

# Florida Keys National Marine Sanctuary Revised Management Plan



December 2007

U.S. Department of Commerce

National Oceanic and  
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](http://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](http://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.

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# 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 Statutes
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

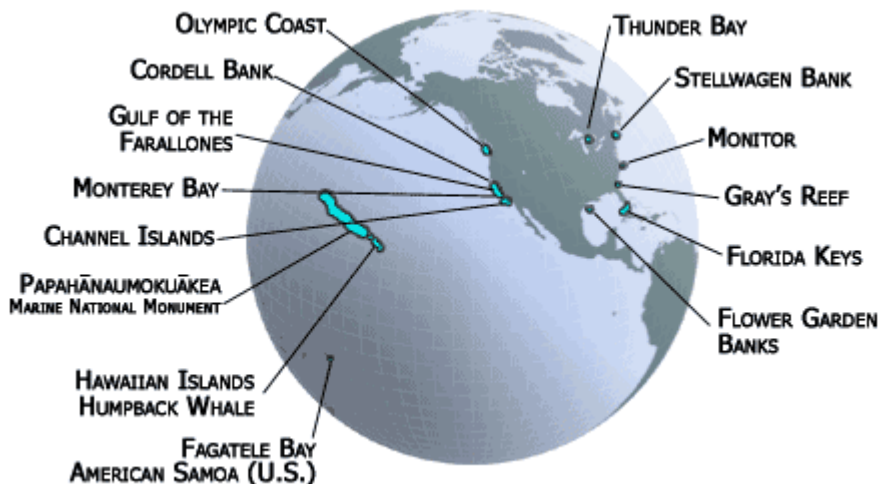
## 1.1 The National Marine Sanctuary Program (NMSP)

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<sup>1</sup> 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.

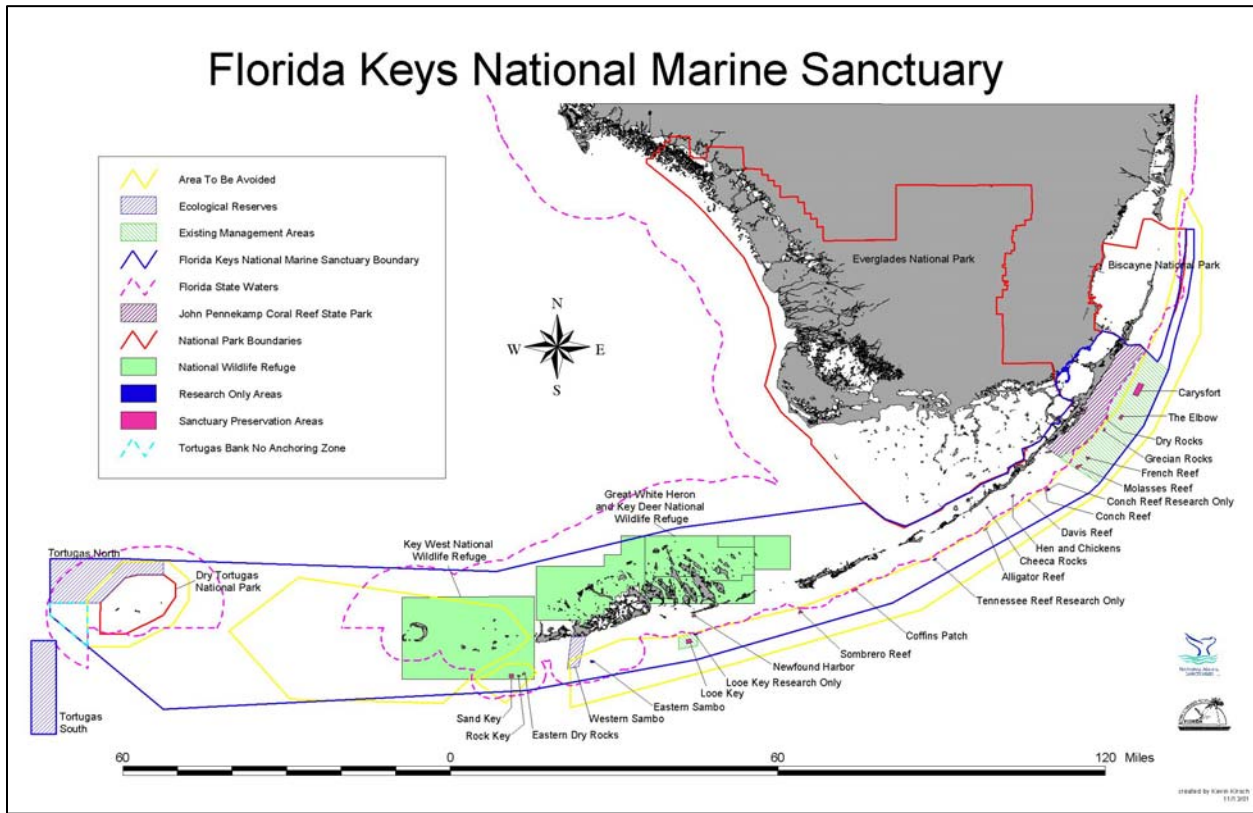
The Sanctuary boundary overlaps two previously existing national marine sanctuaries (Key Largo and Looe Key); four U.S. Fish and Wildlife Service (USFWS) refuges; six state parks, including John Pennekamp Coral Reef State Park; three state aquatic preserves; and other jurisdictions. Everglades National 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.

