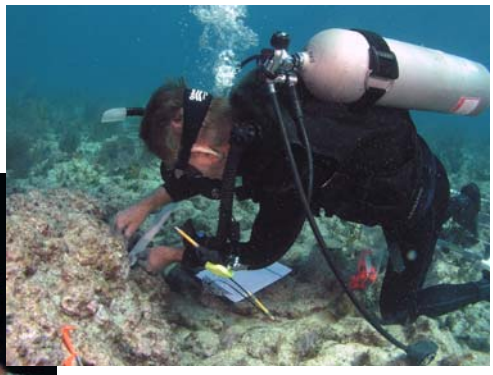
Florida Keys
National Marine Sanctuary
Revised Management Plan



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Atmospheric Administration

National Ocean Service

National Marine Sanctuary Program

This document is the revised management plan for the Florida Keys National Marine Sanctuary. It replaces the management plan that was implemented in 1996 and will serve as the primary management document for the Sanctuary during the next five years.

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Note to Reader

In an effort to make this document more user-friendly, we have included references to the Florida Keys National Marine Sanctuary Web site rather than including the entire text of many bulky attachments or appendices that are traditionally included in management plans. Readers who do not have access to the Internet may call the Sanctuary office at (305) 809-4700 to request copies of any documents that are on the Sanctuary's Web site. For readers with Internet access, the Sanctuary's Web site can be found at floridakeys.noaa.gov.

ABOUT THIS DOCUMENT

This document is a report on the results of NOAA's five-year review of the strategies and activities detailed in the 1996 *Final Management Plan and Environmental Impact Statement* for the Florida Keys National Marine Sanctuary. It serves two primary purposes: 1) to update readers on the outcomes of successfully implemented strategies - in short, accomplishments that were merely plans on paper in 1996; and, 2) to disseminate useful information about the Sanctuary and its management strategies, activities and products. The hope is that this information, which charts the next 5 years of Sanctuary management, will enhance the communication and cooperation so vital to protecting important national resources.

Sanctuary Characteristics

The Florida Keys National Marine Sanctuary extends approximately 220 nautical miles southwest from the southern tip of the Florida peninsula. The Sanctuary's marine ecosystem supports over 6,000 species of plants, fishes, and invertebrates, including the nation's only living coral reef that lies adjacent to the continent. The area includes one of the largest seagrass communities in this hemisphere. Attracted by this tropical diversity, tourists spend more than thirteen million visitor days in the Florida Keys each year. In addition, the region's natural and man-made resources provide recreation and livelihoods for approximately 80,000 residents.

The Sanctuary is 2,900 square nautical miles of coastal waters, including the 2001 addition of the Tortugas Ecological Reserve. The Sanctuary overlaps four national wildlife refuges, six state parks, three state aquatic preserves and has incorporated two of the earliest national marine sanctuaries to be designated, Key Largo and Looe Key National Marine Sanctuaries. Three national parks have separate jurisdictions, and share a boundary with the Sanctuary. The region also has some of the most significant maritime heritage and historical resources of any coastal community in the nation.

The Sanctuary faces specific threats, including direct human impacts such as vessel groundings, pollution, and overfishing. Threats to the Sanctuary also include indirect human impacts, which are harder to identify but are reflected in coral declines and increases in macroalgae and turbidity. More information about the Sanctuary can be found in this document and at the Sanctuary's Web site.

Management Plan Organization

Within this document, the tools that the Sanctuary uses to achieve its goals are presented in five management divisions: 1) Science; 2) Education, Outreach & Stewardship; 3) Enforcement & Resource Protection; 4) Resource Threat Reduction; and 5) Administration, Community Relations, & Policy Coordination. Each management division contains two or more *action plans*, which are implemented through supporting *strategies* and *activities*. The strategies described in the 1996 *Management Plan* generally retain their designations in this document. As in the 1996 plan, two or more action plans may share a strategy where their goals and aims converge. The 1996 plan can be accessed on the Sanctuary's Web site floridakeys.noaa.gov

Accomplishments and Highlights

The Sanctuary's programs and projects have made significant progress since the original management plan was implemented 1996. An overview of these accomplishments is provided in the Introduction. In addition, each action plan contains bulleted lists of accomplishments since the 1996 management plan was adopted.

Table of Contents

List of Figures

List of Tables

Acronyms

ACHP	Advisory Council on Historic Preservation
AGRRA	Atlantic and Gulf Rapid Reef Assessment Program
ASA	Abandoned Shipwreck Act
ATBA	Areas to Be Avoided
AWT	Advanced Wastewater Treatment
CAD	Computer Automated Dispatch
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERP	Comprehensive Everglades Restoration Plan
CFR	Code of Federal Regulations
CRCP	Coral Reef Conservation Program
DARP	Damage Assessment and Restoration Program
DEP	Florida Department of Environmental Protection
DTNP	Dry Tortugas National Park
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
F.S.	Florida Statues
FAC	Florida Administrative Code
FDACS	Florida Department of Agriculture and Consumer Services
FDCA	Florida Department of Community Affairs
FDHR	Florida Division of Historical Resources
FDOT	Florida Department of Transportation
FKNMS	Florida Keys National Marine Sanctuary
FKNMSPA	Florida Keys National Marine Sanctuary Protection Act
FPS	Florida Park Service
FR	Federal Register
FWC	Florida Fish and Wildlife Conservation Commission
FWRI	Fish and Wildlife Research Institute
FY	Federal Fiscal Year
GIS	Geographic Information System
GMD	Growth Management Division (Monroe County)
GMFMC	Gulf of Mexico Fishery Management Council
GPS	Global Positioning System
HAZMAT	Hazardous Materials
ICS	Incident Command Structure
ICW	Intra-coastal Waterway
IMO	International Maritime Organization
MBTA	Migratory Bird Treaty Act
MEERA	Marine Ecosystem Event Response and Assessment
MHR	Maritime Heritage Resources
MMPA	Marine Mammal Protection Act
MMS	Minerals Management Service
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding

MRD	Marine Resources Division (Monroe County)
NCCOS	National Centers for Coastal Ocean Science
NEPA	National Environmental Policy Act
NGO	Non-governmental Organization
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NMS	National Marine Sanctuary
NMSA	National Marine Sanctuary Act
NMSF	National Marine Sanctuary Foundation
NMSP	National Marine Sanctuary Program
NOAA	National Oceanic and Atmospheric Administration
NOAA/OLE	NOAA Office of Law Enforcement
NOS	National Ocean Service
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRDA	Natural Resource Damage Assessment Claims
NURC	National Undersea Research Center
OFW	Outstanding Florida Waters
OSDS	On-Site Disposal System
OSTDS	On-Site Sewage Treatment and Disposal System
PREP	National Prepared for Response Exercise Program
PSSA	Particularly Sensitive Sea Area
RECON	Reef Ecosystem Condition Program
REEF	Reef Environmental Education Foundation
RNA	Research Natural Area
RSMAS	University of Miami/Rosenstiel School of Marine and Atmospheric Science
SAFMC	South Atlantic Fishery Management Council
SAP	Science Advisory Panel
SAV	Submerged Aquatic Vegetation
SCR	Submerged Cultural Resources
SEFSC	Southeast Fisheries Science Center
SFWMD	South Florida Water Management District
SHIELDS	Sanctuary Hazardous Incident Emergency Logistics Database System
SPA	Sanctuary Preservation Area
SWIM	Surface Water Improvement and Management Act
SWM	Stormwater Management
TAC	Technical Advisory Committee
TNC	The Nature Conservancy
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDOC	U.S. Department of Commerce
USDOI	U.S. Department of Interior
USDOS	U.S. Department of State
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WAMS	Waterway Assessment and Marking System

