Quality Waters" and Essential Fish Habitat under regional fishery management plans. In addition, a number of MMA systems rely heavily on volunteer participation to assist with program activities.

### **Conclusions**

The state-level MMA systems examined in this report have all attained the strong support of stakeholders, which in turn has led to sufficient political support as well. The high levels of support are attributed to two key factors: 1) the early, extensive, and inclusive nature of stakeholder participation in system planning; and 2) strong scientific data that supports site selections and boundary demarcations. Coordination between and among local, state, and federal agencies, often through new partnerships, was also considered essential to the success of these MMA systems. In particular, state agencies may find that they can leverage staff time and jurisdiction to gain the education/outreach, monitoring, and/or enforcement capacities of other agencies. Finally, the concept of ecological networks of MMAs is gaining momentum. MMA systems that were established in the 1970s and 1980s were not as likely to consider this concept, but could through site additions and/or standardized approaches with other area-based management systems. Newer MMA systems are encountering difficulties with the science needed to plan for and/or demonstrate site connectivity. Additional research is needed in this area.





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## **Internet Resources:**

- NC:** <http://www.ncfisheries.net/habitat/pna.htm>
- FL:** <http://www.dep.state.fl.us/coastal/programs/aquatic.htm>
- CA:** [http://www.dfg.ca.gov/mrd/channel\\_islands/](http://www.dfg.ca.gov/mrd/channel_islands/)
- OR:** <http://www.inforain.org/mapsatwork/oregonestuary/>  
<http://www.lcd.state.or.us/coast/estuaries.html>
- WA:** <http://www.dnr.wa.gov/hdocs/aqr/reserves/home.htm>
- MI:** <http://www.nsgo.seagrant.org/SeaGrantResults/V3N3.html>



# APPENDIX I



## Executive Order 13158 of May 26, 2000

### **Marine Protected Areas**

By the authority vested in me as President by the Constitution and the laws of the United States of America and in furtherance of the purposes of the National Marine Sanctuaries Act (16 U.S.C. 1431 et seq.), National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-ee), National Park Service Organic Act (16 U.S.C. 1 et seq.), National Historic Preservation Act (16 U.S.C. 470 et seq.), Wilderness Act (16 U.S.C. 1131 et seq.), Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 et seq.), Coastal Zone Management Act (16 U.S.C. 1451 et seq.), Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), Marine Mammal Protection Act (16 U.S.C. 1362 et seq.), Clean Water Act of 1977 (33 U.S.C. 1251 et seq.), National Environmental Policy Act, as amended (42 U.S.C. 4321 et seq.), Outer Continental Shelf Lands Act (42 U.S.C. 1331 et seq.), and other pertinent statutes, it is ordered as follows:

**Section 1.** Purpose. This Executive Order will help protect the significant natural and cultural resources within the marine environment for the benefit of present and future generations by strengthening and expanding the Nation's system of marine protected areas (MPAs). An expanded and strengthened comprehensive system of marine protected areas throughout the marine environment would enhance the conservation of our Nation's natural and cultural marine heritage and the ecologically and economically sustainable use of the marine environment for future generations. To this end, the purpose of this order is to, consistent with domestic and international law: (a) strengthen the management, protection, and conservation of existing marine protected areas and establish new or expanded MPAs; (b) develop a scientifically based, comprehensive national system of MPAs representing diverse U.S. marine ecosystems, and the Nation's natural and cultural resources; and (c) avoid causing harm to MPAs through federally conducted, approved, or funded activities.

**Sec. 2.** Definitions. For the purposes of this order:

- a. "Marine protected area" means 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.
- b. "Marine environment" means those areas of coastal and ocean waters, the Great Lakes and their connecting waters, and submerged lands thereunder, over which the United States exercises jurisdiction, consistent with international law.
- c. The term "United States" includes the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands of the United States, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands.

**Sec. 3.** MPA Establishment, Protection, and Management. Each Federal agency whose authorities provide for the establishment or management of MPAs shall take appropriate actions to enhance or expand protection of existing MPAs and establish or recommend, as appropriate, new MPAs. Agencies implementing this section shall consult with the agencies identified in subsection 4(a) of this order, consistent with existing requirements.

**Sec. 4.** National System of MPAs. (a) To the extent permitted by law and subject to the availability of appropriations, the Department of Commerce and the Department of the Interior, in consultation with the Department of Defense, the Department of State, the United States Agency for International Development, the Department of Transportation, the Environmental Protection Agency, the National Science Foundation, and other pertinent Federal agencies shall develop a national system of MPAs. They shall coordinate and share information, tools, and strategies, and provide guidance to enable and encourage the use of the following in the exercise of each agency's respective authorities to further enhance and expand protection of existing MPAs and to establish or recommend new MPAs, as appropriate:

1. science-based identification and prioritization of natural and cultural resources for additional protection;
  2. integrated assessments of ecological linkages among MPAs, including ecological reserves in which consumptive uses of resources are prohibited, to provide synergistic benefits;
  3. a biological assessment of the minimum area where consumptive uses would be prohibited that is necessary to preserve representative habitats in different geographic areas of the marine environment;
  4. an assessment of threats and gaps in levels of protection currently afforded to natural and cultural resources, as appropriate;
  5. practical, science-based criteria and protocols for monitoring and evaluating the effectiveness of MPAs;
  6. identification of emerging threats and user conflicts affecting MPAs and appropriate, practical, and equitable management solutions, including effective enforcement strategies, to eliminate or reduce such threats and conflicts;
  7. assessment of the economic effects of the preferred management solutions; and
  8. identification of opportunities to improve linkages with, and technical assistance to, international marine protected area programs.
- b. In carrying out the requirements of section 4 of this order, the Department of Commerce and the Department of the Interior shall consult with those States that contain portions of the marine environment, the Commonwealth of Puerto Rico, the Virgin Islands of the United States, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands, tribes, Regional Fishery Management Councils, and other entities, as appropriate, to promote coordination of Federal, State, territorial, and tribal actions to establish and manage MPAs.
- c. In carrying out the requirements of this section, the Department of Commerce and the Department of the Interior shall seek the expert advice and recommendations of non-Federal scientists, resource managers, and other interested persons and organizations through a Marine Protected Area Federal Advisory Committee. The Committee shall be established by the Department of Commerce.
- d. The Secretary of Commerce and the Secretary of the Interior shall establish and jointly manage a website for information on MPAs and Federal agency reports required by this order. They shall also publish and maintain a list of MPAs that meet the definition of MPA for the purposes of this order.
- e. The Department of Commerce's National Oceanic and Atmospheric Administration shall establish a Marine Protected Area Center to carry out, in cooperation with the Department of the Interior, the requirements of subsection 4(a) of this order, coordinate the website established pursuant to subsection 4(d) of this order, and partner with governmental and nongovernmental entities to conduct necessary research, analysis, and exploration. The goal of the MPA Center shall be, in cooperation with the Department of the Interior, to develop a framework for a national system of MPAs, and to provide Federal, State, territorial, tribal, and local governments with the information, technologies, and strategies to support the system. This national system framework and the work of the MPA Center is intended to support, not interfere with, agencies' independent exercise of their own existing authorities.
- f. To better protect beaches, coasts, and the marine environment from pollution, the Environmental Protection Agency (EPA), relying upon existing Clean Water Act authorities, shall expeditiously propose new science-based regulations, as necessary, to ensure appropriate levels of protection for the marine environment. Such regulations may include the identification of areas that warrant additional pollution protections and the enhancement of marine water quality standards. The EPA shall consult with the Federal agencies identified in subsection 4(a) of this order, States, territories, tribes, and the public in the development of such new regulations.

**Sec. 5. Agency Responsibilities.** Each Federal agency whose actions affect the natural or cultural resources that are protected by an MPA shall identify such actions. To the extent permitted by law and to the maximum extent practicable, each Federal agency, in taking such actions, shall avoid harm to the natural and cultural resources that are protected by an MPA. In implementing this section, each Federal agency shall refer to the MPAs identified under subsection 4(d) of this order.

**Sec. 6. Accountability.** Each Federal agency that is required to take actions under this order shall prepare and make public annually a concise description of ac-



tions taken by it in the previous year to implement the order, including a description of written comments by any person or organization stating that the agency has not complied with this order and a response to such comments by the agency.

**Sec. 7. International Law.** Federal agencies taking actions pursuant to this Executive Order must act in accordance with international law and with Presidential Proclamation 5928 of December 27, 1988, on the Territorial Sea of the United States of America, Presidential Proclamation 5030 of March 10, 1983, on the Exclusive Economic Zone of the United States of America, and Presidential Proclamation 7219 of September 2, 1999, on the Contiguous Zone of the United States.

**Sec. 8. General.**

- a. Nothing in this order shall be construed as altering existing authorities regarding the establishment of

Federal MPAs in areas of the marine environment subject to the jurisdiction and control of States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands of the United States, American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, and Indian tribes.

- b. This order does not diminish, affect, or abrogate Indian treaty rights or United States trust responsibilities to Indian tribes.
- c. This order does not create any right or benefit, substantive or procedural, enforceable in law or equity by a party against the United States, its agencies, its officers, or any person.

William J. Clinton

THE WHITE HOUSE,

May 26, 2000.



# APPENDIX 2

## Informal Telephone Interview

Can you please suggest sources of information about this program?

For each topic below (or where applicable), please describe your program's: a) procedures, b) perceived or measured outcomes, c) lessons learned, and d) needs:

- 1) Stakeholder involvement
  - a) New site designations
  - b) Management plan development / regulatory reviews
  - c) NGOs
- 2) Legislative/Administrative authorities, for example:
  - a) Sites described specifically in statutes only
  - b) Statutes specifically authorize agency site designations
  - c) Statutes authorize conservation in general, agency developed MMA system
  - d) State review/support of standardized system at local level (if so, are standard elements described in statutes or administrative code?)
- 3) Goal/Objective development
  - a) Overall system goals
  - b) Multi-objective or single-purpose
  - c) Additional goals/objectives defined for each site?
  - d) Measurable?
  - e) Tied to indicators?
  - f) Tied to timelines/estimated costs?
- 4) Management approach
  - a) Development of a management plan for each site
  - b) Standardize regulations across existing sites
  - c) Subzones developed?
- 5) Role of science
  - a) Siting/design
  - b) Policy formulation
  - c) Does system play a role in an ecological "network" of MPAs
  - d) Monitoring/Evaluation
  - e) Adaptive management/formal renewal process
- 6) Boundaries
  - a) How marked?
  - b) Based on what? (Lat/Longs, depth contours, etc.)
- 7) Enforcement
  - a) Who?
  - b) Technology
  - c) Cross-deputization
  - d) Penalties
- 8) Outreach/Education
  - a) Volunteer monitoring programs
  - b) Volunteer restoration programs
  - c) Brochures/Reports
  - d) Meetings/Events
  - e) Website
- 9) Institutional Arrangements
  - a) Staff
  - b) Advisory Committee/Panel
  - c) Intergovernmental coordination
    - 1) MOAs/MOUs
    - 2) Coordinated permit reviews
    - 3) General Permits
- 10) Funding mechanisms
  - a) Dedicated tax
  - b) Entrance fee
  - c) Fines
  - d) Appropriations







**For more information, please contact:**

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