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<sup>1</sup> 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](http://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.

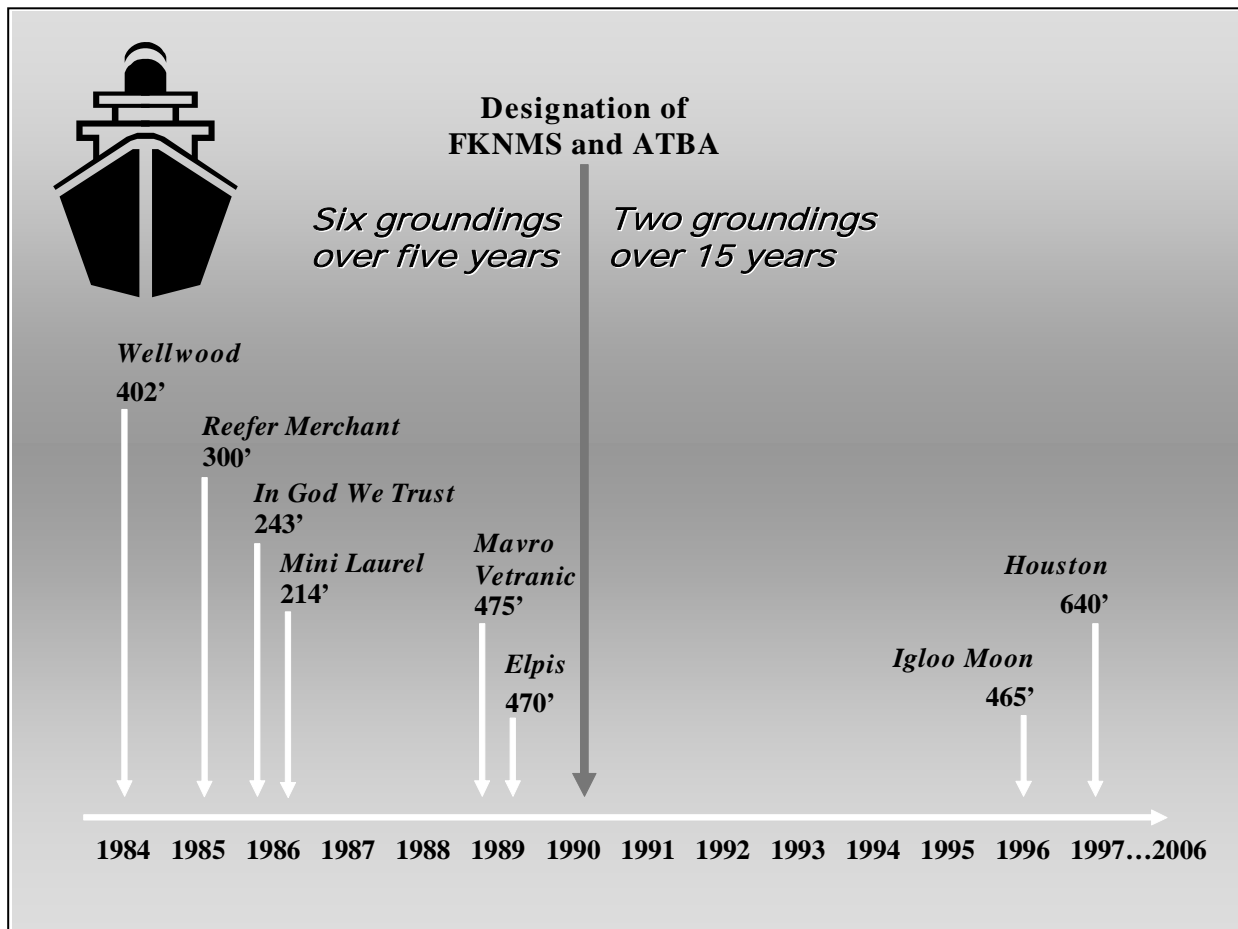
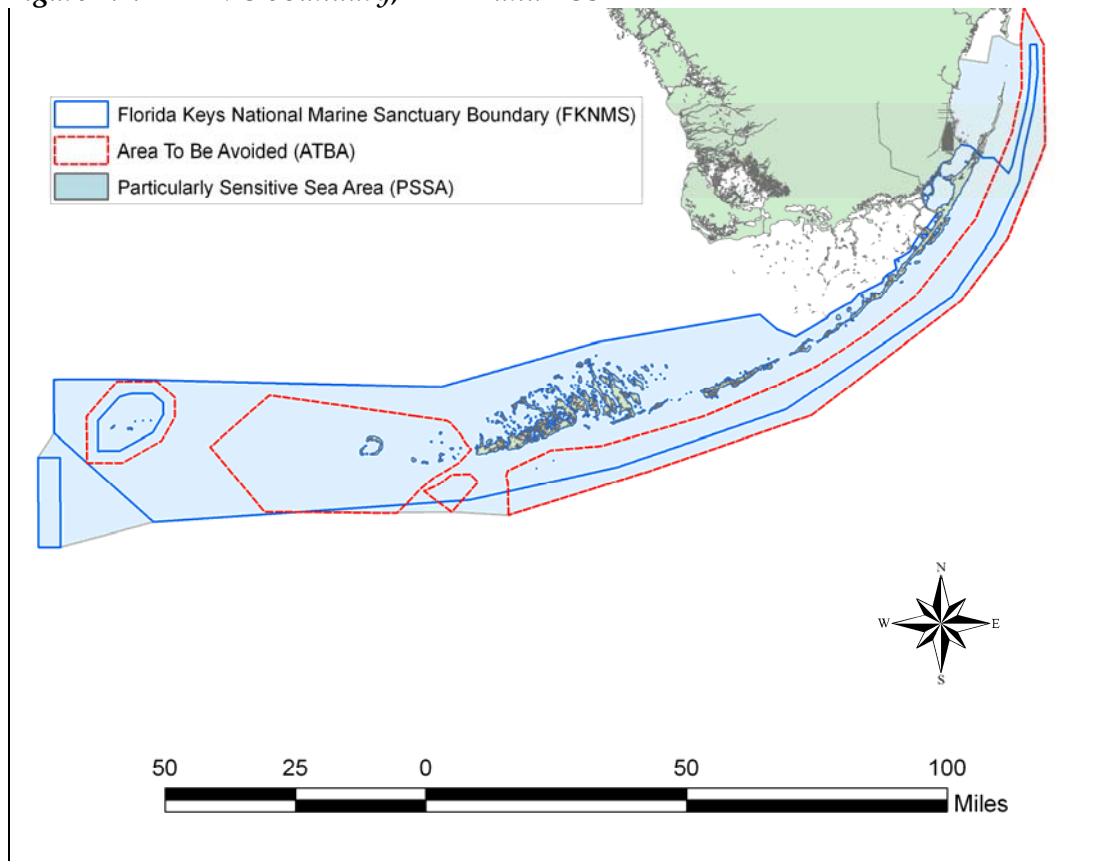