WMA	Wildlife Management Area
WQPP	Water Quality Protection Program
WQSC	Water Quality Steering Committee

1.0 INTRODUCTION

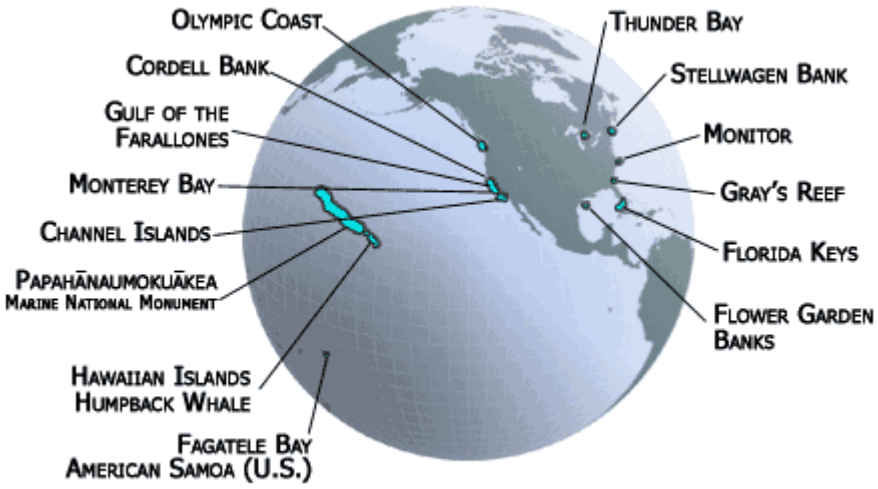
1.1 The National Marine Sanctuary Program (NMSP)

The National Marine Sanctuary Program (NMSP) is a network of 14 marine protected areas (Figure 1.1), encompassing marine resources from Washington State to the Florida Keys, and Lake Huron to American Samoa. The National Oceanic and Atmospheric Administration's (NOAA) National Ocean Service (NOS) has managed the nation's marine sanctuary system since passage of the Marine Protection, Research and Sanctuaries Act of 1972. Title III of that Act is now called the National Marine Sanctuaries Act (NMSA), which is found in Appendix A.

Today, the national marine sanctuary system contains deep-ocean gardens, near-shore coral reefs, whale migration corridors, deep-sea canyons, and underwater archaeological sites. They range in size from one-quarter square mile in Fagatele Bay, American Samoa, to almost 138,000 square miles of Pacific Ocean including the Northwest Hawaiian Islands - the largest marine protected area in the world. Together, these sites protect nearly 150,000 square miles of coastal and open ocean waters and habitats. While some activities are managed to protect resources, certain multiple uses, such as recreation, commercial fishing, and shipping are allowed to the extent that they are consistent with each site's resource protection mandates. Research, education, outreach, and enforcement activities are major components in each site's program of resource protection.

The NMSP is recognized around the world for its commitment to management of marine protected areas within which primary emphasis is placed on the protection of living marine resources and our nation's maritime heritage resources.

Figure 1.1. The National Marine Sanctuary System



The NMSP Vision:
People value marine sanctuaries as treasured places protected for future generations.

The NMSP Mission:
To serve as the trustee for the national system of marine protected areas to conserve, protect, and enhance their biodiversity, ecological integrity and cultural legacy.

1.2 The Florida Keys National Marine Sanctuary (FKNMS)

Historical Setting

Warning signs of the fragility and finite nature of the region's marine resources have been present in the Florida Keys for years. In 1957, a group of conservationists and scientists met at Everglades National Park to discuss the demise of the coral reef resources at the hands of those attracted by its beauty and uniqueness. The conference resulted in the 1960 creation of the world's first underwater park, John Pennekamp Coral Reef State Park. However, in the following decade, public outcry continued over pollution, overfishing, physical impacts, overuse, and user conflicts. The concerns continued to be voiced by environmentalists and scientists alike throughout the 1970s and into the 1990s.

As a result, additional management efforts were instituted to protect the Keys' coral reefs. In the Upper Keys, Key Largo National Marine Sanctuary was established in 1975 to protect 103 square nautical miles of coral reef habitat from north of Carysfort Lighthouse to south of Molasses Reef. In the Lower Keys, the 5.32 square nautical mile Looe Key National Marine Sanctuary was established in 1981.

Despite these efforts, oil drilling proposals and reports of deteriorating water quality occurred throughout the 1980s. At the same time, scientists were assessing coral bleaching and diseases, long-spined urchin die-offs, loss of living coral cover, a major seagrass die-off, and declining reef fish populations. Such threats prompted Congress to act. In 1988, Congress reauthorized the National Marine Sanctuary Program and ordered a feasibility study for possible expansion of Sanctuary sites in the Florida Keys - a directive that signaled that the health of the Keys ecosystem was of national concern and an endorsement of the NMSP's management successes at Key Largo and Looe Key National Marine Sanctuaries.

The feasibility studies near Alligator Reef, Sombrero Key, and westward from American Shoal were overshadowed by several natural events and ship groundings that precipitated the designation of the Florida Keys National Marine Sanctuary (FKNMS). Three large ships ran aground on the coral reef during one 18-day period in the fall of 1989. Although people cite the ship groundings as the issue triggering Congressional action, it was, in fact, the cumulative degradation and the threat of oil drilling, along with the groundings. These multiple threats prompted the late Congressman Dante Fascell to introduce a bill into the House of Representatives in November of 1989. Congressman Fascell had long been an environmental supporter of South Florida and his action was very timely. Senator Bob Graham, also known for his support of environmental issues in Washington and as a Florida Governor, sponsored the bill in the Senate. Congress gave its bipartisan support, and on November 16, 1990, President George H.W. Bush signed the bill into law.

With designation of the Florida Keys National Marine Sanctuary in 1990, several protective measures were implemented immediately, such as prohibiting oil and hydrocarbon exploration, mining or otherwise altering the seabed, and restricting large shipping traffic by establishing an Area To Be Avoided (ATBA). Additionally, protection to coral reef resources was extended by restricting anchoring on coral, touching coral, and collecting coral and live rock (a product of the aquarium

trade). Discharges from within the Sanctuary and from areas outside the Sanctuary that could potentially enter and affect local resources were also restricted in an effort to comprehensively address water quality concerns.

Administration and Legislation

The Sanctuary uses an ecosystem approach to comprehensively address the variety of impacts, pressures, and threats to the Florida Keys marine ecosystem. It is only through this inclusive approach that the complex problems facing the coral reef community can be adequately addressed.

The goal of the Sanctuary is to protect the marine resources of the Florida Keys. It also aims to interpret the Florida Keys marine environment for the public and to facilitate human uses of the Sanctuary that are consistent with the primary objective of sanctuary resource protection. The Sanctuary was created and exists under federal law, and became effective in state waters with the consent of the State of Florida. It is administered by NOAA and is jointly managed with the State of Florida under a co-trustee agreement. The Florida Governor and Cabinet, sitting as the Board of Trustees for the State of Florida, designated the Florida Department of Environmental Protection (DEP) as the state partner for Sanctuary management. The Florida Fish and Wildlife Conservation Commission (FWC), created in 1999, enforces Sanctuary regulations in partnership with Sanctuary managers and the NOAA Office of Law Enforcement. Throughout this document when the term FKNMS managers is used in reference to a responsible or responsive entity it refers to the NOAA and State of Florida co-trustees and their designated representatives from the NMSP, DEP and FWC working cooperatively to implement the strategies outlined in this plan.

NOAA, DEP and FWC are large and diverse organizations. In some cases we have identified specific organizations we work closely with within the broader agencies but are generally separate from the direct organizational chain of the staff working at the Sanctuary. For instance, FWC also houses the Fish and Wildlife Research Institute (FWRI), which conducts and coordinates scientific research and monitoring. In addition, the Sanctuary works cooperatively with multiple state and federal agencies, numerous universities and non-governmental organizations. The relationship with some, like the US Environmental Protection Agency (EPA), is based in the legislation creating the Florida Keys National Marine Sanctuary. Other relationships have evolved through cooperative agreements and information arrangements based upon shared boundaries, shared mission and goals, and/or shared interests.

National marine sanctuaries are typically designated by the Secretary of Commerce through an administrative process established by the National Marine Sanctuary Act (NMSA). However, recognizing the importance of the Florida Keys ecosystem and the degradation of the ecosystem due to direct and indirect physical impacts, Congress passed the Florida Keys National Marine Sanctuary and Protection Act (FKNMSPA) in 1990, (P.L. 101-605) (Appendix B) designating the Florida Keys National Marine Sanctuary to be managed as a national marine sanctuary under the NMSA. President George H. W. Bush signed the FKNMSPA into law on November 16, 1990.

The FKNMSPA and NMSA require the preparation of a comprehensive management plan and implementing regulations to protect Sanctuary resources. This *Revised Management Plan* responds to the requirements of the FKNMSPA and NMSA. The implementing regulations, effective as of 1 July

1997, are found at 15CFR922 and in Appendix C. The designation document[1] for the FKNMS is found in Appendix D.

Sanctuary Boundaries

The Sanctuary's enabling legislation designated 2,800-square-nautical miles of coastal waters surrounding the Florida Keys as the Florida Keys National Marine Sanctuary. The Sanctuary's boundary was amended in 2001 when the Tortugas Ecological Reserve was designated, significantly increasing the marine resources requiring protection.

Currently, the boundary encompasses approximately 2,900 square nautical miles (9,800 square kilometers) of coastal and ocean waters and submerged land (Figure 1.2). The boundary extends southward on the Atlantic Ocean side of the Keys, from the northeastern-most point of the Biscayne National Park along the approximate 300-foot isobath for over 220 nautical miles to the Dry Tortugas National Park. The boundary extends more than 10 nautical miles to the west of the Park boundary, where it turns north and east. The northern boundary of the Sanctuary extends to the east where it intersects the boundary of the Everglades National Park. The Sanctuary waters on the north side of the Keys encompass a large area of the Gulf of Mexico and western Florida Bay. The boundary follows the Everglades National Park boundary and continues along the western shore of Manatee Bay, Barnes Sound, and Card Sound. The boundary then follows the southern boundary of Biscayne National Park and up its eastern boundary along the reef tract at a depth of approximately 60 feet until its northeastern-most point.

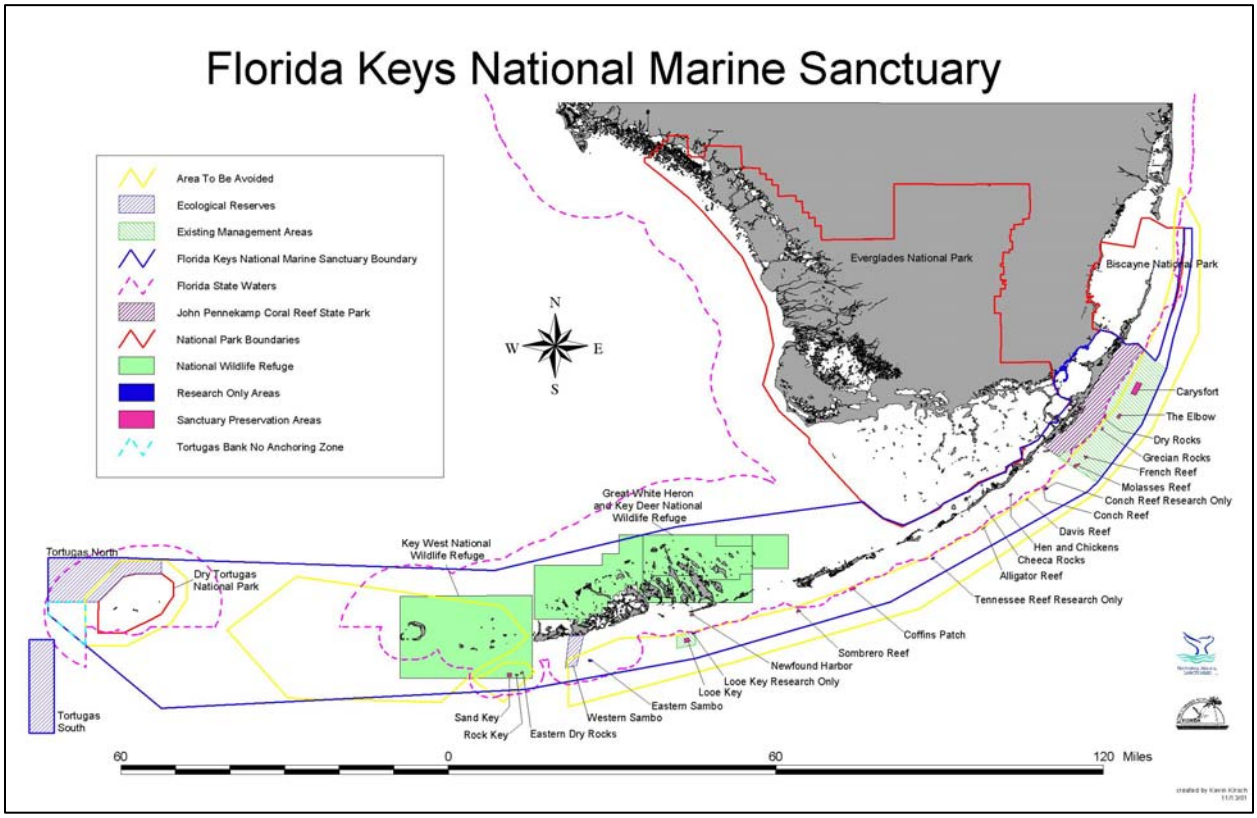
A separate, non-contiguous, 60 square nautical mile area off the westernmost portion of the Sanctuary is called the Tortugas Ecological Reserve South. The area's shallowest feature is Riley's Hump which rises to a depth of only 90 feet of water.