Figure 1.4. FKNMS boundary, ATBA and PSSA



**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.

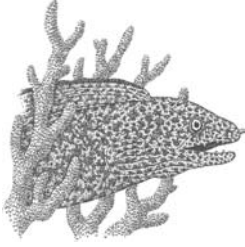
**8. Enforcement and Regulations.** Both the city of Key West and the State of Florida have declared Florida Keys waters under their jurisdictions as "no-discharge" zones. Additional accomplishments in implementing the Enforcement and Regulatory Action Plans are largely a tribute to the cooperative efforts 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.



### 3.4.3 Waterway Management Action Plan

#### *Introduction*

This action plan describes strategies that implement and maintain a comprehensive and effective waterway marking and management system for boaters within the FKNMS. Formerly known as the Reef/Channel Marking Action Plan, this plan was re-named to reflect the broader strategies and activities. In addition to markers, this plan incorporates several surveys and databases that aid in waterway management. Aids to Navigation (channel markers and informational markers) and regulatory markers (i.e. vessel exclusion, no motor, and preservation zones) are in place in many areas of the Sanctuary. Channel, shoal, and reef markings have reduced the damage to shallow-water resources; however, significant resource damage continues to occur in sensitive areas. Meanwhile, boating activities have increased dramatically since the plan was first developed necessitating the enhancement of waterway markings and management. This plan promotes standardized signage consistent with the International “Rules of the Road” and state standards. This comprehensive marking plan emphasizes long-term resource protection and protects shallow-water resources such as seagrass banks, patch reefs and the bank reef crest.