The Sanctuary boundary overlaps two previously existing national marine sanctuaries (Key Largo and Looe Key); four U.S. Fish and Wildlife Service (USFWS) refuges; six state parks, including John Pennekamp Coral Reef State Park; three state aquatic preserves; and other jurisdictions. Everglades National Park, Biscayne National Park and Dry Tortugas National Park are excluded from Sanctuary waters, but each shares a contiguous boundary with the Sanctuary.

The shoreward boundary of the Sanctuary is the mean high-water mark, except around the Dry Tortugas where it is the boundary of Dry Tortugas National Park. The Sanctuary boundary encompasses nearly the entire reef tract, all of the mangrove islands of the Keys, and a good portion of the region's seagrass meadows.

[1] The NMSA defines the term designation (also known as the designation document) of a sanctuary as the geographic area of the sanctuary, the characteristics of the area that give it conservation, recreational, ecological, historical, research, educational, or esthetic value, and the types of activities that will be subject to regulation to protect those characteristics.

Figure 1.2. The Florida Keys National Marine Sanctuary Boundaries



Socio-Economic Context

The environment and the economy are inextricably linked in the Florida Keys, making management and protection of existing resources and reducing impacts critical if the economy is to be sustained. Tourism is the number one industry in the Florida Keys, with over $1.2 billion dollars being spent annually by over 3 million visitors. The majority of visitors participate in activities such as snorkeling, SCUBA diving, recreational fishing, viewing wildlife and studying nature. Recreational and commercial fishing are the next most important sectors of the local economy, annually contributing an estimated $500 million and $57 million respectively (marineeconomics.noaa.gov).

Because of the recreational and commercial importance of the marine resources of the Florida Keys, protecting these Sanctuary resources is valuable not only for the environment but also for the economy. The special marine resources of the region, which led to the area's designation as a national marine sanctuary, contribute to the high quality of life for residents and visitors. Without these unique marine resources, the quality of life and the economy of the Keys would decline.

1.3 The Management Plan Review Process

What is management plan review?
In 1992, when Congress reauthorized the NMSA, it required all national marine sanctuaries to review their management plans every five years in order to monitor and evaluate the progress of the national mission to protect national resources. The Florida Governor and Cabinet, as trustees for the state, also mandated a five-year review of the Florida Keys National Marine Sanctuary Management Plan in their January 28, 1997 resolution.

The Sanctuary's management plan review creates a road map for future actions based on past experience and outcomes. The review reevaluates the goals and objectives, management techniques, strategies, and actions identified in the existing management plan. It provides the opportunity to take a close and comprehensive look at outcomes and plan for future management of the Sanctuary.

The 1996 Florida Keys National Marine Sanctuary Management Plan
After the initial six-year FKNMS planning process, a comprehensive management plan for the Sanctuary was implemented in July 1997. The management plan focused on ten action plans which were largely non-regulatory in nature and involved educating citizens and visitors, using volunteers to build stewardship for local marine resources, appropriately marking channels and waterways, installing and maintaining mooring buoys to prevent anchor damage to coral and seagrass, surveying maritime heritage resources, and protecting water quality. In addition to action plans, the 1996 management plan designated five types of marine zones to reduce pressures in heavily used areas, protect critical habitats and species, and reduce user conflicts. The efficacy of the marine zones is monitored Sanctuary-wide under the Research and Monitoring Action Plan.

The implementing regulations for the FKNMS became effective July 1, 1997. The 1996 management plan was published in three volumes: Volume I is the Sanctuary management plan itself (which this document updates); Volume II characterizes the natural and social environmental setting of the Sanctuary and describes the process used to develop the draft management alternatives, including environmental and socioeconomic impact analyses of the alternatives, and the environmental impact statement; Volume III contains appendices, including the texts of federal and state legislation that designate and implement the Sanctuary. All three volumes of the 1996 management plan are available on the Sanctuary Web site (floridakeys.noaa.gov) and from the Sanctuary's Key West office. Volume II is not being revised as part of this review. After public input, government review and final adoption of this five-year review and revised Management Plan, this document will replace Volumes I and III.

How does management plan review work?
Review of the 1996 management plan began in early 2001 with a meeting in Tallahassee, Florida, among federal and state partners responsible for Sanctuary management and various FKNMS and NMSP staff. The review included the FKNMS Sanctuary Advisory Council and the general public in every step of the process.

In the late spring and summer of 2001, FKNMS staff, working closely with the Sanctuary Advisory Council, held scoping meetings and re-convened action plan working groups that had been created during development of the 1996 plan. The scoping meetings were held in Marathon, Key Largo, and

Key West, and gave the public the opportunity to meet with Sanctuary Advisory Council members, Sanctuary managers, and FKNMS staff. The meetings included round-table discussions on every action plan, and participants had the opportunity to move freely between the various topics being discussed at each table.

The scoping period for the revised management plan lasted from June 8 through July 20, 2001. Approximately 30 comments were received - a sharp contrast to the more than 6000 public comments received during the comment period for the 1996 plan. In addition, the working groups held more than three dozen meetings between June and September 2001 to discuss, evaluate, revise and update action plans. Sanctuary Advisory Council members and FKNMS staff who had served on the working groups presented the proposed revisions to the Sanctuary Advisory Council at three meetings in October 2001. The full advisory council recommended minor changes and approved each action plan in this document. The Sanctuary Advisory Council membership and Action Plan Working Group membership lists are included in Appendix E.

Between 2001 – 2004, numerous drafts of each action plan and strategy were prepared and reviewed by the FKNMS Management Team, Action Plan Leads and National Marine Sanctuary Program Headquarters staff. In February 2005 the *Draft Revised Management Plan* was published and distributed for public review and comment. A notice was placed in the Federal Register. A series of three public meetings were held in the Florida Keys including a meeting in each of Key Largo, Marathon and Key West. This formal comment period extended from February 15, 2005 to April 15, 2005. Responses were received from approximately 20 commenters. Between May 2005 and February 2006 the comments were reviewed, consolidated into a single document and distributed for review and response to the FKNMS Management Team and Action Plan Leads. The responses to the comments were incorporated into the *Draft Revised Management Plan*, as appropriate. Between August 2006 and May 2007 FKNMS staff and staff in the NMSP and the FL Department of Environmental Protection headquarters units worked together to review, refine and ensure the *Draft Revised Management Plan* reflected the most recent and up-to-date information and management practices and policies.

The Role of Sanctuary Management as Facilitators

A sanctuary management plan is designed to identify the best and most practical strategies to achieve common goals, while getting the most out of public investment. Achieving this aim cannot be accomplished solely through the authorities and resources of an individual sanctuary management authority. It requires a broad partnership of programs, authorities, and resources, coordinated to meet the needs of both the sanctuary site and the broader region of which it is a part.