Marking reefs, banks, and major passages to and from Florida Bay, the Gulf of Mexico, and the Atlantic Ocean improves navigation and minimizes the damage to shallow-water resources throughout the Sanctuary. At the same time, an effective waterway management system promotes boater safety by identifying and marking hazards to navigation. Properly delineated regulatory zones (as addressed in the Marine Zoning Action Plan) together with effective waterway management alert boaters of Special-use areas and promote compliance with sanctuary regulations, while well-marked zones also greatly enhance enforcement of sanctuary regulations.

Several inventories and databases are maintained to assess current levels of boating activity and evaluate trends in shallow-water resource damage. These inventories include several studies of propeller scar data, the location of all existing markers (permitted and un-permitted), the location and function of marine facilities, depth of entrance and exit channels from subdivisions throughout the Keys, and a vessel grounding database. In addition to the inventories, changes in boating activity are monitored as new marking systems are placed in sensitive areas. These inventories and databases, further described below, are maintained as tools for planners and resource managers to evaluate the effectiveness of waterway management. Full utilization of these tools will also lead to design improvements.

Through Damage Assessment and Restoration Program activities, the FKNMS has conducted removal of grounded and sunken vessels and marine debris. FKNMS also works closely with Monroe County derelict vessel program that currently removes roughly 100 derelict vessels per year. Such debris threatens boater safety and has the potential to directly injure benthic resources and/or jeopardize water quality. Although state grant funds dedicated for this purpose have declined in recent years, the county has directed Boating Improvement Funds to overcome this shortfall. Continued funding to remove derelict vessels and marine debris through alternative funding sources is critical for effective waterway management.

This action plan is inherently linked to and complimented by several other action plans. The Boat Access Strategy (strategy B.1) is included as a component of the Mooring Buoy Action Plan, however,

the implementation scheme (description of activities and associated information) for the strategy is only included in this action plan. Waterway management/marking activities (strategy B.4) such as the vessel grounding database, prop-scar surveys, and derelict vessel removal are linked to the Damage Assessment and Restoration Action Plan. The planning and installation of regulatory markers are directly linked to the Regulatory and the Marine Zoning Action Plans. The regulations associated with the waterway marking/management strategy are included in the Regulatory Action Plan.

### ***Goals and Objectives***

The Sanctuary contains broad, shallow-water areas and significant reef tracts that require marking to improve navigation, increase boater safety, and therefore provide adequate resource protection.

Goals with respect to waterway marking-management include:

- Minimize resource damage from boating activities.
- Protect shallow-water resources.
- Provide reasonable and appropriate access while minimizing resource damage.
- Educating the public about safe and responsible boating practices.

To achieve these goals, the following objectives must be accomplished:

- Periodically assess the characteristics of boat use within the Sanctuary.
- Continually assess the extent and intensity of damage that occurs due to boating.
- Gain consensus on uniform aids to navigation, marking criteria, and regulatory marking systems.
- Promote and enhance a standardized waterway marking system consistent with international and state standards.
- Develop waterway marking criteria that protect resources, ensure reasonable boating access, and allow for easy transit.
- Continue installing new markers and maintaining existing ones.
- Evaluate the effectiveness of the waterway marking system and regulatory zones.
- Educate the public about the waterway marking system.

### ***Implementation***

#### *Responsible Institutions*

The Monroe County Growth Management Division (GMD) has primary responsibility for implementing this action plan in State of Florida waters. USCG has primary responsibility for marking federal navigation channels, including the Intra-coastal Waterway, and shipping lanes. The Sanctuary is responsible for marking its regulatory zones. The Sanctuary also coordinates the Waterway Management/Marking Working Group and promotes cooperation among the different agencies. The success of the Action Plan depends on the cooperation of federal, state, county, local agencies and the municipalities.

#### *Personnel*

About ten staff members from the Monroe County GMD and the assisting institutions were involved in the original implementation of the Waterway Management Action Plan. Two FWRI staff constructed the original GIS data layers. Three Monroe County GMD staff, including the county's Marine Planner, continue to be involved in developing this plan, submitting permit applications,

developing installation and maintenance contracts, and directing the removal of derelict vessels and marine debris. FKNMS staff is involved in the coordination of the Waterway Management Action Plan Working Group that includes Monroe County GMD, USCG, USFWS, and other trustees. The FKNMS mooring buoy team installs and maintains numerous regulatory markers addressed under this plan. FKNMS staff review permitting of markers and have recently been involved in the coordination of installing the 300-foot residential shoreline idle speed/no wake zones.