Consequently, the management plan review process first focuses on finding the most effective strategies to accomplish common goals. These strategies are the product of a process that brings together constituents, institutions, and interested parties in directed working groups to address specified problem areas. How these strategies are to be implemented—with whose authorities, investments, and personnel—is determined subsequent to developing the best strategies. While the Sanctuary program commits to carrying out specific strategies as budgets allow, in many cases implementation becomes the responsibility of other institutions such as state, federal, or local partners, that have the authorities, the appropriate program, and/or the resources required. The intent of identifying these responsibilities is not to create unfunded mandates for other agencies, but rather to integrate management actions so as to maximize protection of Sanctuary resources.

In this process, the sanctuary management plan becomes a framework in which the role of all partners is clarified. The sanctuary assumes the role of facilitator and integrator of a far larger body of activities and outcomes than are within the scope of its immediate authorities, programs, and resources. This facilitation role provides the mechanism for continued implementation, evaluation, and adaptation of the partnership activities documented by the plan, ensuring its continuity and overall success.

1.4 Accomplishments

There have been many accomplishments in the sanctuary beginning with the authority established under the Florida Keys National Marine Sanctuary and Protection Act of 1990 and the implementation of the management plan in 1997. An overview of the Sanctuary's accomplishments is given here, and more details are provided within each Action Plan.

1. Area To Be Avoided. The "Area To Be Avoided" (ATBA) designation in 1990 has resulted in a significant decrease in the number of major ship groundings on the coral reefs. As Figure 1.3 illustrates, prior to 1990 there was a major ship grounding involving vessels greater than 50 m in length, nearly every year, while only two have occurred since the implementation of the ATBA. The United Nations International Maritime Organization (IMO) agreed that the ATBA should be given additional strength as a Particularly Sensitive Sea Area (PSSA) in 2002 (see Accomplishment 5 below). The ATBA regulations are at 15 CFR Part 922, Subpart P, Appendix VII. Figure 1.4 shows the ATBA, the PSSA and the Sanctuary boundary.

Figure 1.3. Reef groundings of vessels greater than 50m before & after ATBA designation.

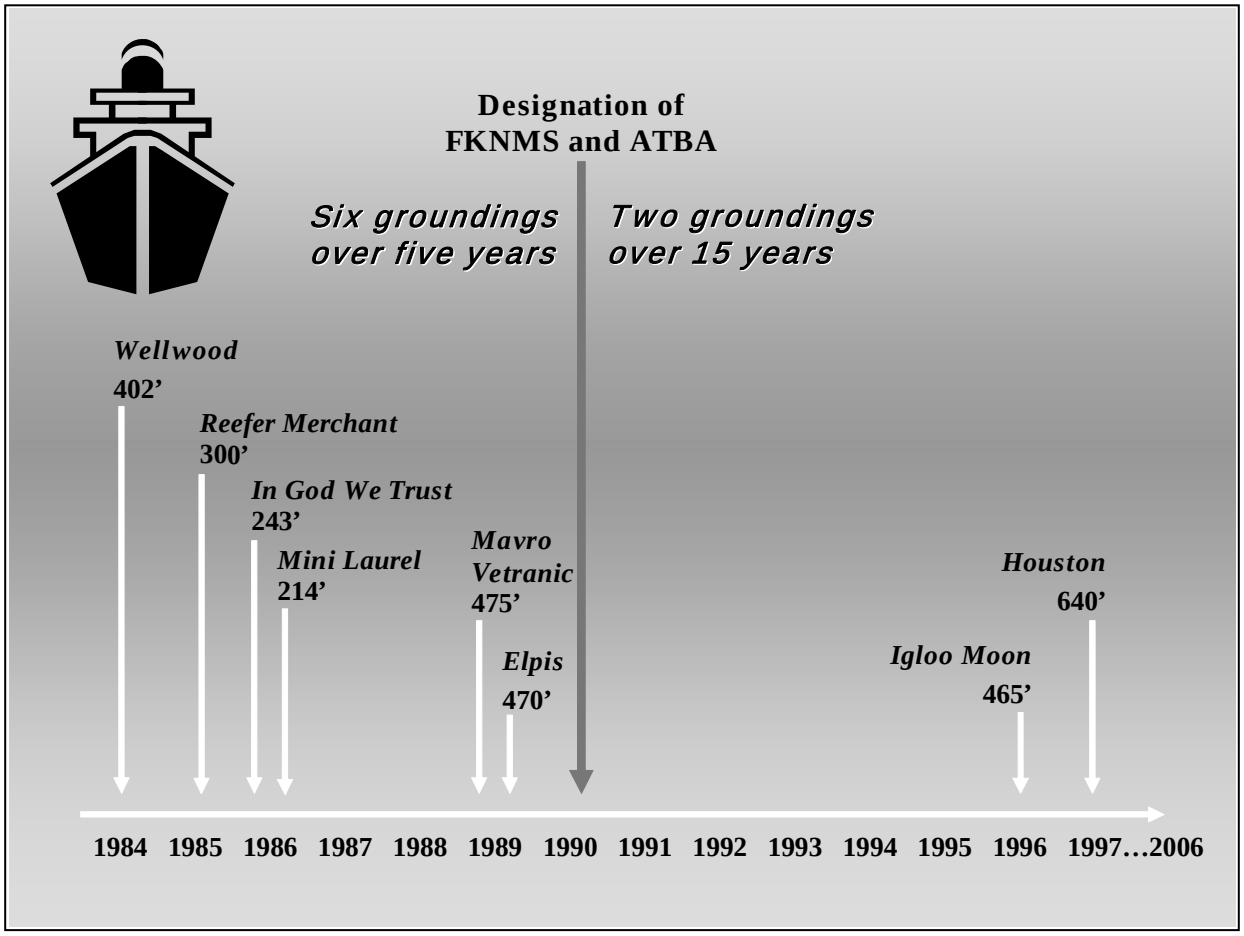
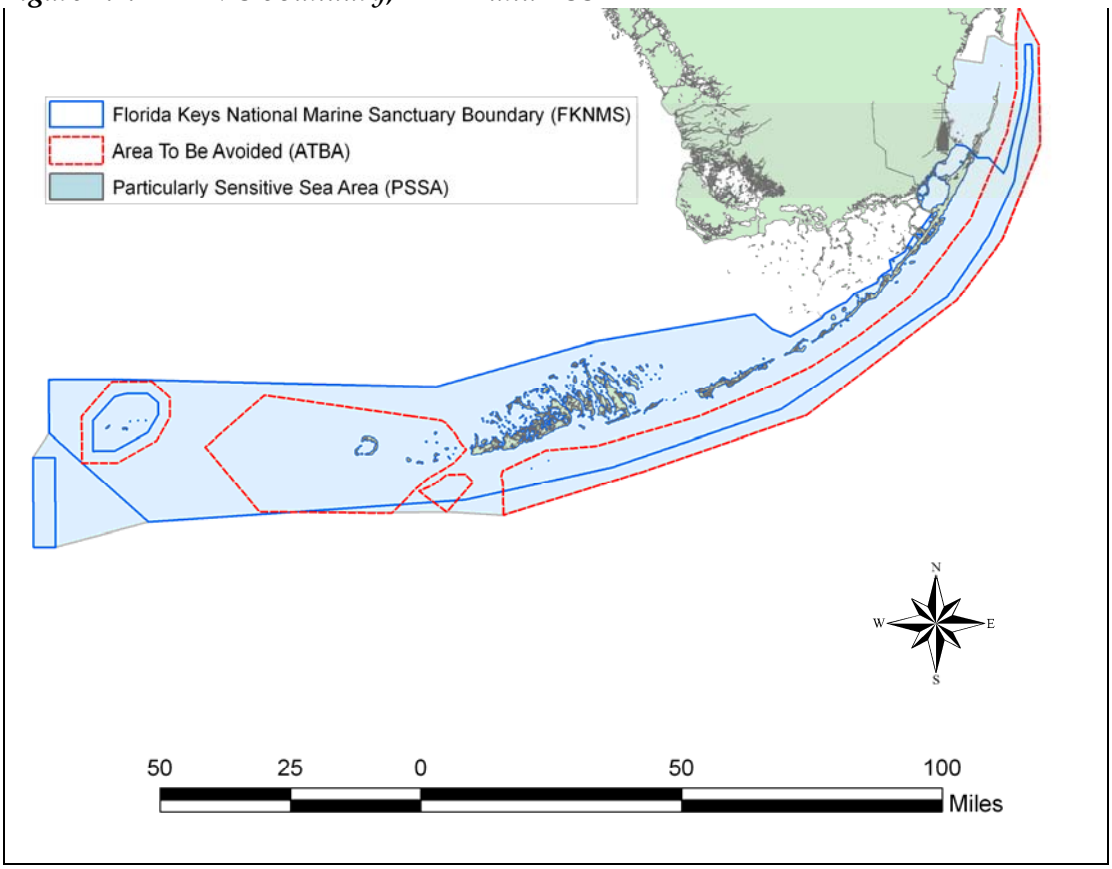


Figure 1.4. FKNMS boundary, ATBA and PSSA



2. Oil Drilling and Hard Mineral Mining Ban. A ban on these activities was established when the Sanctuary was created, and has prevented these activities from occurring in the Sanctuary.

3. The Water Quality Protection Program. This program has produced the first Water Quality Protection Program for a national marine sanctuary and has fully implemented 26 of 49 high-priority activities, many of which are carried out in cooperation with other action plans.

4. The Comprehensive Everglades Restoration Plan. The Sanctuary continues to participate in the implementation of the Comprehensive Everglades Restoration Plan (CERP). Sanctuary staff have been active on this project since 1993, including chairing a working group for the South Florida Ecosystem Restoration Task Force and staffing its science and education committees. The Sanctuary's participation seeks to protect the ecosystem's water quality by eliminating catastrophic releases of freshwater along the coastal waters of South Florida including Florida Bay following rain events. One of the goals of the CERP is to restore the water quality, quantity, timing and distribution to the South Florida ecosystem.

5. Designation of the Florida Keys as a Particularly Sensitive Sea Area. In November 2002, the United Nations International Maritime Organization approved designation of the Florida Keys as a PSSA. The designation is not accompanied by additional rules and regulations, but seeks to elevate public awareness of the threat of oil spills and hazardous materials to sensitive marine environments

and will ensure that the previously mentioned ATBA is noted not only on U.S. charts but also on nautical charts worldwide.

6. Long-term and continuing progress in the Research and Monitoring and Zoning action plans. Research and monitoring has produced significant scientific data, hypothesis testing, mapping, trend documentation, and wide dissemination of these findings. Especially notable is the Keys-wide benthic map which provides valuable information for Sanctuary managers. In addition to the new protected zone in the Tortugas Ecological Reserve, the Sanctuary's zoning programs continue to provide invaluable data that demonstrate the success of the marine zoning program.

7. Education, Public Outreach, Sanctuary Stewardship, and Volunteerism. Through these inter-related efforts, information is flowing from scientists to managers and then to educators, who reach the next generation. More than 180,000 volunteer hours, an estimated $2.9 million value, were donated to the Sanctuary between 1996 and 2006. Even more valuable than the dollar worth of the program is the stewardship created through volunteerism, which uniquely contributes to the long-term effectiveness of the Sanctuary.

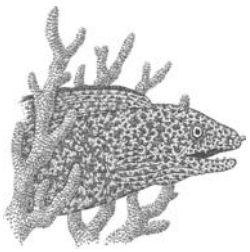
8. Enforcement and Regulations. Both the city of Key West and the State of Florida have declared Florida Keys waters under their jurisdictions as "no-discharge" zones. Additional accomplishments in implementing the Enforcement and Regulatory Action Plans are largely a tribute to the cooperative efforts among the Florida Fish and Wildlife Conservation Commission, the Florida Park Service, the U.S. Coast Guard (USCG), and NOAA. Notable among these is the cross-deputization of state-certified law enforcement officers, which allows them to enforce numerous federal laws, including fisheries regulations, the Endangered Species Act, the National Marine Mammal Act, the Lacey Act, etc.

9. Damage Assessment and Restoration. The Damage Assessment and Restoration Action Plan is new to this document but is based on accumulated data and lessons learned since 1982. The cross-disciplinary strategies will prove useful in reducing the number of vessel groundings in Sanctuary waters as well as restoring Sanctuary resources damaged by vessels.

10. Maritime Heritage Resources. The Maritime Heritage Resources Action Plan includes a close partnership of the state, NOAA, and the Florida Advisory Council on Historic Preservation described in a programmatic agreement for resource management that was originally signed in 1998 and then renewed in 2004 (see Appendix F for more information and a Web site link for the full document). Additionally, the 2002 discovery of a previously unknown wreck within the Sanctuary has brought about a community-endorsed research and interpretation plan for the site. Overall, the Action Plan represents excellent progress in balancing resource protection, investigation and interpretation.

11. Mooring Buoys and Waterway Management (formerly Channel Marking). The Mooring Buoy and Waterway Management Action Plans have implemented simple but effective strategies for reducing vessel damage to the coral reef and to seagrass beds. The long-term success of these programs—mooring buoy strategies have been used in local Sanctuary waters since 1981 when they were introduced at the Key Largo National Marine Sanctuary—has largely been due to a unique interface of education, outreach, enforcement and research and monitoring activities.

12. Operations. Since 1997, the Sanctuary has integrated the administrative functions of two former sanctuaries—at Key Largo and Looe Key—into a single headquarters umbrella with two regional offices. This integration streamlined delivery of human resources, community relations, and policy development. It also resulted in a series of accomplishments, ranging from an updated electronic financial reporting system to the 180+-episode television series, *Waterways*.



3.4 RESOURCE THREAT REDUCTION

Resource protection and conservation can be achieved with a variety of management tools such as those action plans bundled in this management division. Those action plans include: the Marine Zoning Action Plan**;** the Mooring Buoy Action Plan; the Waterway Management Action Plan; and the Water Quality Action Plan. Each of these action plans contains tools that allow managers to directly protect and conserve Sanctuary resources through the implementation of various management strategies. These action plans, when implemented, provide very targeted means of protecting resources whether it is by establishing marine zones to conserve Sanctuary resources, balancing user conflicts or by providing mooring buoys to eliminate anchor damage to corals in high-use areas. The marking of channels and waterways to aid in the prevention of vessel groundings is an effective non-regulatory approach to protecting Sanctuary resources while boundary buoys help Sanctuary users comply with the regulations.