#### *Contingency Planning for a Changing Budget*

In December 2002, the County adopted a new ordinance that levies additional funds through the state vessel registration fee; about \$580,000 is available annually from Monroe County Boating Improvement Funds. State grants for the removal of derelict vessels were not renewed in recent years, so the county has used approximately \$150,000 of the Boating Improvement Funds to cover these activities in Monroe County. Many aids to navigation are funded, owned and maintained by the USCG, although recent changes in mission have limited resources available for waterway marking. The Sanctuary may purchase and install markers from vessel grounding settlements, but has not yet done so on a large-scale basis. The current level of funding will allow the program activities to be completed; additional funding simply shortens the time frame required.

#### *Accomplishments*

- Implemented a Channel Marking Master Plan, prepared by Monroe County GMD and adopted by the Board of County Commissioners. The county portion of the plan is essentially complete, with over one hundred new markers installed, eight new channels marked and maintained, and three additional banks marked.
- Worked with owners of container vessel *M/V Houston*, USCG, and the Key West Propeller Club to install eight RACON beacons (also known as radar transponder beacons) on navigational aids along the reef tract from Loggerhead Key, in the Dry Tortugas National Park, to Fowey Rocks at the north end of Biscayne National Park. The beacons transmit a signal that is displayed on the radar screens of passing ships, warning them of the location of the coral reef tract. The Sanctuary used its authority to negotiate with the ship owners for funds to purchase 10 of these highly effective beacons. The remaining two beacons are being held as replacements for the existing beacons.
- Installed new danger markers in the Sambos Complex to protect SPA reefs.
- Identified navigation problems in channels around Key West and the Middle Keys. As a result, an area north of Moser Channel through Red Bay Banks area has been remarked.
- Inventoried approximately 600 aids to navigation; included in a GIS database.
- Completed a boat-access survey of all marinas, boat ramps and docking facilities; data has been entered into a marine facilities GIS database.
- Surveyed entrance depths to all residential canals; available as GIS data layer.
- Provided updated waterway information to the *Upper Keys Boating Guide*, the locally produced *Teall's Guides*, and NOAA charts.
- Standardized, relocated, added, and when necessary, removed markers.
- Conducting on-going investigation of the root causes of prop scars in grass flats. Lignumvitae Key State Park seagrass banks have been assessed via aerial and ground surveys for vessel grounding trend analysis. A statewide survey of prop scars has been published and a four-point action plan recommended channel marking, zoning, education, and enforcement.
- Streamlined permit process and marked residential subdivision shorelines as requested to delineate the 300 foot Sanctuary idle-speed-only/no-wake zone.

- Removed a dangerous obstruction at Marker 48 and determined that the pile at 9-foot stake is no longer a threat to navigation.
- Improved marking of shoal areas using 'Danger Reef' buoys at various reefs throughout the Sanctuary such as Newfound Harbor SPA, Looe Key back reef, Bicentennial Head.

**Strategies**

Waterway Management/Marking is comprised of two strategies, which are detailed below.

- Strategy B.1 Boat Access
- Strategy B.4 Waterway Management/Marking

Each of these strategies is detailed below. Table 3.13 provides estimated costs for implementation of these strategies over the next five years.

**Table 3.13 Estimated Costs of the Waterway Management Action Plan.**

Waterway Management Action Plan Strategies	Estimated Annual Cost (in thousands)*					Total Estimated 5 Year Cost
	YR 1	YR 2	YR 3	YR 4	YR 5	
B.1: Boat Access	-	-	-	50	-	50
B.4: Waterway Management/Marking+	335	352	370	390	408	1855
<b>Total Estimated Annual Cost</b>	335	353	370	440	408	<b>1,905</b>
* Contributions from outside funding sources also anticipated.						
+ Expenditures by the U.S. Coast Guard are not included in these estimates						

## STRATEGY B.1 BOAT ACCESS

### Strategy Summary

The purpose of this strategy is to conduct surveys to assess public and private boat access throughout the Sanctuary. By knowing these entry and exit sites, the team can ensure channel markings to and from these areas are adequate.

### Activities (4)

**(1) Periodically Update Marine Facilities Survey.** A field survey of each boat access site in the Keys is periodically updated. Information includes the location, type of facility, services provided, intensity of use, and type of use.

Status: Implemented and on-going.