Water quality degradation is the primary issue that is affecting the health and vitality of Sanctuary resources. This management division includes the Water Quality Action Plan designed to identify the sources of water quality decline and to outline the various corrective management actions that need to be implemented to improve water quality.

3.4.2 Mooring Buoy Action Plan

Introduction

Sanctuary Biologist John Halas first implemented the mooring buoy system used in the Key Largo National Marine Sanctuary in 1981. This simple yet effective tool for reducing anchor damage to coral reefs and seagrass beds was later implemented in Looe Key National Marine Sanctuary (1984) and eventually in other areas. Sanctuary staff worked with Reef Relief, a grassroots conservation group in Key West, and other groups to install mooring buoys at popular dive sites along the reef tract. Today, Florida Keys National Marine Sanctuary staff travels worldwide, assisting groups with mooring buoy installations that protect natural resources from anchor damage. While mooring buoys are excellent management tools, other management programs must accompany a mooring buoy program, including education, outreach, research and monitoring.

Concerns have been raised that mooring buoys may negatively impact marine resources by attracting boaters, divers, and fishermen to the areas. This plan establishes a methodology for identifying areas appropriate for mooring buoys and managing boating activities near coral reefs so that negative impacts are minimized. By allowing or directing access at selected locations, a Mooring Buoy Program can limit resource-use conflicts and damage to the resources.

The Mooring Buoy Action Plan seeks to minimize anchoring impacts to sensitive marine habitats, specifically coral reef formations, to provide reasonable access to Sanctuary resources, consistent resource protection, and to manage or restrict activities that have a detrimental impact on resources. To accomplish these goals, the Mooring Buoy Action Plan seeks to:

- Assess the characteristics of boater and diver use in coral reef areas.
- Maintain a database of boater and diver use and existing mooring buoy locations.
- Develop criteria for determining the location of additional mooring buoys to meet demand.
- Assess the impact of boater and diver use in coral reef areas.
- Develop a standard marking system for mooring buoys.
- Determine the impact of large vessels on mooring buoys and determine optimum vessel size for a variety of buoys.
- Implement vessel-size restrictions on the use of mooring buoys.

Organization of the Mooring Buoy Program

Developing a comprehensive mooring buoy plan has been a high priority since the beginning of the initial management plan and continues as an on-going strategy for protecting coral reef resources.

Responsible Institutions

FKNMS is to be the lead agency responsible for implementing the activities within this action plan. However, the mooring buoy program works in partnership with local government agencies, FWC, FWRI, USACE, USCG, NPS, and Monroe County; non-government organizations, including The Nature Conservancy, Mote Marine Laboratory, and The Ocean Conservancy also play an important role in this plan.

Prioritization of Implementation

The implementation of a mooring buoy system has been shown to be an effective management tool worldwide, especially in coral reef ecosystems. It is a simple, relatively non-controversial, and extremely visible action that will protect delicate reef structures. Accordingly, the Mooring Buoy Action Plan is among the highest priority for management action.

Staff
A minimum of nine full-time personnel are needed to maintain the mooring buoys. Currently there are eight full-time staff assigned to the Mooring Buoy Program.

Equipment
FKNMS staff, using Sanctuary vessels, maintain the mooring buoys. The Tortugas Ecological Reserve has substantially increased logistical and manpower needs. Because of the additional mooring buoy sites, a third vessel and crew are needed. Each vessel should be at least 25 to 50 feet long, and equipped with standard navigational equipment. At least one vessel should have a built-in hydraulic winch for servicing the large boundary buoys. FKNMS currently owns two complete sets of hydraulic installation equipment. One additional backup system may be required in the future.

Contingency Planning for a Changing Budget
To the extent possible, FKNMS will encourage other volunteers and private and nonprofit organizations to assist the Mooring Buoy program. FKNMS will also consider alternative funding sources, including an "Adopt-a-Buoy," volunteers, and other innovative funding mechanisms.

If an adequate budget is not available and alternative funding sources are not feasible, mooring buoy maintenance costs can be reduced by cutting the number of buoys in the system. However, the use of mooring buoys is one of the most basic and cost effective mechanisms for reducing physical impacts in sensitive areas, and reducing the number of buoys will only be considered after all other cost-saving actions have been explored.

Accomplishments
There have been several accomplishments relative to FKNMS mooring buoys since implementation of the 1996 management plan, including:

- Sanctuary staff has completely refitted all mooring buoy systems in the Sanctuary.
- Two 39-foot mooring buoy vessels (*R/V Rachel Carson* and *R/V Agassiz*) have been acquired and equipped.
- New mooring buoy staff has been hired and trained.
- Two smaller mooring buoy maintenance vessels have been acquired and made operational.
- Sanctuary staff have developed a mooring buoy installation and maintenance manual.
- The Sanctuary has increased the number of mooring buoys within its boundaries from 175 to over 500 by taking responsibility for mooring buoys previously installed by other organizations in Key West, Marathon, and Islamorada.
- The four outer boundary buoys for the Looe Key Existing Management Area continue to be maintained.
- Sanctuary staff installed 118 yellow boundary buoys (30-inch diameter) for marine zones.
- Sanctuary staff installed 120 WMA boundary buoys.
- Sanctuary staff installed mooring buoys on the *Thunderbolt* (Marathon), *Cayman Salvager* (Key West), *Spiegel Grove* (Upper Keys) and *Adolphus Busch* (Lower Keys) shipwrecks.

- Sanctuary staff installed mooring buoys and information buoys along Shipwreck Trail.
- Sanctuary staff installed five new mooring buoys in the Lower Keys and 36 new mooring buoys in the Tortugas Ecological Reserve.
- Sanctuary staff has implemented a monitoring program at mooring buoys in the Tortugas Ecological Reserve.
- A 1993-1994 survey assessed public and private boat access throughout the Sanctuary and sought to develop a low-impact access plan and direct new public access to low-impact areas. The plan's purpose is to modify as appropriate, any access affecting sensitive areas throughout the Sanctuary. This strategy is described in detail in the Waterway Management Action Plan and included in the Volunteer Action Plan.

Goals and Objectives
The goals of the Mooring Buoy Action Plan are to:

- Minimize anchoring impacts to sensitive marine habitats (specifically coral reef formations)
- Provide reasonable access to Sanctuary resources
- Provide consistent resource protection
- Manage or restrict activities that have a detrimental impact on resources.

To achieve these goals, the Sanctuary seeks to achieve the following objective:

- To limit resource-use conflicts and damage to Sanctuary resources by allowing or directing access at selected locations.

Strategies
There is one management strategy in this Mooring Buoy Action Plan.

- B.15 Mooring Buoy Management

This strategy is detailed below. Table 3.12 provides estimated costs for implementation of this strategy over the next five years.

Table 3.12 Estimated Costs of the Mooring Buoy Action Plan.