Implementation: Monroe County Division of Marine Resources (now the Growth Management Division) completed the initial surveys in 1993<sup>3</sup> under contract with FWRI as part of the Channel Marking Project; a second survey was conducted in 1999<sup>4</sup>. All data was turned over to FWRI for generation of GIS data layers. The inventory is updated by Monroe County GMD as marine facilities change or new ones come into existence. A comprehensive field survey will be conducted periodically.

**(2) Survey Needs for Shallow-water Access.** A survey<sup>5</sup> was designed and completed that assessed the water depths at subdivision entrance points, and of shallow-water access impediments between the Atlantic Ocean, Florida Bay, and the Gulf of Mexico and subdivision entrances. The information collected is used to prioritize placement of corrective or additional markings.

Status: Implemented and on-going.

Implementation: Monroe County (DMR) (now GMD) completed the initial surveys under contract with FWRI as part of the Channel Marking Project. The Florida Department of Community Affairs (FDCA) provides information on subdivisions and needs for shallow-water access. FKNMS provided boat support for some of the surveys.

**(3) Input Survey Data into a GIS.** Input all data developed through the on-site surveys into a GIS database to enable use of inventories for waterway management planning and by resource managers.

Status: Implemented and on-going.

Implementation: Monroe County DMR (now GMD) completed this activity for both databases under contract with FWRI. All data has been turned over to FWRI and is updated as data changes.

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<sup>3</sup> Marine Facility Survey conducted in 1993 by County DMR (now GMD) as part of Channel Marking Master Plan process. Also called the *Marinas* data layer.

<sup>4</sup> Fletcher survey. Data gathered, data entry on-going.

<sup>5</sup> Survey of all subdivisions to determine which have four-foot access to bay and/or ocean. Conducted by DMR (now GMD) for Channel Marking Master Plan. Also referred to as *Subdivisions* GIS data layer.

**(4) Make Survey Results Available to Resource Managers and the Public.** Initiate a process to make the information developed in the marine facilities survey and shallow water access survey available to resource managers in map, graphic, and written formats. As part of FWRI's obligation to maintain data created as a result of activities carried out in the Sanctuary, this information will become more readily available over time.

*Status:* Implemented and on-going.

*Implementation:* Data is currently available through FWRI. Some of the data has been used for an *Upper Keys Boater's Guide*. (See Strategy W.28 in the Water Quality Action Plan.); additional data will be used by Monroe County GMD and FWRI for the Middle Keys and Lower Keys boater's guide.

#### **STRATEGY B.4 WATERWAY MANAGEMENT/MARKING**

##### **Strategy Summary**

The purpose of this strategy is to continue to promote and enhance a coherent waterway management and marking system throughout the Sanctuary to minimize resource damage from boating activities, promote safe navigation, and increase boater safety.

##### **Activities (10)**

**(1) Improve Coordination of the Agencies Involved in Waterway Management.** Re-vitalize the Waterway Management Action Plan working group to renew active discussions of priorities in waterway marking and management.

*Status:* On-going.

*Implementation:* Working group was very active for several years after implementation of the Action Plan. Activity has tapered off in recent years; Sanctuary will coordinate the regular meeting and revitalization of this group.

**(2) Survey Damage from Propeller Scarring and Vessel Groundings.** Assemble aerial photography, visual observations, and databases of reported vessel grounding data to obtain a complete picture of damage to shallow water resources caused by prop-scars, keel grooves, blowholes, and vessel groundings. A database was assembled from published reports<sup>6</sup>. A statewide prop-scar survey was completed, compiled and published by FWRI in 1995<sup>7</sup>. NOAA, FWRI, DEP and Monroe County have conducted additional aerial and on-water surveys. In addition, FWRI and the Sanctuary created the vessel grounding database<sup>8</sup> from FWC grounding citations. "Hot spots" of resource damage can be

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<sup>6</sup> Kruer, C.R. 1994. Mapping Assessment of Vessel Damage to Shallow Seagrasses in the Florida Keys. A report to the Florida Dept. of Natural Resources and the Univ. of South Florida / F.I.O. 9p.

<sup>7</sup> Sargent, F., T.J. Leary, D.W. Crewz, and C.R. Kruer 1995. Scarring of Florida's seagrasses: assessment and management options. FWRI technical report TR-1. 46p. Using low-level aerial surveys and photography, researchers characterized levels of light, moderate, and severe scarring. These areas were converted into a GIS data layer by FWRI.

<sup>8</sup> Includes all seagrass and coral grounding cases that generated a FWCC citation; database maintained by FKNMS Damage Assessment and Restoration program.

illustrated by plotting the data. This data is then used to design/improve waterway marking schemes through partnering with USCG and Monroe County.

Status: Implemented and on-going.

Implementation: Propeller scar surveys have been compiled, and Monroe County, FKNMS and DEP continue aerial and ground surveys of boating impacts. FWRI and FKNMS created the vessel grounding database and sanctuary staff update grounding data as they are reported. FWRI is the lead agency for propeller scarring surveys. FKNMS maintains the vessel grounding database.

**(3) *Inventory and Geo-reference Aids to Navigation and Regulatory Markers.*** A channel marker inventory<sup>9</sup> has been designed to identify, characterize and geo-reference all known markers; information has been incorporated into a GIS data layer. Positions for aids to navigation maintained by local, state, and federal agencies are integrated into the database. Used in conjunction with the vessel-grounding database, an assessment can be made of where new markers may be needed and existing markers repositioned. Each agency has a separate inventory of regulatory markers they maintain; an effort to compile all regulatory markers will be made.

Status: Implemented and on-going. The inventory will take two years to update.

Implementation: Monroe County GMD has this inventory as a GIS layer and verified all marker locations. Monroe County, NOAA, and USCG update the database to reflect changes in positions for aids to navigation.

**(4) *Enhance Channel Marking Aids to Navigation.*** This activity will enhance existing channel marking efforts. Based on much of the data collected and assessed as part of this plan, Monroe County implemented the Channel Marking Master Plan<sup>10</sup>, a comprehensive plan for all channels and markers in the county. The plan will be linked to channel marking schemes maintained by other local, state, and federal agencies. The GMD will continue to identify areas of concern and implement further enhancements as needed.

Status: This is an on-going activity. The county is funded for this activity through the Florida Boating Improvement Funds and other grants.

Implementation: Monroe County has essentially completed its portion of the Channel Marking Master Plan. This effort has greatly enhanced the channel marking within the county by installing over 100 new markers, maintaining eight new channels, and marking additional banks. Additional enhancements will be considered by GMD. Coordination of channel marking activities will be achieved through the Action Plan Working Group members participating in meetings of the local Marine and Port Advisory Committees, the Sanctuary Advisory Council, and providing technical input to USCG.

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<sup>9</sup> Channel marker inventory compiled from USCG Light List and County data as part of the Channel Marking Master Plan. Existing channel makers were checked for exact location by Monroe County DMR (now GMD). Data layer is referred to as the *ATONS* layer. In addition, an *Unpermitted Markers* data layer was compiled by Monroe County DMR (now GMD) during field surveys.

<sup>10</sup> Channel Marking Master Plan for the Florida Keys, January 1998. Richard Jones, Channel Marking Planner. Submitted in fulfillment of DEP Agreement No. SWPP96-06 by the Monroe County Department of Marine Resources.

**(5) Assess Effectiveness of Channel Marking Master Plan.** In addition to installing new channel markers, several studies have been designed to assess the effectiveness of newly marked channels. Assessment consists of three primary techniques: 1) using aerial photography to assess changes in benthic communities in discrete areas following modifications to a waterway marking scheme; 2) analysis of grounding information; and 3) numbers of complaints and/or other evidence that problems have been solved. Aerial overflights have been completed for several areas<sup>11</sup> throughout the keys at various times and using a variety of methods. A coherent monitoring study was started by (now GMD) in 1997 by gathering aerial photography for five study areas: Broad Creek, Tavernier Creek, Vaca Cut, Whale Harbor Channel, and Niles Channel. The channel markings for all of the study areas, with the exception of Niles Channel, were improved between 1997 and 2000. Follow-up aerial surveys of the same areas are planned. The effectiveness of the new markings will be evaluated by changes in the shallow resources (mainly seagrasses) in these areas.

Status: Implemented and on-going.

Implementation: Monroe County is conducting pre- and post-project assessments of newly marked channels. Aerial overflights have been conducted in five areas. The vessel grounding database will also be used to assess the effectiveness of the plan.

**(6) Enhance Reef Marking Aids to Navigation.** Protection of the reef tract has been accomplished through several important marking improvements; however, significant and long lasting damage still occurs on the reef crest. Further enhancements are needed. The Sanctuary staff will assist USCG in planning improvements and make recommendations based on trends in boating activity and resource damage. Continued coordination and enhancement of reef marking activities will be achieved through the Action Plan Working Group.

Status: Implemented and on-going.

Implementation: RACON beacons have been installed and, along with the ATBA restrictions, have virtually eliminated large vessel groundings on the reef. At the request of FKNMS, reef markings were improved at Sambos complex by USCG. Further enhancements will be proposed through the Action Plan Working Group. The Sanctuary has lead responsibility to staff the working group and facilitate information exchange among agencies and citizen groups.