Mooring Buoy Action Plan Strategy	Estimated Annual Cost (in thousands)*					Total Estimated 5 Year Cost
	YR 1	YR 2	YR 3	YR 4	YR 5	
B.15: Mooring Buoy Management	316	332	348	366	384	*1,746*
Total Estimated Annual Cost	316	332	348	366	384	*1,746*

* Contributions from outside funding sources also anticipated.

STRATEGY B.15 MOORING BUOY MANAGEMENT

Strategy Summary

The purpose of this strategy is to continue a comprehensive mooring buoy maintenance program. Within this program, FKNMS mooring buoy teams perform several functions, such as siting and installing mooring buoys as needed; inspecting mooring systems regularly and replacing components as necessary; and installing heavy-duty anchor systems in areas frequented by larger vessels. As part of this action plan, Sanctuary managers will establish vessel size limits and the teams will continue to evaluate developing technology and implement environmentally sound, cost effective, and efficient installations.

Activities (10)

(1) Maintain Existing Mooring Buoys. The existing system of mooring buoys must be maintained. Mooring buoy teams use volunteers when available to supplement the mooring buoy maintenance program.

> *Status:* There are currently over 500 mooring buoys within the Sanctuary that are maintained through a combination of government agencies and private organizations; managing these existing buoys is an on-going activity.
> *Implementation:* FKNMS, in cooperation with existing agencies and non-governmental organizations (NGOs) that maintain mooring buoys, is the lead agency. FKNMS also assists, both financially and through logistical support, other organizations that install and maintain mooring buoys. Volunteers are used to assist in some aspects of the maintenance of mooring buoys to the maximum extent feasible.

(2) Assess Current Mooring Buoy Technology. The various types of mooring buoy designs available for use will be continually reviewed, based on substrate type, boat size, water depth and sea state. Methods of limiting resource damage through mooring buoy installation will be assessed, as will vessel impacts on mooring buoys.

> *Status:* On-going. Many components of this activity have been through an on-going analysis of mooring buoy systems in the Sanctuary and research on visitor impacts to patch reefs. Vessel impacts on mooring buoys remain to be addressed.
> *Implementation:* FKNMS will be the lead agency responsible for implementing the assessment of vessel impacts. FKNMS will work with the Sanctuary Advisory Council, other sanctuaries and marine protected areas, and nongovernmental organizations that have experience with mooring buoy systems used by larger vessels.

(3) Review Visitor-use and Boating Data. Boating activity and visitor-use data collected by various surveys are used for mooring buoy planning. This includes targeting data on diving activity around major coral reef systems and considering the impact of special events, such as holidays and lobster season, on boating patterns. On-the-water surveys are correlated with available aerial data to determine peak usage and turnover rates in high-use areas. To enable recommendations for mooring buoy additions or deletions, visitation data will be compared with existing mooring buoy locations.

Status: On-going. A report entitled "An Evaluation of Mooring Buoys in the Florida Keys National Marine Sanctuary Based on Boating Patterns" has been produced, which addresses some of the items identified in this activity.
Implementation: FKNMS is the lead agency. Using available sources to update visitor use data, FKNMS works with the Sanctuary Advisory Council and the working group established in Activity 4 to review the information. Team OCEAN volunteers help gather visitor data.

(4) Develop Siting Criteria. Sanctuary staff will continue to develop criteria for future mooring buoy sites within the Sanctuary. Workshops will be conducted as needed, with representatives of the Sanctuary Advisory Council, affected agencies, NGOs and other interested parties to identify criteria for allocating existing buoys and placing new ones. A working group has been established to advise and facilitate the development of the mooring buoy action plan.

Status: On-going.
Implementation: FKNMS is the lead agency responsible for implementing this activity by organizing the working group and facilitating workshops.

(*5) Recommend New Sites for Mooring Buoys.* Areas where new mooring buoys should be installed are identified based on local knowledge, local dive industry input, visitor-use data, resource management concerns, level of demand and other relevant information. Priority areas for installation are determined.

Status: On-going.
Implementation: FKNMS is the lead agency responsible for implementing this activity. The working group established in Activity 4 will make recommendations.

(6) Conduct Site Assessments of Proposed Locations. Areas identified for the installation of new mooring buoys are surveyed to determine: 1) the health of the habitat in relation to visitor use, 2) types of use and use patterns (e.g., size of vessels, glass-bottom boat use, unusual features, etc.), and 3) the number, location, and concentration of specific mooring buoys on the reef.

Status: On-going.
Implementation: FKNMS is the lead agency. DEP biologists and the Sanctuary Advisory Council are consulted for the resource survey.

(7) Determine Costs of Implementation and Maintenance. After establishing the number of mooring buoys suitable for each primary area, installation and maintenance costs will be determined. Maintenance costs will be based on past costs at the Key Largo and Looe Key National Marine Sanctuaries and relevant NGOs (e.g., Reef Relief, etc.). The ability to fund adequate maintenance activities will be a primary factor in determining the priority areas where new mooring buoys will be installed.

Status: On-going.
Implementation: FKNMS will be the lead agency responsible for implementing this activity. Other agencies and NGOs with mooring buoy experience (e.g., the DEP, Reef Relief, etc.) will be consulted to determine installation and maintenance costs.

(8) Install Additional Mooring Buoys. Based on the recommendations developed in Activities 5 and 6, new mooring buoys will be installed at the locations identified.

Status: On-going.
Implementation: FKNMS is the lead agency.

(9) Implement Vessel Size Limits in High-Use and Sensitive Areas. The Mooring Buoy Working Group recommends that staff use education and outreach rather than regulations for this activity. The Working Group recommends determining vessel size using a combination of length and tonnage. Mooring buoys in the Sanctuary are designed for vessels less than 60 feet. Vessels using mooring buoys in the Sanctuary have increased in size over the past five years, requiring stronger and heavier duty mooring systems. Based on vessel-impact information, staff observations, and load tests, it has been determined that vessels using mooring buoys located between Key Largo and the Marquesas Keys should not exceed 60 feet in length. Vessel-size limits in the Tortugas Ecological Reserve are 100 feet in length or a combined length of 100 feet.

FKNMS staff will install large boat mooring sites on selected reef areas located throughout the Sanctuary. These designated sites will be designed for vessels larger than 60 feet in length up to 100 feet. A program to educate the public on size and weather condition limits should be implemented under the education action plan in coordination with the installation of these mooring buoys. Aesthetic and recreational crowding factors will be considered as well. After a period of review and analysis, the size limits may be proposed for incorporation into the Federal Regulations established for the Sanctuary if data supports such a move once gathered.

Status: On-going.
Implementation: FKNMS will be the lead agency responsible for implementing this activity.

(10) Evaluate Effectiveness and Influences of Mooring Buoy Placement and Make Necessary Changes. Volunteer monitoring and in-house staff monitor mooring buoy sites and compare the sites to similar nearby areas without mooring buoys. A monitoring program will be established in the Tortugas Ecological Reserve to compare mooring sites prior to and after the installation of mooring buoys, and in areas without mooring buoys that have little or no diving or boating. Mooring buoys will be removed from areas found to be detrimentally impacted by the presence of mooring buoys.

Status: On-going.
Implementation: FKNMS will be the lead agency responsible for implementing this activity. DEP/FWC will provide support.