**(7) Conduct Waterway Assessment and Marking System (WAMS) Survey.** The USCG has the primary responsibility for installing and maintaining markers in federally maintained channels, Hawk Channel, the old Intra-Coastal Waterway (ICW), on the bank reef crest, and shoal areas outside state waters. USCG has committed to conducting a WAMS study in the area to evaluate the effectiveness of federally maintained markers and management schemes. The Sanctuary staff will assist with the study however possible, and provide technical support such as output from the vessel grounding database.

Status: On-going.

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<sup>11</sup> Areas that have aerial photographs gathered before 1996 include: the north end of Big Coppitt Key, Lower Sugarloaf Sound, Kemp Channel south of U.S. 1, the north end of Ramrod Key, and the Lignumvitae Aquatic Preserve area. Two of these areas, Lower Sugarloaf Sound and Lignumvitae, received channel markings.



Implementation: USCG has made several improvements in channel markings and reef crest markings. A formal WAMS process is in the planning stages. The County's Channel Marking Master Plan has several recommendations for improvements of federally maintained markers. Data from the survey will be used to plan future improvements to the marking system.

**(8) Enhance Use of Regulatory Markers and Information Signs.** In addition to working with other agencies to mark channels, shoals and reefs with day boards, beacons and lights, the Sanctuary helps manage waterways through regulatory and zoning activities. The Sanctuary maintains more than 100 wildlife management buoys (including some for other agencies), approximately one hundred preservation area and ecological reserve boundary buoys, and numerous danger markers near coral heads. Regulatory markers inform boaters of regulations for idle-speed/no-wake zones, vessel exclusion zones, and other zoning designations. In addition, several agencies install information signs at entry points to waterways throughout the Florida Keys.

Status: Implemented and on-going.

Implementation: The FKNMS has the lead responsibility. FKNMS staff install and maintain several hundred regulatory markers and numerous informational markers. The installation of regulatory markers is linked to the Marine Zoning and Regulatory Action Plans.

**(9) Remove Derelict Vessels, Marine Debris and other Waterway Obstructions.** Another important activity for managing the waterways of the Florida Keys is the removal of abandoned vessels and marine debris that impede navigation, threaten public safety or harm the environment. Monroe County currently removes about 100 derelict vessels per year through an efficient removal program. USCG removes objects deemed to be hazards to navigation or significant threats of marine pollution. FKNMS works closely with both agencies to report and coordinate the removal of waterway obstructions. In some instances, particularly for problem projects where no agency has lead responsibility, FKNMS has located funds and contracted the removal of sunken vessels that were deemed to be a threat to sanctuary resources. This activity is related to the removal of grounded vessels under Damage Assessment and Restoration, Regulatory and Marine Zoning action plans.

Status: On-going.

Implementation: Monroe County has an efficient derelict vessel removal program. USCG is responsible for removing hazards to navigation. FKNMS staff coordinate removal of debris and when needed reduce threat to sanctuary resources. In 2006/2007 Monroe County removed over 400 derelict vessels and over 45,000 derelict traps following the impacts and dislocations of the 2004 and 2005 hurricane seasons. This large scale removal effort was partially supported through hurricane recovery funds from the Federal Emergency Management Agency.

**(10) Develop Guidelines for 100-Yard Idle-speed/No-wake Shoreline Markers.** Guidelines will be developed for collecting information from homeowners and homeowner associations based on reporting requirements set forth by agencies involved in issuing permits to install regulatory markers in submerged lands. Permitting agencies include USACE, DEP and the USCG. FKNMS staff provides residential shoreline No-wake/Idle-speed permit information and requirements to homeowners and homeowner associations upon request. FKNMS staff works with the public to seek

the necessary approvals or exemptions from jurisdictional agencies. Generally, those desiring permits provide: approximate latitude and longitude coordinates for the area to be marked and the names, addresses and telephone numbers for adjacent homeowners. Permit requests are evaluated by need, resource impacts, and locations before being submitted for permit approval.

FKNMS staff completes, files and pursues approvals from the agencies responsible for managing submerged lands, regulatory markers and regulations within the Sanctuary. FKNMS staff seeks approvals/exemptions from jurisdictional agencies and works with agencies to complete permit application and obtain approvals. It is the responsibility of the homeowners and homeowner associations to initiate communications with contractors for buoy installation and maintenance.

Status: On-going.

Implementation: Currently, there are four permitted sites and 17 existing regulatory markers. The FKNMS Upper Region resource manager and administrative staff are responsible for implementation of the activity.